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*Sincerely,*

***EJES, Team***

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# **IN THE CANOPY WITH TARDIGRADES, HERBIVORY AND WHEELCHAIRS: ENGAGING MOBILITY-LIMITED STUDENTS IN FIELD BIOLOGY**

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## **Abstract**

We conducted research to quantify tardigrade (water bear) density, diversity, and distribution in temperate forest canopies, and to promote opportunity for undergraduates with mobility limitations as field researchers. This ecology project was funded by the National Science Foundation (NSF) Research Experiences for Undergraduates (REU) program to explore canopy biodiversity and herbivory in a temperate deciduous forest, with a special focus on tardigrade fauna. The program confirmation that a wheelchair is not a limitation to field biology since canopy research involves vertical not horizontal transects. Mobility-limited students with equal mental and visual capabilities ascended into the canopy, collected samples, used microscopes, identified new species, and wrote professional papers.

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**Keywords:** Canopy, tardigrade, herbivory, disability, wheelchair

## **Introduction**

Miller, Lowman, and McCord (2013) boldly declared that canopy access and invertebrate ecology are disability-friendly arenas for rigorous scientific research, and we used that idea for our NSF (National Science Foundation of the United States) REU (Research Experiences for Undergraduates) proposal. Approximately 11% of US undergraduate students have physical limitations, but only 9% pursue studies in the life sciences and mathematics (NSF 2009), and an even smaller fraction of those students attempt studies in ecology or field biology (Teresa Mourad, Ecological Society, personal communication, 2012).

E.O. Wilson (2005) called forest canopies the "eighth continent of planet Earth" due to their complexity and enormous biodiversity. For decades, canopy exploration has concentrated on the exotic tropical rain forests, with few surveys in temperate regions (Preisser, Lowman, and Smith 1999; Shaw et al. 2006). This disparity of knowledge precludes answers to basic ecological questions about habitat selection, abundance, herbivory, diversity, vertical stratification, and evolution. This paucity of data provides the opportunities for undergraduate students to conduct primary, cutting-edge research into little known habitats and groups of invertebrates. Using protocols developed in the tropical forest canopies, undergraduate students can make discoveries in temperate forests (Bergelson et al. 1993).

Over the last two decades, ascent into the treetops has been facilitated by the development of safe single- and double-rope tree climbing techniques (SRT/DRT) (Lowman 1999, Haefke et al. 2013). This paradigm shift in accessibility has allowed canopy researchers to confirm that a large portion of global biodiversity inhabits the treetops (Lowman & Rinker 2004). Our project combined the adventure of canopy exploration with the hunt for a little known, charismatic animal, the water bear or tardigrade (Miller et al 2013).

## **Students with Disabilities as Field Biologists**

As equal opportunity educators, we, along with our institutions are dedicated to broadening opportunities for women, minorities, and persons with disabilities. Over many years, the authors have worked with students and colleagues with many disabilities, and recognized that a wheelchair does not preclude good science. Burgstahler (2009) wrote that any student who is given a research opportunity can observe, sample, and understand ecology. Students with disabilities have the same ability to think, question, hypothesize, analyze, and write as any other student. In the laboratory, students in or out of a wheelchair can use microscopes, analytical instruments, computers, and books to classify animals and interpret temporal and spatial data (Burgstahler 2009). *“Yes, but how can a student in a*

*wheelchair climb a tree?*”, is the first question asked of us, to which we point out that we employ technical hardware and ropes, so a person with average arm strength can climb into the canopy (Figure 1).

In Japan, the *Treehab Program*([treeclimbing.jp/Treehab.html](http://treeclimbing.jp/Treehab.html)) uses tree climbing in the therapeutic treatment of children with physical disabilities (Gathright et al. 2008). Although not ecological research, their project is a testimony to the idea that students with ambulatory disabilities need not be excluded from field biology or canopy exploration.

## **Herbivory**

Herbivory in tropical rain forest canopies is lowest in sun leaves of the upper canopy. Insect herbivores prefer to eat young leaves more than mature ones (Lowman 1983, 1985, Lowman and Heatwole 1992, Lowman 2012). Further, insect herbivory has been shown to correlate to leaf toughness more significantly than to leaf chemistry (Lowman and Box 1983), however little is known about herbivory in temperate forest canopies.

## **Tardigrades**

Tardigrades or water bears, are a little studied phylum of aquatic invertebrates living in the interstitial water that becomes trapped within the leaves of the mosses and thalli of lichens, and live as epiphytes on the trunks and branches of trees all over the world. Tardigrades exhibit cryptobiosis; they desiccate as their habitat dries and reconstitute when moisture returns (Miller 1997). In the dry state, tardigrade “tuns” can be picked up and carried by the winds. Thus, cryptobiotic tardigrades are rained into the canopies of the world, but must find acceptable habitat to survive (Miller 2004). Despite our knowledge of tardigrade physiology, we know almost nothing about their distribution and ecology (Ramazzotti and Maucci 1983, Kinchin 1994, Miller 1997, Mitchell et al. 2009). Miller, Gallardo, and Clark (2013) presented the first tardigrade vertical distributional pattern in a white pine tree in Kansas.

## **Research**

This REU project exposed students to designing ecological field experiments, the development supportive laboratory work, and appropriate statistics to analyze data. We hypothesized uniformity or that there are no significant differences in the diversity and density of tardigrade populations at different levels on different substrates (tree species) (Miller et al. 2013). Our herbivory hypothesis was that there are no significant differences in herbivory at different levels throughout temperate forest canopies, similar to their tropical counterparts (Lowman 1985).

## Materials & Methods

We worked in the transition zone between the tall grass prairie and the western edge of the great deciduous forest in eastern Kansas. Our research was based on simple vertical transects using double rope technique (Haefke et al. 2013), with sampling at standard levels: ground, low (3 m), mid (7 m), and high (> 10 m). At each level in each tree (substrate), tardigrade habitats (moss and/or lichen) were collected by scraping the habitat into a paper bag. Each sample was processed in the lab and tardigrades mounted on slides (Miller 1997). The resulting data set from each substrate becomes statistically comparable to other tree species. The results at different levels are comparable to each other, as is the matrix of habitats (moss & lichen) found within the canopy. Differences between forest types can be studied over years to develop a picture of temporal changes. Replicate leaf samples were similarly sampled along these vertical transects (see Lowman et al. 2012). In addition, each student was trained to use a scanning electron microscope to image their specimens and appreciate tardigrade morphology (Figure 2).

## Results

As a team, mobility-limited or not, we climbed 117 trees (Figure 1) representing 20 different species, and collected 576 samples of moss & lichen habitat from the four different levels. Over 4,256 tardigrades were extracted, slide mounted, imaged, and identified. Our preliminary results indicate the presence of 2 classes, 3 orders, 5 families, 8 genera, and 16 species of tardigrade (Figure 2), six of which are new to Kansas, and four of which appear to be new to science. In addition, we collected 2,347 leaves in sets of 30 from almost each tree (some were out of reach), and measured leaf area and herbivory.

Preliminary results suggest distinct tardigrade stratification, with greater diversity and density in the upper canopy than the understory; association of specific tardigrade species with specific substrates and different habitats (moss versus lichen); and evidence of differential site acceptability (Table 1). In addition, herbivory was significantly different between tree species (Figure 3).

Each student created a professional PowerPoint presentation for public audiences that were given in the Daily Planet Theater of the North Carolina Museum of Natural Sciences. Students have presented posters nationally at the Council of Undergraduate Research conference in Washington D.C., the Sigma Xi Undergraduate Research Symposium in North Carolina, and regionally at the Missouri and Kansas Academies of Science annual meetings. Numerous public outreach events have been

orchestrated, including water bear scavenger hunts and public tree climbing workshops.

Recent research (Laurance et al. 2013) has indicated the sooner young scientists begin to publish, the greater their motivation and professional advancement later in their careers. As we write this, two of our students have already published peer reviewed papers (Haefke et al. 2013, Spiers et al. 2013) and five other manuscripts are in preparation. Co-author Tripp has recently published her experience in the canopy from her wheelchair in Ability Magazine (Tripp 2013).

## **Discussion**

Our undergraduate canopy researchers have studied a major forest type, conducted research via DRT climbing, and used SEM to visualize their subjects. Students have identified new relationships among deciduous canopy trees and the epiphytes that grow upon them. They will have discovered and described new species, new habitats, and new characteristics in the canopy environment of the temperate forest. They have made poster and oral presentations, and many will have submitted a paper for publication. Our REU students are part of a growing research community of young scientists and canopy experts. All now have a core understanding of the achievements and challenges faced by colleagues with physical disabilities, and are well prepared for graduate school in ecological sciences.

The two students in this project with ambulatory disabilities have been full partners in this project, participating in every aspect. They climbed the same number of trees, climbed as high, and collected as many samples as the ambulatory students. They found as many tardigrades as the other students and measured as many leaves. They are writing as many papers. The circumstance that some participants were in wheelchairs presented no scientific problems and required only thoughtful logistics and planning. The fact that one project student was vegan was more of a challenge. During Open Tree Climbing Day at the North Carolina Museum of Natural Sciences, our students assisted more than a hundred people into the canopy at the Prairie Ridge Ecostation. Among those whom our students helped climb out of their wheelchairs included our own ADA consultant Pam Dorwarth. And recently, Dr. Gathright has contacted us about using water bears to introduce citizen science into his program in Japan.

This project demonstrates that students with ambulatory disabilities can conduct cutting edge research in the field, in the canopy, and in the laboratory, and communicate the results to both colleagues and the public. Thus we continue to declare that canopy access and invertebrate ecology are disability-friendly arenas for rigorous scientific research.

## Acknowledgement

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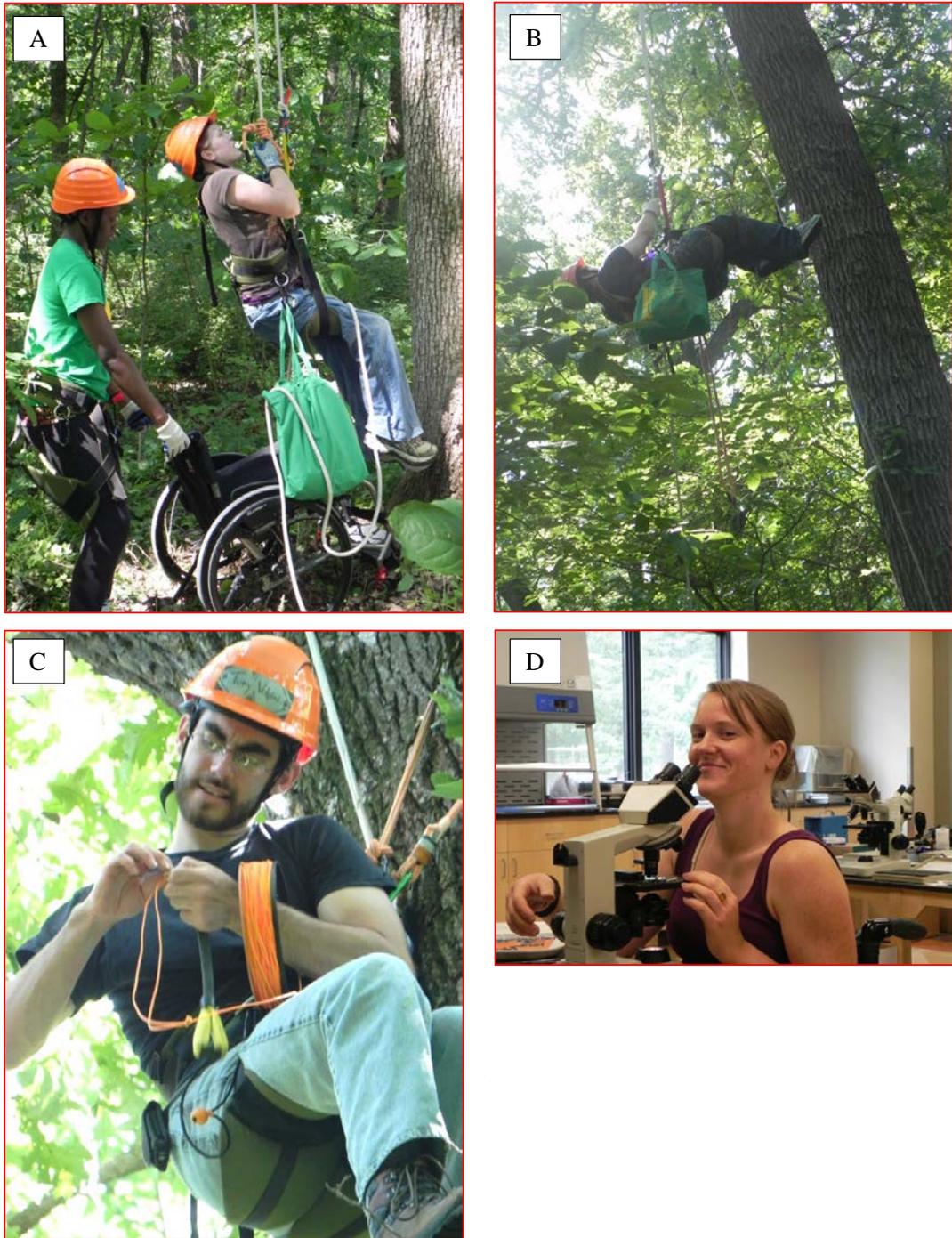


Figure 1. A. Rebecca Tripp lifting out of her wheelchair, B. Devan Glennly ascending into canopy to collect, C. Tony Volpini preparing to sample at 20 meters, D. Rebecca searching her samples for tardigrades. Photographs by W. R. Miller.

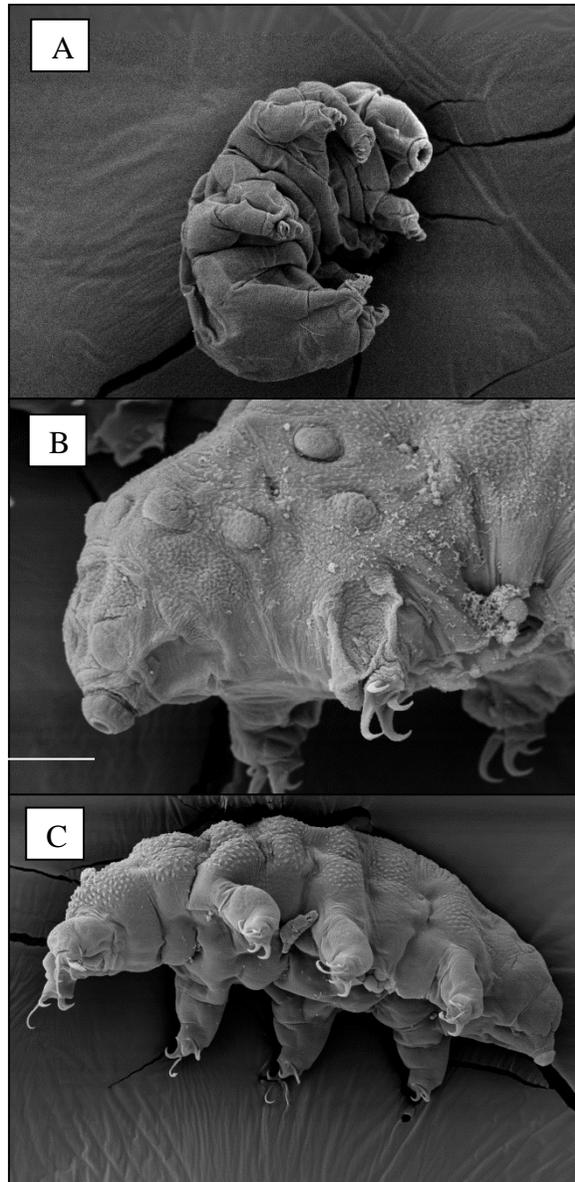


Figure 2. Some tardigrades found.  
A. *Minibiotus* sp., B. *Doryphoribius* sp.,  
C. *Ramazzottius* sp. Scale bars = 50 $\mu$ m.

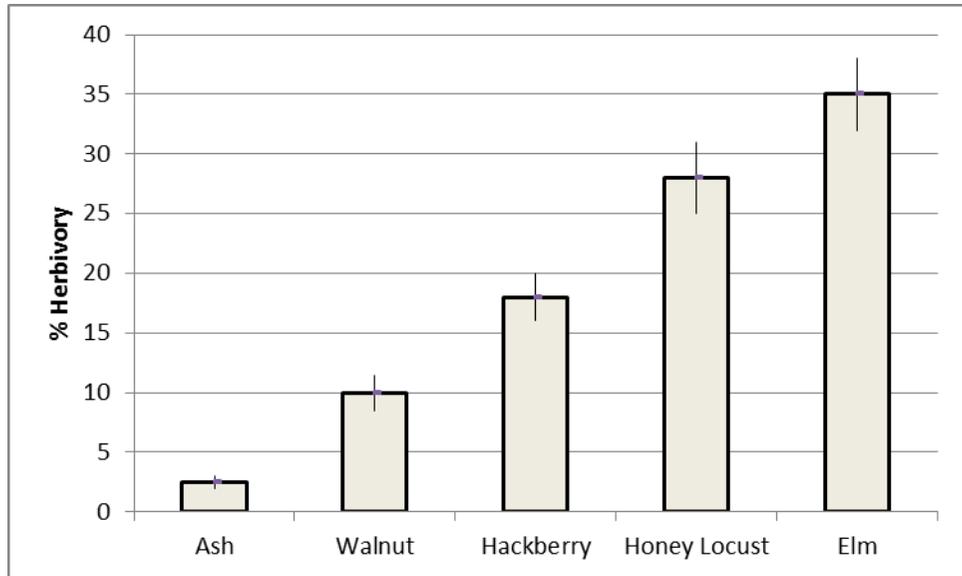


Figure 3. Preliminary indication of differential herbivory by tree species at University of Kansas Field Station site.

Table 1. Preliminary indication of stratification with more tardigrades found per sample at greater heights into the canopy at eight of ninesites. BU = Baker University, KU = University of Kansas, and OP = Overland Park.

| Level | Height<br>in meters | BU Prairie | Black Jack | BU Campus | BU Woods | KU Rice Woods | Vinland | OP Arboretum | BU Wetland | KU Field Station |
|-------|---------------------|------------|------------|-----------|----------|---------------|---------|--------------|------------|------------------|
| 4     | >10                 | 30.5       | 4.0        | 13.3      | 11.0     | 10.5          | 8.4     | 6.8          | 19.1       | 10.1             |
| 3     | 7-10                | 12.7       | 5.0        | 8.3       | 6.5      | 11.3          | 3.4     | 10.8         | 6.1        | 10.0             |
| 2     | 3-7                 | 12.4       | 5.4        | 6.8       | 6.7      | 5.3           | 2.0     | 4.3          | 5.4        | 8.6              |
| 1     | 0-3                 | 7.3        | 10.3       | 9.4       | 3.8      | 0.9           | 6.0     | 3.2          | 2.9        | 6.2              |

# THE ART THERAPY, AN AESTHETIC AND ARTISTIC EXPERIENCE TO SUPPORT THE INTEGRATION AND PREVENTION OF UNEASINESS

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## Abstract

Art therapy is a means of expression, a communication tool that represents the imaginary through the non-verbal. The present work is a proposal for a project to be carried out in Universities, in order to try and experiment with students the language of symbols, specifically the paint, draw, shape, dance, write, recite: activities in which all the senses are stimulated. Art therapy is an ideal instrument when, for students of all ages, in situations of *crisis* or at the margins of the social context, anxiety and stress cause somatization disorder, when you cannot reproduce existential dramas or tragic events, when verbal expression is impossible or deficit for various causes so the bodily and psychological integrity is at risk or compromised.

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**Keywords:** Art therapy, support, expressive capacities, uneasiness

## Introduction

Art therapy is the set of treatments using main tool the artistic expression in order to promote health and promote healing, and is proposed as a technique of multiple application contexts, such as therapy, rehabilitation and education/prevention (Improta, 2005). It has been a valuable tool in support of psychiatric care of people with severe mental disorders, such as psychotic and autistic (*therapeutic area*). The latter subjects were able to express themselves better with the body or with gestures, materials modelling, dancing, or representing in drawings their fears, rather than through words; the use of artistic expression, could help

them to overcome the serious difficulties in communication, which are typical of people suffering from these disorders.

These results led to extend the use of these techniques also to patients *less serious*, with mood disorders and anxiety disorders, in which there is, thanks to the use of art therapy, an increase of self-esteem, a consolidation of the ego and the improvement of social skills (Pasanisi, 2001). The success achieved in therapy led to extend the use of art therapy in the *rehabilitation* of patients with neurological damage and physical disability, but no real mental illness. Creative activities help these people reduce the denial of disability, to develop greater personal autonomy and social relations (Warren, 1995). As for *the area of education*, art therapy is increasingly being used by *common* people, not carriers of the specific hardships, as a form of education being addressed with sensitivity, creativity, to *self-awareness* and to *self-acceptance*. The path of art therapy to adults of all ages, require no special skills or artistic talents, but facilitate creative expression by offering opportunities to meet yourself and others, useful to discuss personal issues to deal with times of change, discover new personal resources.

For children and adolescents, the paths of art therapy, assure listening and opening, lack of judgment and maximum encouragement to individual creativity, resulting valid and effective tools in schools (from kindergarten to high school) and in recreational and educational such as youth centres of aggregation or communities for children. Just for the younger ones, projects could be promoted aimed at supporting those who are in conditions of social disadvantage, uneasiness with psychological/behavioural disabilities, foreigners, involving them in the release of emotions and experiences, to know and discover oneself in a playful and creative way.

Many are situations in which both adults and children are in moments of 'crisis', and feel the need to readdress the balance with themselves and with the outside world (bereavement, separation, failure in school or work, etc.): art therapy can help them express and process their emotions to deal with their conflicts, and regain self-confidence. Among the art forms, primarily used in art therapy you can mention all graphic arts, from drawing to writing; the dance; the music; theatre and cinematography. Creativity is at the centre of human development: it allows, throughout life, to recover confidence in creative and transformative capacity

The setting of art therapy as a therapeutic space delimited, protected and assured that holds, supports and facilitates such holding environment. It must be adequate, comfortable, ordered and stimulating to allow the memory of archaic processes of focus. In it are, in effect the normal social rules, the atmosphere is serene, and everyone feels accepted and not judged. The

physical relationship with the materials present in the patient wakes up, setting the experiences of contact and pre-verbal communication; stimulates the symbolic expression of the contents of the unconscious; and allows the creative act of expressing all the transformative potential. In this space, the therapeutic process takes place within the triadic relation between subject/patient, therapist, expressive (even potentially): none of the three leaders of the report may be missing or do without the other, and each receives from the other two thicknesses, which results in a more complex dynamic transferal-controtransferale. Each material used implies different messages, depending on the tactile quality, control possibilities that offers the degree of muscular involvement required, and can be chosen for that particular subject/patient following proper observation, given the defence, the level of object relations, I outline. Even the therapist proposes a material rather than another, depending on the psychological demand of the moment: support, comfort, challenge, reflection. What is being created (not the finished product, but the vicissitudes of his emergence) is never just a translation abstract thinking or representation, but is an unconscious and an incarnate expression of a lived; not a pure transcription of a lived in concrete, but a reworking of living and reactivate a process that may have been inappropriate, or distorted, or blocked. What is created, depending thus on the time and the report can perform several functions (complementary, integrative, reparative): *transitional function*, a bridge between the internal world and external reality, between Self and other by Self, between patient and therapist (for example, in times preceding the separation, incorporating elements of the patient and the therapist); or *narcissistic function*, which is the subject of Self reflecting and supporting the patient's Self. The means of expression of the creative process become a bridge between the various parts of the self, between the inner world and the outer world, between patient and therapist, between himself and the other members of the Group; become a vehicle through which they can communicate, and at the same time you can hide what cannot, or cannot yet be expressed. Processing work can then be carried on a plan of greater knowledge, for example through verbal interpretations; or remain on a more symbolic level with metaphorical interpretations and verbal associations.

However, to date, there are few data and clinical studies conducted in Italy, contrary to what is found in the countries of Europe and North America, where the art therapy is recognized and practiced for decades to the psychological support of patients. In Italy, has not enjoyed wide acclaim that made it possible to develop and share a theoretical system that scientifically right: there are indeed tasks, techniques, shared objectives and commonly accepted, nor a training or professional ethics. Despite this, the efficacy demonstrated by experimental evidence reported in the literature, has

launched the basis for the use of art therapy in private structures in our country. Art therapy is used in various contexts, from therapy to rehab until the educational contexts. Although there is some scientific decoding tool of art therapy, such as the Polisegnico model (De Gregorio, 2000), a fix yet found is to *quantify* the benefits produced by the art therapy, whereas for the scientific community is valid if treatment is *quantifiable* and *repeatable*.

The proposal of an art therapy-oriented laboratory in University, stems from a fundamental assumption: non-verbal communication is of considerable importance for the evocative and relational potential of each person. It represents an essential vehicle to intervene also on students *unease*, in particular regarding: closing behaviours, difficulty of integration and communication with peers and teachers, specific issues related to disability, attitudes of burn out, desire to surrender.

## Method

This method dynamically addresses the world of sound, image, movement, appropriately and scientist, using the most diverse sensory and communicative registers. It places students in the face of various languages (verbal, corporeal, mimic-gestural, sound, etc.) and offers the opportunity to experience them directly in order to enrich the training offer, stimulate creativity, express emotions and feelings suppressed (or where it is difficult to speak); identifying and addressing conflicts and emotional blocks; improving the knowledge and the relationship with your body. This method increase self-esteem and the perception of effectiveness; assert yourself and your identity-individuality; develop new strategies of behaviour; increase your interpersonal skills and communication skills; prevent the phenomenon of failure and work on specific cognitive and communicative goals, motivating participation in University life and resizing the difficulties linked to the preparation of examinations and inadequate compared to the demands of the teachers. This proposal aims at enhancing moments and spaces that welcome and support students in a location in which to search within themselves what can be and represent, through non-verbal languages. The use of art materials (colours, chalk, paper,...), voice, body and art-therapeutic techniques, are meant to develop creativity and the ability to represent, to fill in the world, and part of it.

*Making art*, in the sense of engaging in new and creative activity, also promotes the activation of the right hemisphere of the brain, which governs precisely the creative activity of the imagination, intuition, communication and bodily signals (analogical thinking). The lateral thinking, in fact, whose evolution is encouraged by the activation of the right hemisphere (De Bono, 2000), makes it possible to identify criteria and dominant ideas that usually polarize perception of a problem, then look for

new ways to count and operate in reality, and therefore to construct more flexible the rigid restraint of the rational logical thinking and stimulate the growth of creativity.

The project will consist of the succeeding stages: the first, information and communication to students of the Institute through a notice on the bulletin boards or information through media, television media and journalism; the selection phase that can be accessed by internal and external students, unemployed youth and adults and unemployed and job seekers, Italians and foreigners, men and women, family groups, handicapped. The selection will be curated by a Special Commission who will deal with deepening and professionalization to the needs of so-called at-risk subjects (learning disability) getting a mapping of strong or weak sides of the participants.

The terminal phase is that of laboratories, divided into theoretical moments-cognitive and practical operational times. During the workshops will offer an overview of the history, training and read mode of the main themes, in particular the emphasis on the relationship between the characteristics and the employment of individual artistic productions. The activities will lead to the acquisition of theoretical and practical knowledge of the techniques and instruments relating to expressive communication. Cultural and educational content presented to participants to provide basic knowledge of materials, shape, composition, artistic techniques and allow everyone to freely express their artistic impulses. The workshops will feature both amateur and specialization approaches (particularly versatile individuals). Laboratory appointments will be interspersed with preparatory measures of Arts Education, held by the master, encouraging careful reading of creative dynamic that will demonstrate.

The central methodology of the sessions is the inductive-deductive, to solicit participants to capture affected, under the guidance of art therapist and art masters since then revealed aspects emerged about the cognitive and emotional arena, creative solutions and outline a possible shared operating outlet. The focus of the observation will give priority to the observation through role-play techniques. In this process, the content is not the starting point, but the arrival, spilling what generally is the learning-teaching process used in university classrooms. The methodological approach, transversal and avant-garde, presupposes the awareness of necessity, at an intermediate stage, a bracketing: this essential adjustment possibilities of the project will come from a practice thought and organized such a theory and a method less weak.

It's also important to take account of the increasingly significant issue, the increase of non-EU students, as well as that relating to the inclusion of persons with disabilities and the need for targeted interventions

that allow both integration with able-bodied individuals who develop residual capacities. The challenge is to create contexts, that help students to gain knowledge, skills, confidence and motivation to compete with more resources with the University world and later that of work.

The *drawing and painting laboratory* is used to acquire or enhance the ability to contact the emotions and represent them in a fantastic dimension through shape and colour. In addition, requiring the activation of visual-motor coordination and the ability to fine and precise movements, involves also a strictly motor benefit. The drawing has three meanings: a *playful* meaning (to create) a *narrative* meaning (to tell oneself), and a *cognitive* meaning (for asking and answering of questions). But especially, the drawing has a *projective* value: it allows to explaining one's conflicts and anxieties that, assuming concreteness and becoming something external to it, can finally be dealt with less anxiety-provoking. Any type of drawing contains obviously projective aspects, for the way in which space is used (in this case the sheet), stroke type, and colours. It can also be used as a tool for analysis of group dynamics and the way in which each individual interacts. Proposing, for example, a drawing of the group - where both space (the sheet), tools (colours, pencils, etc.), and the theme will be shared - are evident power dynamics and how that group processes for the resolution of conflicts, as well as the way in which each member relates to others.

As for the painting, can be used all the tools and all the painting techniques: markers, tempera, watercolours, finger paints, collage, etc. Each choice of a certain tool has a symbolic value: while, for example, markers, easy to use and with a sudden sharp and defined, give safety, the paints and still more, the finger-paints get dirty and require a greater involvement, and in fact are not usually used by people with obsessive-compulsive traits. The collage, which requires less creative effort because it is just to assemble, it is usually chosen by people who feel somehow threatened by a creative freedom too. The choice, however, to use more tools together, is a sign of great flexibility and is very useful in the development of lateral thinking, which goes beyond the classical patterns. The *writing laboratory* that in art therapy takes various names (writing therapy, poetry therapy, bibliotherapy, etc.) depending on the technique mostly used, implies the intentional use of writing as a therapeutic tool. In fact, it is used in different ways, to choose and adapt to the characteristics of persons and therapeutic goals, but it is possible to distinguish an active mode and a passive mode. In *active mode*, the subjects are invited to compose poetry or literary excerpts, free or starting from a subject or keywords indicated by the therapist. In this case, writing has principally an expressive function and represents an important opportunity to get more into greater contact with themselves, achieve greater self-awareness and new, and often unexpected insights. *Passive mode*, on the

other hand, requires reading, according to a personal interpretation of existing tracks. In this case the function is evocative, and mainly relies on of projection and identification mechanisms. The use of writing is particularly suitable with very rational people and they usually find it difficult to recognize and express their emotions.

With regard to the *dance laboratory* different variants have been developed (bio-dance, dance therapy, dance-movement therapy), which share the use of movement, with or without music, as the main therapeutic tool. Muscle tension and postural and movement mode (use of space, timing, rhythm, etc.), reflect the tensions and psychological ways, so work to take awareness and dissolve such physical tension involves contact and resolve emotional and psychological blocks. Just because body language replaces the verbal (Colombo, 2006), the main goal is to get in touch with own body and listen to the emotions that dwell there. The benefits of the use of movement and dance are at several levels: to a physical level allows extending the motor repertoire and improve coordination and muscle tone; at the psychological level, it acts in the way of self expression and adapting to reality, at a social level, finally, works on the way to interact with the group and then on the communicative- relational skills.

As for the *music laboratory*, we speak mainly of *Music Therapy*. Music is a very powerful tool, especially for its evocative value and regressive. Make or listen to music, in fact, activates hypothalamus of the brain areas related to the most ancient survival mechanisms, while the rhythm returns to contact with the maternal heart rhythm in uterine phase. The music introduces the person in an atmosphere where the relationship with psychological aspects of self-consciousness is weakened by allowing you to get in touch with the deepest parts of the psyche. In addition, facilitates both physical and mental relaxation and improves the physiological functions (breathing, heartbeat and blood pressure). Also, it can be used in therapy in active form, producing music with different instruments (usually drums), and passive, leaving soothed by notes of songs chosen by the therapist according to therapeutic purposes. The aim is to help the individual to explore the emotional experiences derived from contact with music and re-elaborating his images and memories erased.

The therapeutic effects of the *laboratory of Theater* dates back to the times of Aristotle and ancient Greece: the beneficial effects and the catharsis that stemmed from a tragedy, however, were passive, while theatrical techniques in art therapy (psychodrama, theatre-drama therapy, playback theatre), are used actively and therapy purposes. Dramatize and translate words into action allows a more direct access to the internal contents of the subject, which can re-live process and past events, and resolve conflicts re-enacting them self, explore their own *ghosts* making concrete and external

rendering unto itself, and therefore more accessible and more easily modified, or even experiment in new situations, thus increasing own skills and self-knowledge. In addition to the representation of reality and psychodrama, very good can be theatrical plays, usually used as a *heating of the group*, as to create the necessary atmosphere for a free and spontaneous self-expression, and the use of masks, which can be built and painted by the students themselves, and the interpretation of monologues.

In the *laboratory of cinematography* are experiencing the beneficial effects of watching a movie: as in dreams, images have a character of reality while not intruding into reality; they meet the imaginary needs and more intimate drives, allowing the hallucinatory satisfaction, and are subjected to the same intrapsychic processes: displacement, projection, forgetfulness, oblivion, etc. (Musatti 1960). The session also presents film a whole host of features that promote involvement so strong, as the darkness, high volume, the relaxed position, passivity. Watching a movie cancels, at least temporarily, surrounding reality by activating the mechanisms of identification, so a deficiency or an internal need are mitigated by *identifying* precisely, emotions and feelings of the characters in the movie; *projection*, so addressing internal conflicts or more unpleasant aspects of itself as objective worked on the characters in the movie. When it is possible, the awareness of these processes can be a very important moment for personal growth. Even the cinematography is used in art therapy is in the passive form, and therefore closer to cathartic effects mentioned by Aristotle, both in active form, involving the group in the writing the screenplay and the production movie itself, in which, of course, will be the protagonists.

The arts can be used synergistically. For example, you can invite participants to make a paint taking inspiration from music, or ask to play or dance a poetic or musical piece. Use different sensory and communicative registers, or switch from one to another can be very useful for promoting flexibility and fluidity and deal with the same themes from a different perspective.

## Objectives

In the current society, where we are subjected to a hectic lifestyle and to an excess of stimulation, it gives less importance and space for imagination and creativity - penalizing the real knowledge of oneself and of one's emotions. The purpose of art therapy is regaining possession of space and time, boosting the resources and the autoregenerative potential, express their emotions, whatever they are, deal with the deeper aspects, and experiment in different skills, to promote self-awareness and maintain or regain the psychological well-being, not only through the treatment of the

disease but also through the transformation, the evolution and inherent growth of every individual.

In this project we wanted to emphasize the importance of art therapy such as un-conventional therapy, used as a treatment for certain pathological conditions, often chronic. Through a speech and non-verbal support, the creative process put in place in making-art produces wealth and improves the academic performance and the quality of life, becoming, a process of education, where *educate* is for *educere*, or *take out*, to bring out the awareness and greater self-knowledge through the practice of expression, observation and comparison (Naccari, 2001). Educating with the use of artistic techniques to creatively contribute to amend or contain personality traits (obsessive, conformity, acquiescence, negativity) that sometimes might evolve into some diseases. Art can motivate a lot, since it allows physically and symbolically to recapture natural law to produce a footprint and engage in creative activity, leads to a series of physical, emotional and intellectual changes that produce organic and psychological changes that promote healing processes. (Warren, 1995). Each pathway involves the participation both individually and in groups in one or more laboratory, to facilitate the production/expression of each participant or the interaction between everyone. The presence of the group in fact performs multiple functions: first of all, it creates an atmosphere of spontaneity and the feeling of containment required so each member can express themselves freely; it also offers an important opportunity for comparison and growth discussing the experiences of individual members; in addition, allows to the subject to realize that he is not the unique in a difficult situation, but he is, even in the specificity of personal experiences, in a situation common to other and from other *participated*. It is easier to talk about a drawing, a poem, a song, a movie or any other artistic product, that talked about oneself. Therefore, is effective in the treatment of psychological, social or physical discomfort, and prevent discomfort. The value of the work produced is not in artistic quality, but in its meaning: create with their own hands something that makes sense to the person means to regain the power to act and then to choose; to find themselves testing through the sign, the sound, movement, etc., and therefore return to be actors and not mere spectators of their own lives.

In fact, the overriding objective of the work, entrusted to experts, is to accompany students in activities oriented to good communication and integration in groups; to awareness of the expressive gesture (the translation of emotions through a corresponding objectivity); to appropriation of imitative, production, improvisation, capacities, listening self and other; the use of instrumental means and the desire to live more consciously his own person/identity.

In expressive / creative laboratories required by an expert of the institute helped by an equippe of masters, activities will take place to experience the visual arts - sculpture, painting, ceramics - musical and gestural and will be able to enhance their expressive abilities, will also promote the paths of non-verbal communication useful to identify / address the needs / problems of the students, supporting them in the path, recovering elements for decoding of their behaviors.

The art therapist does not evaluate or judge, but facilitates and enhances attempts to *tidy up* that people experience with different artistic techniques, in absolute autonomy of expression. He is a professional who does not give solutions, a facilitator who accompanies the person to experience a way out through the expression. The creative process, regardless of the outcome, is not only about the treatment, but prevention against potential neurosis, psychosis, phobias, obsessions, prevention for healthy individuals because it relieves stress conditions and existential issues.

Making art (and not relate to an artistic product) in expressive/creative laboratories can become time to care and treatment, under the proficient guidance of art therapist, joined the art master, who must know how to use the best tools, adapting gradually to people and situations. The master, in the single laboratory, must ensure that the student can self-correct limiting direct interventions on him and giving him full liberty. It also organizes meetings and/or final exhibitions of discussions where verbalizing implemented processes and be rewarded.

The first meetings with University students are recommended prior to the start of the course to achieve a satisfactory degree of familiarisation within the group. Beyond master the art therapist must also be present, and he must observe and have moderator-mediator function. It is also essential that the master in the first person is concerned in the preparation, discovery, tuning, recovery, location of the tools required.

## **Results**

Art therapy is the method that reduces the physical issues and improves interpersonal skills and socialization of the individual suffering from social discomfort. What is important is mainly the creative process in itself: the express themselves, create, rather than the final artistic product.

Acquisitions, expressive skills, behavioral, emotional, experience, interests and needs of recipients will be monitored and recorded in special observation sheets, prepared for each meeting by the supervisor of the work. This material will represent a final reading of the path, in addition to the questionnaire distributed to students in output of laboratories, on the expectations, performed, levels of satisfaction and operational and technical

aspects, during the laboratories. The items of documentary material, designed and prepared by the supervisor, will take account of the specific factors for a psycho-dynamic reading of behaviour expressive and communicative attitudes of the individual in relation to the group. The work will be supervised by the supervisor/art therapist in periodic meetings with the conductors/master of laboratories and returned in the form of documentary material. The work of the supervisor provides instruments for monitoring: periodic discussion about laboratories; observation and assessment of technical details of the work; reflections on the operations and the participation by the instruments used: questionnaires, cards, musical instruments-scenic, paintings and scenic used, video recordings; role-playing/simulate where in the *action* refers to solutions and strategies of intervention.

You can also include the opening of a one-stop consultancy, in the days and hours specified in the program attached to the project. The specialists will provide assistance to those students who, inside and outside, living conditions of discomfort and *disorientation* social and/or academic, intervening in everyday life, in prevention to reduce stress, or in those situations where there is no need to get a good balance, in order to increase the level of general welfare (especially in periods when you are *under examination*).

The laboratory of art therapy is a large, bright, and full of stimuli. There is everything: paper, pencils, colors, patterns, fabrics, wool, wood, flour, towels, puppets, installations, musical instruments. You can also find an empty space, free from stimuli to fill as you wish. The work in workshops is experienced as a *playful and funny* that accompanies the student in one of the most fascinating journeys of humankind: the self-discovery. For anxiety and stress cause an emotional burden that can result in the effects: asthenia, headaches, sleep disturbances, gastrointestinal, respiratory and sexual (Tonini, 1997) if does not find adequate expression channels. The art-therapeutic approach gets, therefore, two important results: provide immediate emotional relief channel and allow a loosening of defenses that do not process the problematic experiences.

## Conclusions

Our industrial and technologically advanced society has operated a clear separation between art and life. Consequently, the art is defined in terms of products that can be discussed or subject of criticism and evaluation, often more for their economic value than for the aesthetic or spiritual contribution for whole society. Over the centuries, developed the idea that artistic creation complete only to a narrow circle of individuals specifically equipped. In this way, you are denied the natural rights: the right

to produce their own unique creative mark, a mark that no one else could create. Art therapy presented here aims to improve the quality of University life, because, through the creation, the student will be able to get in touch with their inner life and a better understanding of certain aspects of himself that will help you relate to others and in their performance. Through artistic expression and, with the contribution of technically trained experts and empathically present, he will receive the right indications, a greater courage and enthusiasm, to arrive with his own time, in small steps to give vent to impulses such as aggressiveness, anger, frustration, fear, suffering, shrugging off the negative emotion to project it, contingent on the paper, on canvas, on artistic support.

Psycho-physical deficiency can be realistically compensated, not eliminated, with deceptively designed on concrete conditions and projected toward possible, feasible size and livable with dignity. Students no longer feel trapped by a reality, contingent, unhappy. And the healthy emotional detachment allows them to take distance from the negative emotions and to look, from the outside, as observers, to regain a state of well-being, balance, and a more authentic contact towards awareness. The limit can thus become a resource.

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# IMPACT OF CONTINUOUS ICT TRAINING IN SECONDARY SCHOOL TEACHERS IN PORTUGAL

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## Abstract

This paper focuses on the relevance of Continuous Teacher Training in the development of the required skills for effectively and efficiently employing Information and Communication Technologies in the secondary school classroom, as a set of not only useful, but necessary resources in today's teaching context. Research was conducted on secondary school teachers in the Municipality of Coimbra (Portugal), with a view to survey the teacher's perception on a number of related issues.

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**Keywords:** Continuous Teacher Training, ICT training, Secondary Education

## Introduction

Continuous Teacher Training (CTT), as defined by the *Lei de Bases do Sistema Educativo Português* (Basic Law of the Portuguese Educational System), developed in 1986 and institutionalized in 1992, has not always been understood by its main actors, i.e., teachers, as a resource aimed at improving the conditions of the teaching/learning process as a whole. Facing a career where advancement depended not only on length of service, but to a large extent on the acquisition of "credit units", teachers suspected that the requirement to follow training activities would only be one more hurdle to prevent career advancement.

Many institutions showed interest in offering and developing CTT activities: school associations, unions, and higher education institutions

(Caballero and Levis, 2007). Both training professionals and programmes had to be certified prior to the training services being actually offered to the teaching community. On the other hand, teachers being pressed to take part in CTT activities resulted in their hastily and poorly guided search for such training, which was reduced to choosing from simple lists of courses offered whose main description was the number obtained, which would measure their training progression (Cabero, Llorente, and Gisbert, 2007).

In these circumstances, the offer was linked to the demand (Campos and Körner, 2005), that is, training institutions offered what they could and trainees chose used their own criteria to make a choice, both sides seriously limited by the lack of knowledge and information that the training institutions offered regarding the real needs of trainees (Caetano, 2003).

Many years after the institutionalization of CTT, the situation still remains confusing, bringing into question the quality of the training and the objectives to be achieved by the training process (Ramos, 2005). On the one hand, there is a generalized awareness among the teaching community regarding the need for training, not simply based on "credit hunting", and, on the other, teachers now display some sort of adaptation to the new system of career progression (Tejedor and Valcarcel, 2006). This adaptation allows not only for some early planning of the "how" and "when" to attend this or that training action, but also means that, within flexible time constraints, teachers can seek training topics or areas more suited to their profile and needs from training institutions (Souza, 2005).

It was in this context that training in the area of Information and Communication Technologies developed. Great importance was given to the use of technological tools to meet the needs of contemporary society in general and, in particular, to their potential as teaching and learning tools (Cañellas, 2006; Gonçalves, 2002).

This issue is discussed by a number of scholars, such as Gomez (1993), Hokanson and Hooper (2004), who states that one of the research areas to be developed within the relationship between educational actions and the use of technology is to develop taxonomies of applications with specification of their objectives, sectors and educational levels.

The Portuguese Ministry of Education, aware of this new reality, began to legislate on this issue and to give guidance regarding the importance and use of ICT in schools (Decree-Law nr. 6/2001 of 18 January - Ratified in accordance with Statement of Ratification nr. 4-A/2001, published in the DR (Official Gazette), I-A, nr. 50, of 28 February 2001 and Amended by Decree-Law nr. 209/2002, of 17 October). By 2007 training in ICT was properly regulated CRIE/DGIDC/ME/2007, (*Continuous teacher training Reference Chart in the area of ICT*).

In 2008, the Education Technology Plan was launched. This plan aimed to organize training programmes within the school, according to their specific needs, aiming to strengthen the school's autonomy and capacity for action, as an implementation of the educational policy on public education (Law nr. 75/2008, of 22 April).

It is within this context that we pose the main topic of our research, which could be very roughly summarized in the following questions: what do teachers think of their training in ICT? What is their perception regarding its use in the teaching/learning process? How do they use the ICT in their teaching?

## **Methodology**

### **Research objectives**

Specifically, we aim to address the following issues:

- 1) Analyse the relationship between academic and continuous training and the needs related to teaching duties.
- 2) Assess the use of ICT in the activities of secondary school teachers of the Municipality of Coimbra.
- 3) Evaluate the effective application of ICT in the educational context of secondary schools of the Municipality of Coimbra, in the different dimensions of the teaching-learning process.
- 4) Assess the potential of ICT as a tool and resource to be used in the school context in question.

We thus intended to inquire about the nature and quality of teacher training and thus be able to verify if the education was gained through the initial training, continuous training, or both. Moreover, we verified what teachers thought about the quality of their own training. We also wanted to know what perception teachers have regarding the potential of these new tools, by establishing a relationship between their perceptions and the use of these tools in their teaching duties.

Given the above, this research aims to contribute to the improvement of the development and the quality of the teaching-learning process, based on adequate use of ICT as a tool to be used by the educational community.

### **Population and sample**

The population of our study comprises all the teachers in the secondary schools of the Municipality of Coimbra. The choice of the city of Coimbra was due to the fact that it is a medium-sized city, with many schools, located in the centre of Portugal, and, we believe, fairly representative of the country.

To this end, we made a request to GEPE (Office of Statistics and Education Planning), the entity responsible for ensuring the educational

production and statistical analysis, for the data regarding the number of teachers effectively working in these schools. We verified that the population consisted of 757 teachers, distributed among different curricular departments.

Aware that a significant proportion of this population would not respond to our questionnaire and that the sample would have to be representative, we used the technique of simple random sampling for finite populations, applying the mathematical formula proposed by R. Sierra Bravo (1988),  $N = n G2 (P * Q) / E2 (n - 1) + G2 (P * Q)$ . Thus, we concluded that the sample should consist of at least 266 respondents, about 35% of the population.

### **Instruments and methodology**

A questionnaire was selected as the most appropriate instrument for collecting quantitative information in this context (Hill and Hill, 2008; Trujillo, Lopez and Lorenzo, 2011) Its construction underwent several stages, which were supervised by one of the six groups of teachers specifically invited to comment on it. We also put together a focus group with the aim of obtaining ideas and questions for the design of the questionnaire. Suggestions emanating from the various players in the construction of the questionnaire were progressively reformulated until its form and content responded to these suggestions, as well as to the objectives of our research.

Before its final implementation, implemented a pilot study in the Secondary School of Cantanhede, in the district of Coimbra. The reasons to choose this school were twofold: it has a relatively large teaching population (100 teachers), and it is located relatively close to the schools where the questionnaire would be applied. We emailed all teachers in this school requesting collaboration in our study and sent them the questionnaire, with instructions on how to complete it. In all, 35 teachers responded to the request, none of who pointed out misinterpretations of any of the items, or raised any other issues.

This pilot study reassured us that the instrument was adequate to our purpose, so the next step involved dealing with certain legal issues imposed by Portuguese law, which demands that requires that the research instruments be approved by GEPE (Office of Statistics and Education Planning). The final version of the questionnaire consisted of 43 questions grouped in four sections:

Section 1: items 1-6 on biographical data;

Section 2: items 7-16 on ICT training;

Section 3: items 17-31 on the perception of the use of ICT in the context of teaching and learning;

#### Section 4: items32-43 on the use of ICT in the classroom.

After GEPE approved the questionnaire, we developed a website developed, supported by PHP and MySQL technologies, which enabled the creation of a user-friendly interface. The site was online for a month (from May 15 to June 15, 2009). The result was 391 acceptable responses.

To assess the reliability of our sample, we used Cronbach's Alpha, as implemented in SPSS v17.0, which was applied to items 7 to 43 (those quantitative in nature). We obtained an index 0.805, which means that the internal consistency in our data was very high.

As for the focus group, it consisted mostly of teachers with a similar amount of experience on the issue in question and similar professional background (Perremoud, 2001; Serrão 2007; Taylor 2004). For the group to achieve maximum effectiveness, we decided to communicate in two different ways: a monthly group meeting and individual and group emailing and instant messaging. The former offered the advantage of being more direct and formal where all issues were discussed, while the latter proved to be extremely effective in dealing with minor issues that came up during the study.

Six group meetings were scheduled, with a maximum duration of two hours. As a starting point, we set out to discuss a number of aspects of the quantitative study, the type of instruments used, the defined population, the sample produced and the analysis of results and conclusions to be achieved. Finally, we agreed that the observations, comments or conclusions to be submitted should be made in a unified final document to be referred to as "Considerations of the Focus Group".

### Results and Discussion

SPSS v.17 and Microsoft Office Excel 2003 were used to analyse the data. The contingency tables that follow attempt to summarize our most relevant results.

#### Section 1: Bio data

| Q1    |        |           |            |                  |                       |
|-------|--------|-----------|------------|------------------|-----------------------|
|       |        | Frequency | Percentage | Valid Percentage | Cumulative Percentage |
| Valid | Female | 232       | 59,3       | 59,3             | 59,3                  |
|       | Male   | 159       | 40,7       | 40,7             | 100,0                 |
|       | Total  | 391       | 100,0      | 100,0            |                       |

Table 1: Item 1 – Gender

| Q2    |         |           |            |                  |                       |
|-------|---------|-----------|------------|------------------|-----------------------|
|       |         | Frequency | Percentage | Valid Percentage | Cumulative Percentage |
| Valid | 26 – 30 | 13        | 3,3        | 3,3              | 3,3                   |
|       | 31 – 35 | 46        | 11,8       | 11,8             | 15,1                  |
|       | 36 – 40 | 51        | 13,0       | 13,0             | 28,1                  |
|       | 41 – 45 | 70        | 17,9       | 17,9             | 46,0                  |
|       | 46 – 50 | 113       | 28,9       | 28,9             | 74,9                  |
|       | 51 – 55 | 65        | 16,6       | 16,6             | 91,6                  |
|       | 56 – 60 | 20        | 5,1        | 5,1              | 96,7                  |
|       | 61 – 65 | 13        | 3,3        | 3,3              | 100,0                 |
| Total |         | 391       | 100,0      | 100,0            |                       |

Table 2: Item 2 -Age

The sample has individuals with ages between 26 and 65 years, most notably in the range [46-50], which corresponds to 28.9% of the sample, which is nonetheless indicative of a significant percentage with a vast experience in teaching, possibly justified by the privileged geographical area of the selected sample.

| Q3    |                                |           |            |                  |                       |
|-------|--------------------------------|-----------|------------|------------------|-----------------------|
|       |                                | Frequency | Percentage | Valid Percentage | Cumulative Percentage |
| Valid | Bachelor's                     | 18        | 4,6        | 4,6              | 4,6                   |
|       | Degree<br>(a five year course) | 330       | 84,4       | 84,4             | 89,0                  |
|       | Master's                       | 43        | 11,0       | 11,0             | 100,0                 |
|       | Total                          | 391       | 100,0      | 100,0            |                       |

Table 3: Item 3: Academic Degree

The sample consists of individuals with different academic degrees. The percentage of teachers with a Master's degree (11%) should be highlighted, as it may indicate awareness of the importance of professional development. In contrast, the percentage of BA degrees (4.6%) seems rather significant, which appears to be somewhat odd in relation to their professional development, when considering the educational reforms that have taken place over the last years and which allowed teachers with a

Bachelor's degree to integrate the School Boards, in response to the needs of the Educational System of the time.

| Q4    |         |           |            |                  |                       |
|-------|---------|-----------|------------|------------------|-----------------------|
|       |         | Frequency | Percentage | Valid Percentage | Cumulative Percentage |
| Valid | 0 - 5   | 28        | 7,2        | 7,2              | 7,2                   |
|       | 6 - 10  | 30        | 7,7        | 7,7              | 14,8                  |
|       | 11 - 15 | 53        | 13,6       | 13,6             | 28,4                  |
|       | 16 - 20 | 49        | 12,5       | 12,5             | 40,9                  |
|       | 21 - 25 | 101       | 25,8       | 25,8             | 66,8                  |
|       | 26 - 30 | 66        | 16,9       | 16,9             | 83,6                  |
|       | 31 - 35 | 51        | 13,0       | 13,0             | 96,7                  |
|       | 36 - 40 | 13        | 3,3        | 3,3              | 100,0                 |
|       | Total   | 391       | 100,0      | 100,0            |                       |

Table 4: Item 4 - Service time

This shows that our participants have differentiated service time, varying between 0 and 40 years. We highlight the range [21-25], which represents 25.8% of the sample, which is nonetheless indicative of a significant proportion of individuals with extensive teaching experience, which confirms the possible reasons already presented in the statistical analysis of Item 2.

| Q5    |                                       |           |            |                  |                       |
|-------|---------------------------------------|-----------|------------|------------------|-----------------------|
|       |                                       | Frequency | Percentage | Valid Percentage | Cumulative Percentage |
| Valid | Social and Human Sciences             | 73        | 18,7       | 18,7             | 18,7                  |
|       | Expressions                           | 39        | 10,0       | 10,0             | 28,6                  |
|       | Languages                             | 89        | 22,8       | 22,8             | 51,4                  |
|       | Mathematics and Experimental Sciences | 190       | 48,6       | 48,6             | 100,0                 |
|       | Total                                 | 391       | 100,0      | 100,0            |                       |

Table 5: Item 5 - Curricular Department

Our sample is therefore distributed over four curricular departments, most notably the Mathematics and Experimental Sciences that has 48.6%, representing almost half of the sample under study. It is noteworthy that in most schools, particularly in our school population, 320 teachers integrate the curricular department of Mathematics and Experimental Sciences, which in turn has an impact on the representativeness of the answers obtained.3.2 Sections 2-4. ICT specific

|       |            | Q6        |            |                  |                       |
|-------|------------|-----------|------------|------------------|-----------------------|
|       |            | Frequency | Percentage | Valid Percentage | Cumulative Percentage |
| Valid | Initial    | 58        | 14,8       | 14,8             | 14,8                  |
|       | Continuous | 210       | 53,7       | 53,7             | 68,5                  |
|       | Both       | 46        | 11,8       | 11,8             | 80,3                  |
|       | Neither    | 77        | 19,7       | 19,7             | 100,0                 |
|       | Total      | 391       | 100,0      | 100,0            |                       |

Table 6.Item 6 - Training in ICT

The sample shows varying levels of training in ICT. Reference should be made to the fact that 19.7% had no training in ICT whatsoever, which reveals significant disinterest or inability to access this type of training. The statistical analysis regarding Items 1 (gender), 2 (age), and 4 (service time) should be emphasized, as they lead to the assumption, with the proper precautions, that the sample consists mostly of middle-aged female teachers with significant service time, thus subject to the technology shock of the twenty-first century, lacking skills, and having insensitivity and resistance to the field of ICT.

### Correlation 1

Item 6: Training in ICT Item 32: In planning lessons, makes privileged use of ICT as a way to better address the contents.

|       |                          |                          | Q32    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| 6     | Initial                  | Count                    | 1      | 23        | 23         | 11     | 58     |
|       |                          | % within Training in ICT | 1,7%   | 39,7%     | 39,7%      | 19,0%  | 100,0% |
|       |                          | % of Total               | ,3%    | 5,9%      | 5,9%       | 2,8%   | 14,8%  |
|       | Continuous               | Count                    | 7      | 73        | 96         | 34     | 210    |
|       |                          | % within Training in ICT | 3,3%   | 34,8%     | 45,7%      | 16,2%  | 100,0% |
|       |                          | % of Total               | 1,8%   | 18,7%     | 24,6%      | 8,7%   | 53,7%  |
|       | Both                     | Count                    | 2      | 11        | 19         | 14     | 46     |
|       |                          | % within Training in ICT | 4,3%   | 23,9%     | 41,3%      | 30,4%  | 100,0% |
|       |                          | % of Total               | ,5%    | 2,8%      | 4,9%       | 3,6%   | 11,8%  |
|       | None                     | Count                    | 5      | 30        | 29         | 13     | 77     |
|       |                          | % within Training in ICT | 6,5%   | 39,0%     | 37,7%      | 16,9%  | 100,0% |
|       |                          | % of Total               | 1,3%   | 7,7%      | 7,4%       | 3,3%   | 19,7%  |
| Total | Count                    | 15                       | 137    | 167       | 72         | 391    |        |
|       | % within Training in ICT | 3,8%                     | 35,0%  | 42,7%     | 18,4%      | 100,0% |        |
|       | % of Total               | 3,8%                     | 35,0%  | 42,7%     | 18,4%      | 100,0% |        |

Table 7. Correlation 1

The data show that, in planning their lessons, the respondents favor the use of new technologies as a way to better address the contents. The chi-square test of independence presents a value of 19.914 and a significance of 0.035, which leads us to conclude that there, is dependence between the type of training and the answer given by respondents.

**Correlation 2**

Item 6: Training in ICT

Item 33: Uses ICT for creating innovative and diverse strategies

|       |                          |                          | Q33    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| 6     | Initial                  | Count                    | 1      | 22        | 22         | 13     | 58     |
|       |                          | % within Training in ICT | 1,7%   | 37,9%     | 37,9%      | 22,4%  | 100,0% |
|       |                          | % of Total               | ,3%    | 5,6%      | 5,6%       | 3,3%   | 14,8%  |
|       | Continuous               | Count                    | 8      | 93        | 77         | 32     | 210    |
|       |                          | % within Training in ICT | 3,8%   | 44,3%     | 36,7%      | 15,2%  | 100,0% |
|       |                          | % of Total               | 2,0%   | 23,8%     | 19,7%      | 8,2%   | 53,7%  |
|       | Both                     | Count                    | 1      | 19        | 21         | 5      | 46     |
|       |                          | % within Training in ICT | 2,2%   | 41,3%     | 45,7%      | 10,9%  | 100,0% |
|       |                          | % of Total               | ,3%    | 4,9%      | 5,4%       | 1,3%   | 11,8%  |
|       | None                     | Count                    | 5      | 38        | 28         | 6      | 77     |
|       |                          | % within Training in ICT | 6,5%   | 49,4%     | 36,4%      | 7,8%   | 100,0% |
|       |                          | % of Total               | 1,3%   | 9,7%      | 7,2%       | 1,5%   | 19,7%  |
| Total | Count                    | 15                       | 172    | 148       | 56         | 391    |        |
|       | % within Training in ICT | 3,8%                     | 44,0%  | 37,9%     | 14,3%      | 100,0% |        |
|       | % of Total               | 3,8%                     | 44,0%  | 37,9%     | 14,3%      | 100,0% |        |

Table 8. Correlation 2

Respondents are using new technologies to create innovative and diversified strategies. The chi-square test of independence presents a value of 19.802 and a significance of 0.036, which leads us to conclude that there is dependence between the type of training and the answer given by respondents.

### Correlation 3

Item 6: Training in ICT Item 34: Takes advantage of the vast potential of ICT for the production of teaching materials

|       |                          |                          | Q34    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 1      | 19        | 28         | 10     | 58     |
|       |                          | % within Training in ICT | 1,7%   | 32,8%     | 48,3%      | 17,2%  | 100,0% |
|       |                          | % of Total               | ,3%    | 4,9%      | 7,2%       | 2,6%   | 14,8%  |
|       | Continuous               | Count                    | 10     | 82        | 97         | 21     | 210    |
|       |                          | % within Training in ICT | 4,8%   | 39,0%     | 46,2%      | 10,0%  | 100,0% |
|       |                          | % of Total               | 2,6%   | 21,0%     | 24,8%      | 5,4%   | 53,7%  |
|       | Both                     | Count                    | 1      | 15        | 21         | 9      | 46     |
|       |                          | % within Training in ICT | 2,2%   | 32,6%     | 45,7%      | 19,6%  | 100,0% |
|       |                          | % of Total               | ,3%    | 3,8%      | 5,4%       | 2,3%   | 11,8%  |
|       | None                     | Count                    | 3      | 26        | 37         | 11     | 77     |
|       |                          | % within Training in ICT | 3,9%   | 33,8%     | 48,1%      | 14,3%  | 100,0% |
|       |                          | % of Total               | ,8%    | 6,6%      | 9,5%       | 2,8%   | 19,7%  |
| Total | Count                    | 15                       | 142    | 183       | 51         | 391    |        |
|       | % within Training in ICT | 3,8%                     | 36,3%  | 46,8%     | 13,0%      | 100,0% |        |
|       | % of Total               | 3,8%                     | 36,3%  | 46,8%     | 13,0%      | 100,0% |        |

Table 9. Correlation 3

This should be taken as evidence that respondents do take advantage of the vast potential of ICT for the production of teaching materials. The chi-square test of independence presents a value of 17.369 and a significance of 0.070, which leads us to conclude that there is dependence between the type of training and the answer given by respondents.3.2.4 Correlation 4

**Correlation 4**

Item 6: Training in ICT

Item 35: Makes use of ICT for the development of educational projects

|       |                          |                          | Q35    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 7      | 18        | 26         | 7      | 58     |
|       |                          | % within Training in ICT | 12,1%  | 31,0%     | 44,8%      | 12,1%  | 100,0% |
|       |                          | % of Total               | 1,8%   | 4,6%      | 6,6%       | 1,8%   | 14,8%  |
|       | Continuous               | Count                    | 41     | 89        | 69         | 11     | 210    |
|       |                          | % within Training in ICT | 19,5%  | 42,4%     | 32,9%      | 5,2%   | 100,0% |
|       |                          | % of Total               | 10,5%  | 22,8%     | 17,6%      | 2,8%   | 53,7%  |
|       | Both                     | Count                    | 8      | 18        | 18         | 2      | 46     |
|       |                          | % within Training in ICT | 17,4%  | 39,1%     | 39,1%      | 4,3%   | 100,0% |
|       |                          | % of Total               | 2,0%   | 4,6%      | 4,6%       | ,5%    | 11,8%  |
|       | None                     | Count                    | 10     | 40        | 22         | 5      | 77     |
|       |                          | % within Training in ICT | 13,0%  | 51,9%     | 28,6%      | 6,5%   | 100,0% |
|       |                          | % of Total               | 2,6%   | 10,2%     | 5,6%       | 1,3%   | 19,7%  |
| Total | Count                    | 66                       | 165    | 135       | 25         | 391    |        |
|       | % within Training in ICT | 16,9%                    | 42,2%  | 34,5%     | 6,4%       | 100,0% |        |
|       | % of Total               | 16,9%                    | 42,2%  | 34,5%     | 6,4%       | 100,0% |        |

Table 10. Correlation 4

This contingency table provides evidence to the fact that respondents make use of ICT for the development of educational projects. The chi-square test of independence presents a value of 12.603 and a significance of 0.181, which leads us to conclude that there is no dependence between the type of training and the answer given by respondents.

**Correlation 5**

Item 6: Training in ICT Item 36: Creates conditions for students to use ICT as a space of discovery and discussion of different topics

|       |                          |                          | Q36    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 8      | 26        | 21         | 3      | 58     |
|       |                          | % within Training in ICT | 13,8%  | 44,8%     | 36,2%      | 5,2%   | 100,0% |
|       |                          | % of Total               | 2,0%   | 6,6%      | 5,4%       | ,8%    | 14,8%  |
|       | Continuous               | Count                    | 17     | 105       | 74         | 14     | 210    |
|       |                          | % within Training in ICT | 8,1%   | 50,0%     | 35,2%      | 6,7%   | 100,0% |
|       |                          | % of Total               | 4,3%   | 26,9%     | 18,9%      | 3,6%   | 53,7%  |
|       | Both                     | Count                    | 4      | 21        | 20         | 1      | 46     |
|       |                          | % within Training in ICT | 8,7%   | 45,7%     | 43,5%      | 2,2%   | 100,0% |
|       |                          | % of Total               | 1,0%   | 5,4%      | 5,1%       | ,3%    | 11,8%  |
|       | None                     | Count                    | 7      | 42        | 25         | 3      | 77     |
|       |                          | % within Training in ICT | 9,1%   | 54,5%     | 32,5%      | 3,9%   | 100,0% |
|       |                          | % of Total               | 1,8%   | 10,7%     | 6,4%       | ,8%    | 19,7%  |
| Total | Count                    | 36                       | 194    | 140       | 21         | 391    |        |
|       | % within Training in ICT | 9,2%                     | 49,6%  | 35,8%     | 5,4%       | 100,0% |        |
|       | % of Total               | 9,2%                     | 49,6%  | 35,8%     | 5,4%       | 100,0% |        |

Table 11. Correlation 5

Analysing the contingency table, we find that respondents created conditions for students to use ICT as a space of discovery and discussion of different topics. The chi-square test of independence presents a value of 5.283 and a significance of 0.809, which leads us to conclude that there may be no dependence between the type of training and the answer given by respondents.

## Correlation 6

Item 6: Training in ICT Item 37: Uses the new technology as a way to increase students' interest and motivation

|       |                          |                          | Q37    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 1      | 20        | 25         | 12     | 58     |
|       |                          | % within Training in ICT | 1,7%   | 34,5%     | 43,1%      | 20,7%  | 100,0% |
|       |                          | % of Total               | ,3%    | 5,1%      | 6,4%       | 3,1%   | 14,8%  |
|       | Continuous               | Count                    | 3      | 73        | 115        | 19     | 210    |
|       |                          | % within Training in ICT | 1,4%   | 34,8%     | 54,8%      | 9,0%   | 100,0% |
|       |                          | % of Total               | ,8%    | 18,7%     | 29,4%      | 4,9%   | 53,7%  |
|       | Both                     | Count                    | 1      | 15        | 29         | 1      | 46     |
|       |                          | % within Training in ICT | 2,2%   | 32,6%     | 63,0%      | 2,2%   | 100,0% |
|       |                          | % of Total               | ,3%    | 3,8%      | 7,4%       | ,3%    | 11,8%  |
|       | None                     | Count                    | 0      | 31        | 40         | 6      | 77     |
|       |                          | % within Training in ICT | ,0%    | 40,3%     | 51,9%      | 7,8%   | 100,0% |
|       |                          | % of Total               | ,0%    | 7,9%      | 10,2%      | 1,5%   | 19,7%  |
| Total | Count                    | 5                        | 139    | 209       | 38         | 391    |        |
|       | % within Training in ICT | 1,3%                     | 35,5%  | 53,5%     | 9,7%       | 100,0% |        |
|       | % of Total               | 1,3%                     | 35,5%  | 53,5%     | 9,7%       | 100,0% |        |

Table 12. Correlation 6

The data here point to the fact that respondents use new technologies as a way to increase students' interest and motivation. The chi-square test of independence presents a value of 17.370 and a significance of 0.011, which leads us to conclude that there, is dependence between the type of training and the answer given by respondents.

**Correlation 7**

Item 6: Training in ICT

Item 38: Uses ICT to attempt to change individual attitudes of students

|       |                          |                          | Q38    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 10     | 29        | 18         | 1      | 58     |
|       |                          | % within Training in ICT | 17,2%  | 50,0%     | 31,0%      | 1,7%   | 100,0% |
|       |                          | % of Total               | 2,6%   | 7,4%      | 4,6%       | ,3%    | 14,8%  |
|       | Continuous               | Count                    | 52     | 90        | 56         | 12     | 210    |
|       |                          | % within Training in ICT | 24,8%  | 42,9%     | 26,7%      | 5,7%   | 100,0% |
|       |                          | % of Total               | 13,3%  | 23,0%     | 14,3%      | 3,1%   | 53,7%  |
|       | Both                     | Count                    | 10     | 25        | 10         | 1      | 46     |
|       |                          | % within Training in ICT | 21,7%  | 54,3%     | 21,7%      | 2,2%   | 100,0% |
|       |                          | % of Total               | 2,6%   | 6,4%      | 2,6%       | ,3%    | 11,8%  |
|       | None                     | Count                    | 14     | 36        | 23         | 4      | 77     |
|       |                          | % within Training in ICT | 18,2%  | 46,8%     | 29,9%      | 5,2%   | 100,0% |
|       |                          | % of Total               | 3,6%   | 9,2%      | 5,9%       | 1,0%   | 19,7%  |
| Total | Count                    | 86                       | 180    | 107       | 18         | 391    |        |
|       | % within Training in ICT | 22,0%                    | 46,0%  | 27,4%     | 4,6%       | 100,0% |        |
|       | % of Total               | 22,0%                    | 46,0%  | 27,4%     | 4,6%       | 100,0% |        |

Table 13. Correlation 7

The data seem to provide evidence that respondents do in fact use ICT to be able to modify individual attitudes of students. The chi-square test of independence presents a value of 16.482 and a significance of 0.691, which leads us to conclude that there may be no dependence between the type of training and the answer given by respondents.

**Correlation 8**

Item 6: Training in ICT Item 39: Encourages the use of ICT to develop students' autonomy

|       |                          |                          | Q39    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 4      | 21        | 24         | 9      | 58     |
|       |                          | % within Training in ICT | 6,9%   | 36,2%     | 41,4%      | 15,5%  | 100,0% |
|       |                          | % of Total               | 1,0%   | 5,4%      | 6,1%       | 2,3%   | 14,8%  |
|       | Continuous               | Count                    | 6      | 82        | 103        | 19     | 210    |
|       |                          | % within Training in ICT | 2,9%   | 39,0%     | 49,0%      | 9,0%   | 100,0% |
|       |                          | % of Total               | 1,5%   | 21,0%     | 26,3%      | 4,9%   | 53,7%  |
|       | Both                     | Count                    | 1      | 15        | 22         | 8      | 46     |
|       |                          | % within Training in ICT | 2,2%   | 32,6%     | 47,8%      | 17,4%  | 100,0% |
|       |                          | % of Total               | ,3%    | 3,8%      | 5,6%       | 2,0%   | 11,8%  |
|       | None                     | Count                    | 4      | 32        | 41         | 0      | 77     |
|       |                          | % within Training in ICT | 5,2%   | 41,6%     | 53,2%      | ,0%    | 100,0% |
|       |                          | % of Total               | 1,0%   | 8,2%      | 10,5%      | ,0%    | 19,7%  |
| Total | Count                    | 15                       | 150    | 190       | 36         | 391    |        |
|       | % within Training in ICT | 3,8%                     | 38,4%  | 48,6%     | 9,2%       | 100,0% |        |
|       | % of Total               | 3,8%                     | 38,4%  | 48,6%     | 9,2%       | 100,0% |        |

Table 14. Correlation 8

Analysis of this contingency table reveals that respondents encourage the use of ICT to develop students' procedures for autonomy. The chi-square test of independence presents a value of 17.269 and a significance of 0.045, which leads us to conclude that there, is dependence between the type of training and the answer given by respondents.

### Correlation 9

Item 6: Training in ICT Item 40: Promotes the development of extra activities for collaborative or group work

|       |                          |                          | Q40    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 1      | 28        | 22         | 7      | 58     |
|       |                          | % within Training in ICT | 1,7%   | 48,3%     | 37,9%      | 12,1%  | 100,0% |
|       |                          | % of Total               | ,3%    | 7,2%      | 5,6%       | 1,8%   | 14,8%  |
|       | Continuous               | Count                    | 3      | 86        | 91         | 30     | 210    |
|       |                          | % within Training in ICT | 1,4%   | 41,0%     | 43,3%      | 14,3%  | 100,0% |
|       |                          | % of Total               | ,8%    | 22,0%     | 23,3%      | 7,7%   | 53,7%  |
|       | Both                     | Count                    | 0      | 18        | 22         | 6      | 46     |
|       |                          | % within Training in ICT | ,0%    | 39,1%     | 47,8%      | 13,0%  | 100,0% |
|       |                          | % of Total               | ,0%    | 4,6%      | 5,6%       | 1,5%   | 11,8%  |
|       | None                     | Count                    | 3      | 32        | 30         | 12     | 77     |
|       |                          | % within Training in ICT | 3,9%   | 41,6%     | 39,0%      | 15,6%  | 100,0% |
|       |                          | % of Total               | ,8%    | 8,2%      | 7,7%       | 3,1%   | 19,7%  |
| Total | Count                    | 7                        | 164    | 165       | 55         | 391    |        |
|       | % within Training in ICT | 1,8%                     | 41,9%  | 42,2%     | 14,1%      | 100,0% |        |
|       | % of Total               | 1,8%                     | 41,9%  | 42,2%     | 14,1%      | 100,0% |        |

Table 15. Correlation 9

The data here point to the fact that respondents do promote the development of extra activities to develop collaborative or group work. The chi-square test of independence presents a value of 17.762 and a significance of 0.085, which leads us to conclude that there, is dependence between the type of training and the answer given by respondents.

**Correlation 10**

Item 6: Training in ICT Item 41: Using ICT to overcome difficulties arising from the development of the lesson

|       |                          |                          | Q41    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 11     | 22        | 20         | 5      | 58     |
|       |                          | % within Training in ICT | 19,0%  | 37,9%     | 34,5%      | 8,6%   | 100,0% |
|       |                          | % of Total               | 2,8%   | 5,6%      | 5,1%       | 1,3%   | 14,8%  |
|       | Continuous               | Count                    | 41     | 113       | 44         | 12     | 210    |
|       |                          | % within Training in ICT | 19,5%  | 53,8%     | 21,0%      | 5,7%   | 100,0% |
|       |                          | % of Total               | 10,5%  | 28,9%     | 11,3%      | 3,1%   | 53,7%  |
|       | Both                     | Count                    | 6      | 24        | 14         | 2      | 46     |
|       |                          | % within Training in ICT | 13,0%  | 52,2%     | 30,4%      | 4,3%   | 100,0% |
|       |                          | % of Total               | 1,5%   | 6,1%      | 3,6%       | ,5%    | 11,8%  |
|       | None                     | Count                    | 10     | 45        | 21         | 1      | 77     |
|       |                          | % within Training in ICT | 13,0%  | 58,4%     | 27,3%      | 1,3%   | 100,0% |
|       |                          | % of Total               | 2,6%   | 11,5%     | 5,4%       | ,3%    | 19,7%  |
| Total | Count                    | 68                       | 204    | 99        | 20         | 391    |        |
|       | % within Training in ICT | 17,4%                    | 52,2%  | 25,3%     | 5,1%       | 100,0% |        |
|       | % of Total               | 17,4%                    | 52,2%  | 25,3%     | 5,1%       | 100,0% |        |

Table 16. Correlation 10

Analysing the contingency table, we find that respondents rely upon the ICT to overcome difficulties arising from the development of the lesson. The chi-square test of independence presents a value of 18.816 and a significance of 0.017, which leads us to conclude that there, is dependence between the type of training and the response given by respondents.

**Correlation 11**

Item 6: Training in ICT Item 42: Uses new technology to share work generated by students

|       |                          |                          | Q42    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 9      | 28        | 18         | 3      | 58     |
|       |                          | % within Training in ICT | 15,5%  | 48,3%     | 31,0%      | 5,2%   | 100,0% |
|       |                          | % of Total               | 2,3%   | 7,2%      | 4,6%       | ,8%    | 14,8%  |
|       | Continuous               | Count                    | 25     | 93        | 83         | 9      | 210    |
|       |                          | % within Training in ICT | 11,9%  | 44,3%     | 39,5%      | 4,3%   | 100,0% |
|       |                          | % of Total               | 6,4%   | 23,8%     | 21,2%      | 2,3%   | 53,7%  |
|       | Both                     | Count                    | 7      | 22        | 12         | 5      | 46     |
|       |                          | % within Training in ICT | 15,2%  | 47,8%     | 26,1%      | 10,9%  | 100,0% |
|       |                          | % of Total               | 1,8%   | 5,6%      | 3,1%       | 1,3%   | 11,8%  |
|       | None                     | Count                    | 13     | 33        | 26         | 5      | 77     |
|       |                          | % within Training in ICT | 16,9%  | 42,9%     | 33,8%      | 6,5%   | 100,0% |
|       |                          | % of Total               | 3,3%   | 8,4%      | 6,6%       | 1,3%   | 19,7%  |
| Total | Count                    | 54                       | 176    | 139       | 22         | 391    |        |
|       | % within Training in ICT | 13,8%                    | 45,0%  | 35,5%     | 5,6%       | 100,0% |        |
|       | % of Total               | 13,8%                    | 45,0%  | 35,5%     | 5,6%       | 100,0% |        |

Table 17. Correlation 11

Respondents do seem to use ICT to share work generated by students. The chi-square test of independence presents a value of 17.125 and a significance of 0.006, which leads us to conclude that there, is dependence between the type of training and the answer given by respondents.

## Correlation 12

Item 6: Training in ICT Item 43: Disseminates assignments, activities, or projects using ICT

|       |                          |                          | Q43    |           |            |        | Total  |
|-------|--------------------------|--------------------------|--------|-----------|------------|--------|--------|
|       |                          |                          | Rarely | Sometimes | Frequently | Always |        |
| Q6    | Initial                  | Count                    | 14     | 25        | 15         | 4      | 58     |
|       |                          | % within Training in ICT | 24,1%  | 43,1%     | 25,9%      | 6,9%   | 100,0% |
|       |                          | % of Total               | 3,6%   | 6,4%      | 3,8%       | 1,0%   | 14,8%  |
|       | Continuous               | Count                    | 42     | 81        | 71         | 16     | 210    |
|       |                          | % within Training in ICT | 20,0%  | 38,6%     | 33,8%      | 7,6%   | 100,0% |
|       |                          | % of Total               | 10,7%  | 20,7%     | 18,2%      | 4,1%   | 53,7%  |
|       | Both                     | Count                    | 10     | 16        | 18         | 2      | 46     |
|       |                          | % within Training in ICT | 21,7%  | 34,8%     | 39,1%      | 4,3%   | 100,0% |
|       |                          | % of Total               | 2,6%   | 4,1%      | 4,6%       | ,5%    | 11,8%  |
|       | None                     | Count                    | 15     | 28        | 30         | 4      | 77     |
|       |                          | % within Training in ICT | 19,5%  | 36,4%     | 39,0%      | 5,2%   | 100,0% |
|       |                          | % of Total               | 3,8%   | 7,2%      | 7,7%       | 1,0%   | 19,7%  |
| Total | Count                    | 81                       | 150    | 134       | 26         | 391    |        |
|       | % within Training in ICT | 20,7%                    | 38,4%  | 34,3%     | 6,6%       | 100,0% |        |
|       | % of Total               | 20,7%                    | 38,4%  | 34,3%     | 6,6%       | 100,0% |        |

Table 18. Correlation 12

Analysing the contingency table, we find that the respondents engaged in dissemination of assignments, activities or projects, using new technologies. The chi-square test of independence presents a value of 17.970 and a significance of 0.091, which leads us to conclude that there is dependence between the type of training and the answer given by respondents.

## Factorial Analysis

For this study we used SPSS V.17 to develop a variability matrix (descriptive), the estimation of common factors and specific factors (extraction), and the rotation of factors (rotation). We also used SPSS to estimate factor values (scores).

Before performing the analytical process, it was necessary to establish whether the data met the necessary conditions to make the

application of the methodology of factor analysis possible. Using SPSS we verified whether the conditions for the applicability of the test were present, in this case by means of the Kaiser-Meyer-Olkin and Bartlett's test of Sphericity.

For this purpose we considered only the following items: I8, I9, I10, I12, I14, I18, I20, I21, I22, I23, I24, I25, I27, I28, I30, I32, I33, I35, I36, I37, I38, I39, I41, I42 and I43, which we believed to be the most significant.

The result we obtained for the KMO measure was 0.805, which we considered valid, given that the benchmark should be above 0.60. We also noted a significance value of 0.000 through Bartlett's test, which is less than 0.05, allowing us to conclude that the correlation matrix is an identity matrix.

In light of these results, we proceeded to the application of factor analysis and obtained the symmetric correlation matrix. Once the number of factors was calculated and the issues grouped, we moved on to their classification and definition by an equal number of categories, which were given the following designation and consequential reasoning:

**Innovation** category: Items 27, 33, 36, and 41 show a clear intention to use ICT as an innovative and more effective means in addressing the different situations of teaching and learning.

**Communication** category: Items 21, 28, 23, 30 focus essentially on communicative contexts in the different types of inter-relationships: teachers, students, school, family, etc.

**Collaboration** category. Items 39 and 25 covered the use of ICT in a collaborative approach and its practical application in connecting the school with the community.

**Relationships** category. Items 24 and 22 was directed at the relationship student/student, teacher/student and others emerging from relational contexts provided by these special means of information and communication.

**Valorisation** category. Items 2, 4, and 9 referred to the professional development of teachers through continuous training, taking their needs into account.

**Motivation** category. Items 38 and 37 aimed to increase interest and motivation of students as well as the changing of behaviour of individuals or of group/class.

**Planning** category. Items 32, 10, 35, and 18 meant preparing a suitable plan for the achievement of the objectives that the teacher aimed to reach, namely regarding the best way to approach the contents.

**Assessment** category. Items 8 and 20 lead us to a comprehensive assessment of the quality of the teacher training process as well as the implementation of new resources to improve students' performance.

## **Conclusion**

From the analysis of the collected data, we found that the reception and the willingness of respondents towards the use of ICT were substantial, irrespective of the type of training that they held. Although there have been extensive programmes of continuous training in ICT and many institutions providing them, these programmes rarely go beyond the perspective of the common user. This finding could lead us to conclude that this factor could contribute to the relegation of the introduction of ICT in educational settings. However, this has not happened, and the respondents indicated that they significantly use ICT in their teaching activities and consider the salient role that these resources can play the context of teaching and learning. However, we would like to point out that there is still a lot to do in this field, particularly regarding the current framework for training, given that there is a certain gap between the technological knowledge and the specific areas to which it is addressed. Respondents considered essential that a specific type of training should be designed for each subject area, with its own methodology.

We also found that the type of training received by respondents is not a limiting factor in the use of ICT in an educational context. However, the way in which it is used, limits their practice. This fact indicates that there is an urgent need to include strategies for the development of skills and competencies in the school curriculum to allow for the maximization of the use of ICT in various areas.

We would also like to emphasize that it is equally important to promote critical awareness for a teaching context guided by collaboration, interactivity, and dynamism, based on the actual awareness of the need to articulate the curricula and make them flexible. In this sense, in accord with the views of Pablos (2007) and Cardoso (2002), we believe that in the society of information and knowledge in which we live, it is essential to reflect on the concept of teaching and learning in the diverse contexts in which they are performed, as well as on ways of improving them.

In short, we believe that continuous teacher training is of crucial importance, especially in regard to ICT, given that in the development of this process there is a renewed effort, with implications regarding the training programmes, the status of the profession, the change of schools, and the social prestige of teachers.

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# MASSIVE OPEN ONLINE COURSES (MOOCS): IS IT REAL DEMOCRACY?

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## Abstract

Education. Democracy. These are two sides of the same coin: Society.

How can be a society, democratic, if it does not offer a sound education to its fellow citizens?

My central question is : Will the 'Digital Divide', in Higher Education, be filled, globally, by MOOCs? Or on the contrary, the claim "Anyone with an Internet connection can have access to Higher Education (i.e. MOOCs) is misleading, in reality? In my opinion the concept of 'access' needs to be interrogated carefully: it cannot just be assumed that because something exists and because it is 'free', it is then accessible to everybody globally. There are a variety of mitigating factors which limit access to MOOCs: the lack of the set of certain infrastructures - i.e. reliable electricity, unrestricted Internet connections -and resources - temporary or communal accommodation, rural communities, people relying on welfare or living on low incomes - can represent huge obstacles. Together with other factors, such as long working hours, multiple jobs, long distance travel from home to work.

My goal is to give a potential answer to these key questions, by investigating if MOOCs can be a new form of Democracy in Higher Education, globally.

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**Keywords:** In Higher Education, Democracy

## Introduction

### Education Democracy Society (EDS): the Global Triangle

Education. Democracy. Society. The first and the latter are at the roots of the third. Both of them have changed over time, shaping themselves according to people, their history and the human environment they were "living" in. It is meaningful to use this verb for these concepts: Education pertains to human beings; more education means better conditions, equality of opportunities regardless of social backgrounds, the nature of mobility,

within society, which can bring progress. Democracy has been attached to humans since ancient history. The extension of participation in decision taking and the deepness of the impact in the decision making have marked significantly the progress in the history of humanity. Qualitative and quantitative Education goes hand in hand with sound and live Democracy: Society benefits having both of them in good shape.

This stated, in order to make an assessment of the condition of both of them, one should make an analysis which would encompass the many aspects they both implies. That would be an endless exercise, and for sure, it would leave holes which could compromise the results and the conclusions one could draw. However, what a researcher can do, in order to investigate Society, and its facets, namely Education and Democracy, is to shed light on a particular aspect of this *mare magnum*.

In my paper, I will focus on Higher Education (H.E.) and the impact of Information and Communication Technologies (ICTs) on it. In particular I will investigate the last frontier of Massive Online Open Courses (MOOCs), as way of delivering academic content to the masses, and in particular to people who have not the possibility to attend University in the traditional way, and not only this, even more, interestingly, aiming to people who are not traditionally belonging to the University audience.

“Why an Indonesian, in his forties, cannot listen to a lecture by a Harvard Professor?” This is one of the core questions which led to the birth of MOOCs. Technologies help: they shorten distances, they lower barriers. This is true, in many ways, but also other considerations should drive changes: not only what can be, on the surface, democratic, it is as such, in reality. Accessibility, intended in many ways, - I will explain this aspect - and infrastructures are fundamental variables to take into account. Namely, a high grade of accessibility does not correspond only to have a video of a MOOC online: will the person, on the other side of the word, be able to connect stably to the band? Will her or his level of the foreign language (English, French, German, Chinese etc) will enable her or him to understand the discourse? Will she or he be too tired in the evening to follow the lecture, perhaps having worked for two or three different jobs during the day, or having commuted or walk a long distance? Will the infrastructure help the ‘2.0 student’ to follow the video, or he or she will watch it in bits and pieces? Will her or his culture will speak the same codes of the professor? Prerequisites will cut him or her off, making ‘the student’ thinking they are not up to the standards? Will she or he think “It is out of my league”. These are not rhetorical questions, you can answer YES or NO according to the specific human and environmental setting you are referring to, **in this paper I am, however, challenging the idea that what is “accessible” in principle, is “usable” in the substance, universally.** The intentions of

whom conceived, put together, and deliver MOOCs are for sure positive, this is not under doubt, what I am questioning in this paper is that pre-requisites, both of concrete and abstract nature, do matter and determine if inspiration and good intentions meet the high goals set from innovators. Revolutions in Education do not happen all of a sudden, Education is for its inner nature very much attached to culture, it speaks about traditions, it lies at people's human roots and belongs to intergovernmental sphere for the policy domain. Education is very much protected, it has barriers around, to preserve its contents and way in which it is delivered. Democratic sea-changes do not occur with a top-down approach, rather, common practices, transferable methods, innovative techniques, "educational positive virus" spread globally through bottom up logics. Thinking outside the boxes is fundamental: the world in which we live today is Glo-Cal, thinking of it only focusing either on the first or on the second component means to shed light only on one aspect; it brings mystification which could lead to disappointment, even to the most enlightened thinkers. Modern cultural colonialism can consist of sugar-coating Western contents, ways of teaching, visions and points of views assimilating them to a sort of human common sense which leads to think and act, consequently, having in mind this consideration: "Excellence is here. We reached it, this is un-doubtful - according the standards we have set - so now we can go, globally, to spread our *verbum*, since it is excellent. People will be grateful to us because we have made them part of our excellency, of our first class knowledge. We share what we have attained, making it accessible to people who cannot afford our education, because of the physical, psychological and social distance, but we are democratic, and we deliver it to you, no matter what". It is, in some ways, abrupt but, in a nutshell this is the reasoning behind MOOCs, as they were initially intended.

I am not, in this paper, encompassing the cases in which MOOCs are promotional. That is a purpose that I am not taking into consideration MOOCs are investigated here as learning materials, which can be delivered to people globally, and whose unique goal is to share first class knowledge, with the intention to make it available for the masses all over the world (taking, already, for granted that everybody can access a computer, connected to the internet).

Above I have expressed, in a nutshell, my personal opinion on the MOOCs, and my doubts on their democratic real nature; hereafter I will provide a conceptual and policy framework, where to put my statements, in order to give evidence of what I am alleging.

The European Union, as a source of Democracy and Education will be my loading star, being the first pillar of theoretical construction, while digitalisation of society will be the second pillar, and Higher Education

global evolution, in terms of methods, practices, contents, goals and audiences, will be the third one.

### **Society Digitalisation and Higher Education Evolution: Exploring New Democratic Sources**

The central question of this paper is “Does it mean that if something is accessible, is it automatically at hand for everyone?”

Are there, instead, some specific variables to take into consideration, which can lead to a different conclusion: something can be accessible in principle, but in reality, the contingent human and situational constraints are obstacles which prevent its accessibility. In reality, what is accessible in principle can be, therefore, patrimony of some. Even if globalisation make us nearer to each other and more similar to each other in some respects, I would say more that our cultural differences can dialogue better one with the other having common framework: this does not mean that constraints are eliminated.

This concept can be applied to the state of Democracy in the European Union, tracing a parallel with Digitalisation of Society and of Higher Education in particular.

More specifically, in the last decade, we have assisted to interesting political phenomena: politics is more personal, it is more dealing with individuals, rather than ideas, it sublimates the leader, people often talk of one person or another rather than of ideas and programmes. Media are fundamental, both to mark and help the rise of a personality in the political spectrum, or to deteriorate his or her chances to succeed in his or her run to be elected: people watch the news, some read newspapers, others surf the web looking for information or videos to shape their opinion. Information are more accessible but, which kind of information are they? Will people discern and be able to choose among the different layers of news? Will the majority have the cultural and intellectual instruments to form their opinion in an informed way? Or the news are in principle accessible, but in reality only some will be able to get those information? Moreover, why elections' turn-outs are decreasing in Europe and in the Western World, in general? Is Democracy, because considered accessible, and in a certain sense, taken for granted by its fellow citizens, belonging more and more, substantially, to closed circles who decide and dispose, since citizens are disappointed and are delegating more and more the principle of representation, at the highest level?

Again accessibility dos not mean real ‘use’ and active participation.

As J. Habermas puts out “We firstly need to know how we want to understand democracy. Democratic self-government means that addressees of mandatory laws are at the same time their authors. In a democracy,

citizens are subjects only to those laws which they have given themselves in accordance with a democratic procedure. The legitimising force of this procedure rests, on the one hand, on the inclusion of all citizens in the political decision-making processes and on the other, on the coupling of majority decisions with deliberative will-formation. Such a model of democracy transforms the citizens' use of communicative freedoms into as many productive forces for the legitimate self-influencing of a politically organised civil society. If the citizens are to be able to cooperate in influencing social conditions, then the state must have corresponding scope for the political shaping of living conditions." In this rests the sense of conceptual connection between popular sovereignty and state sovereignty. Moreover as R. Dhal points out when referring to democratic elections "Citizens who participate in a democratic election and who authorise a few to act on behalf of all certainly engage in a collective practice. But this transforms democratically generated decisions into decisions of a collective only in a distributive general sense". For these decisions are the product of a plurality of individual stances which are generated and processed in accordance with democratic rules.

Article 1 of the Universal Declaration of Human Rights, which was adopted by the United Nations on 10<sup>th</sup> December 1948, begins with the statement: "All human beings are born free and equal in dignity and rights". We all should start, therefore, from the same conditions as we all belong to humanity, but this 'should' refer of course not to our human condition, but to what is attached to it: our social environment. This is what determines if accessible in principle, means accessible, in reality.

Democracy is globally accessible, their rituals, rules, frameworks and patterns of action are codified: the vote is the highest expression of it. But why, more and more, in Western society we are experiencing populism, disaffection and disappointment towards voting and politics? Democracy is, in numerous situations, ill and alone. It is accessible in principle but discarded by many who can have access to it. Why? Because you should have, as citizen, the perception of: how precious it is, where to access it, for which purpose to treasure it. If you have not this 'democratic prerequisites' then Democracy is something worth only to those who have the means to access it, and from universal becomes 'of some'.

Democracy is government of the people, by the people and for the people: but is it accessible in the same way and by the same means to everyone?

### **An Array of Innovative Ways to Measure the Diameter of the World**

Making a step further, focusing on Societal Digitalisation, the parallel is self-evident: Information and Communication Technologies have made

the diameter of the world in which we live shorter. It seems that we live the lives of people who are physically far from us, through devices which can shorten human distances, but, does this mean that in the neologism ‘Glo-Cal’ is the prefix ‘Glo’ which prevails?

The concept of ‘digitalisation’ belongs semantically to the sphere of Innovation. This has become a key concept in our society, transversal and universal *per se*, it does not stem only from research, and focuses, solely, on specific disciplines or sectors. As the European Institute of Innovation and Technology points out in the Report on Synergies: “Innovation is happening in new ways throughout the world, through the co-creation of knowledge, the development of business, user-led ideas and, more recently, societal challenge-led approaches.” Innovation takes place on the one hand, through trans-national partnership building, multi-stakeholder, multi-disciplinary and multinational teams; and on the other supporting freedom of circulation of people and knowledge.

Innovation belongs, itself, to the semantic sphere of Knowledge, and to be real, it has to be coupled by ‘sharing’. Production of knowledge means also dissemination and positive exploitation of it, globally, through ICTs. What is crucial in Digitalisation of Society is the optimal circulation, access to and transfer of scientific knowledge. Namely when scientists, research institutions, businesses and citizens (last but not the least) have the opportunity to access, share, discuss and use existing scientific knowledge the innovation system as a whole benefits. The Digital Agenda in Europe and world wide encompass the same principles: implementing Open Access (OA) i.e. free internet access for different purposes; fostering Open Innovation and knowledge transfer between public research institutions and the private sector; strengthening the knowledge triangle between research, business and education.

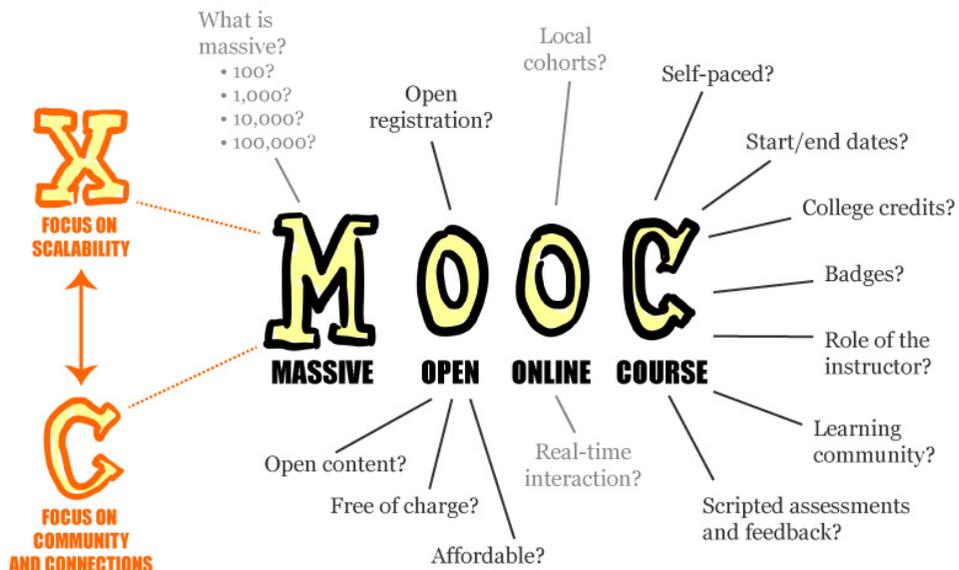
Knowledge pertains to Growth semantic sphere. It is becoming more and more a buzz word, given its positive inner meaning policy makers want to include it in every speech they do and to show everything they do brings it, but in real terms, how could Growth flourish and spring out from policies? Europe 2020 gives an answer: growth should be smart, through more effective investments in education, research and innovation; sustainable, thanks to a decisive move towards a low-carbon economy; and inclusive, with a strong emphasis on job creation and poverty reduction. The strategy is focused on five ambitious goals in the areas of employment, innovation, education, poverty reduction and climate/energy”.

Narrowing the focus on one of the aspect of Growth, Education, and in particular Higher Education, many significant steps have been made towards the creation of a European Higher Education Area (EHEA) without borders (2010), with the policy meaning to promote citizens’ mobility and

employability and the continent's overall development, and its evolution, the ERA, European Research Area. Creation of knowledge and transfer of it are the two pillars of the ERA, which is a fundamental part itself of the EU, intended as knowledge based economy. In this respect one of the main concerns of the EU is to fill the 'knowledge gap' with the other knowledge based economies globally, in the past, The United States and Japan, nowadays BRICS, China, Russia and emerging economies. Each of them, through Education and in this paper will be taken into consideration H.E., export its Knowledge, which can bring Growth and Innovation, ICTs are instrumental in so doing, but, the central question is: top-down approaches pay off? Knowledge is transferable? Do Digital Universities represent sound evolution? Do they bring progress or are there an illusion? Is distance learning simply an evolution of the Academy globally? And the key question: Is it feasible to re-invent the Academy, globally?

### Massive Open Online Courses: a Global Case Study

Answering to the above-questions is only possible by focusing on specific expressions of innovative forms that Higher Education generates: Massive Open Online Courses are a case in point.



First of all I will provide here the universal definition of what a MOOC is: "A Massive Open Online Course is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials such as videos, readings, and problem sets, MOOCs provide

interactive user forums that help build a community for students, professors, and teaching assistants (TAs). MOOCs are a recent development in distance education.” Although early MOOCs often emphasised open access features, such as connectivism and open licensing of content, structure, and learning goals, to promote the reuse and remixing of resources, some notable newer MOOCs use closed licenses for their course materials, while maintaining free access for students. North American top Universities (i.e. courses: Udacity, Coursera), Latin American ones, European, Asian (Malaysia is a fore-runner), Australian Academic institutions have started to provide their e-audience with MOOCs. Stakeholders (both public entities and private ones -i.e. University in Germany) are interested in the innovative process which can spring from this novelty: new partnerships are developed, private and public look at each other with interest, having in front of them a ‘prairie’, but what about students and professors? How does their role change?

A MOOC does not mean to look at a talking head in a video. It is far more than that. A MOOC means to re-invent the way of teaching and of learning radically.

First of all you have no more the personal relation with your professor and your colleagues (forums and peer-reviews are not substitutes); drop-outs are more frequent since personal engagement can be harmed by lack of commitment for different contingencies; difficulties encountered are faced by the student alone and these difficulties do not stem simply from notions themselves, but cultural differences matter as fundamental components – who is teaching in MOOC does not know *a priori* who is the potential audience, therefore it is not possible to fine-tune with a class - in one word: standardisation is the *fil-rouge*, in a MOOC.

In my presentation I will show three MOOCs (the first from Europe, the second from the United States, the third from Asia) that I have personally singled out, because of their characteristics, comparing one to the other following eight guidelines/benchmarks: teaching style; techniques used; learning impact; technical means necessary to follow them; cultural references made; actors involved; kinds of follow up implied; level of connectedness and its implications.

## Conclusions

Global Education through Information and Communication Technologies has a great potential to bring Innovation and Growth, by sharing Knowledge. Before alleging this syllogism, one should investigate case by case the most promising phenomena that Information and Communication Society propose to us. MOOCs are one of them, and according to what I have stated in this paper, also by tracing a parallel with the state of Democracy today, and to what I will show in the presentation by

focusing on three kinds of MOOCs, the evolution of global Higher Education, *rebus sic stantibus*, is not at a point of maturation which can allow to state that MOOCs are an instrument of democracy. It is not sufficient giving the impression that high quality of knowledge is no more treasured in 'knowledge temples', by being online, therefore available to everyone. Real accessibility is the key variable to be taken into consideration, its level, now, has not reached yet the level by which real democracy start.

The future will tell if this benchmark will grow, in this case democratic-impact evaluation of Massive Open Online Courses will evolve accordingly.

# THE IMPACT OF EDUCATION ACROSS SECTORS AND THE MILLENNIUM DEVELOPMENT GOALS

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## Abstract

The Millennium Development Goals (MDGs), which were agreed at United Nations General Assembly Millennium Summit in 2000, address challenges in poverty reduction, hunger, health, gender equality, education, and environmental sustainability, an ambitious set of development targets aimed at reducing poverty and improving the lives of people all around the world by 2015. Over the past decade, notable progress has been made on each individual MDG even in the poorest countries and the most difficult circumstances. Such success shows that the MDGs can be achieved. Indeed, the MDGs have led to unprecedented commitments, partnerships and progress in combating poverty and hunger, in improving school enrolment, in fostering gender equality and in extending equal access to health care. Yet progress is uneven between and within regions and countries and often too slow to meet the 2015 deadline. There is a growing realization that, without renewed commitment and concerted action, some countries will not reach all of the MDGs. In recent years there has been a growing body of literature on the interconnectedness of education and the Millennium Development Goals (MDGs). The purpose of this paper is to synthesize global evidence generated through various MDG Country Reports and supplementary documents that focus on trends toward progress and on the gaps and disparities that have arisen. The paper will help to establish a better understanding of how investment in education can lead to development outcomes that aid the achievement of the MDGs.

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**Keywords:** Development, Education, Goals, Growth, Millennium, Outcomes, Poverty

## Introduction

In recent years there has been a growing body of literature on the interconnectedness of the Millennium Development Goals (MDGs) and the

need to maximize opportunities for education and their linkages. The existing empirical studies confirm some of the arguments about the benefits of education and the linkages to the MDGs. With the developmental outcomes of basic education in mind, this desk study set out to examine in what ways, and under what conditions investment in education is important in relation to the millennium development goals. It provides a synthesis of research on the potential contribution of basic education to achieving the MDGs, focusing on key texts produced by the international institutions. Within this review a key focal point will be the context within which education appears to impact upon the various MDGs outcomes, which is referred to as the 'enabling environment'. The report will sought to explore the evidence about the contribution of basic education to poverty reduction and the achievement of the MDGs within certain countries or regions. It will also consider the critical support systems, policy environments and national capacities upon which good quality basic education depends, and assessed the role of basic education in developing and sustaining these. In response to the global call to achieve the MDGs by 2015, many countries are making remarkable progress demonstrating that setting bold, collective goals in the fight against poverty yields results. Expanding access and improving the quality of education are both imperative for MDG progress. A balance must be struck to move both objectives forward.

In response to the global call to achieve the MDGs by 2015, many countries are moving forward, including some of the poorest, demonstrating that setting bold, collective goals in the fight against poverty yields results. Robust economic growth in the first half of the decade reduced the number of people in developing regions living on less than \$1.25 a day from 1.8 billion in 1990 to 1.4 billion in 2005, while the poverty rate dropped from 46 per cent to 27 per cent (UN MDG Report, 2010). However, the global economic and financial crisis, which began in the advanced economies of North America and Europe in 2008, sparked abrupt declines in exports and commodity prices and reduced trade and investment, slowing growth in developing countries

Nevertheless, the collective efforts towards achievement of the MDGs have made inroads in many areas. Encouraging trends before 2008 had put many regions on track to achieve at least some of the goals. The economic growth momentum in developing regions remains strong and, learning from the many successes of even the most challenged countries, achieving the MDGs is still within grasp: Progress on poverty reduction is still being made, despite significant setbacks due to the 2008-2009 economic downturn, and food and energy crises. The developing world as a whole remains on track to achieve the poverty reduction target by 2015. The overall poverty rate is still expected to fall to 15 per cent by 2015 - Which means

around 920 million people living under the international poverty line half the number in 1990. But unmet commitments, inadequate resources, lack of focus and accountability, and insufficient dedication to sustainable development have created shortfalls in many areas. Moreover, as the UN MDGs Report 2010 points out, the effects of the global financial crisis are likely to persist: poverty rates will be slightly higher in 2015 and even beyond, to 2020, than they would have been had the world economy grown steadily at its pre-crisis pace.

### **Education Outcomes and MDGs**

The positive economic impact of education is reflected in its contributions to increased national income and individual earnings. Rate of return studies have consistently shown a positive correlation between years of schooling and earnings, with higher returns resulting from schooling in low-income countries and investment in education for women and children from deprived groups. Recent evidence also shows that levels of cognitive and non-cognitive skills acquired by students during schooling, rather than years of schooling, contribute most to increased income and lead to a more highly skilled workforce. Both PISA (Programme for International Student Assessment and TIMSS (Trends in International Mathematics and Science Study) cite improved workforce skills as a better predictor of economic growth than average levels of schooling. Many social development indicators are also positively associated with educational levels. Lastly, the present focus on universal primary education (UPE) and gender parity in the Millennium Development Goals (MDGs) places Education For All (EFA) within the framework of a 'collective endeavour to eliminate poverty. All of the foregoing points constitute good arguments and a solid rationale for investment in education and the expansion of educational provision.

Primary education is a powerful lever for poverty alleviation and social and economic growth (World Bank 2004). Its results can be empowering, enabling graduates to take charge of their lives and make more informed choices, contribute to the building of a democratic polity, increase earning potential and social mobility, improve personal and family health and nutrition (particularly for females), and enable women to control their fertility. It is widely stated that expanding education service is critical to making further progress on the MDGs, for broadening of growth, and for tackling persistent poverty and inequality (see ADB 2008, Kabeer 2010, UNICEF 2010, UN 2011). Various reports stress continuing disparities in MDG progress between different regions (especially between core and peripheral regions, urban and rural areas, and conflict-affected and peaceful regions). Within these under-served regions, various marginalised groups are persistently disadvantaged: women, certain minority ethnic or religious

groups, and people with disabilities (see UN 2008, UN 2011, UNICEF 2010, Kabeer 2010).

Since the launch of the MDGs at the Millennium Summit in New York in September 2000, the MDGs have become a widely accepted yardstick of development efforts by governments, donors and NGOs. The MDGs are a set of numerical and timebound targets related to key achievements in human development to be reached by 2015, from their levels in 1990. They include halving income-poverty and hunger, achieving universal primary education and gender equality, reducing infant and child mortality by three-quarters, and reversing the spread of HIV/AIDS and other communicable diseases. Almost all the countries in the world, have committed themselves to attaining the targets embodied in the Millennium Declaration by 2015.

### **Linking Education, MDGs and Context**

#### **The Eight Millennium Development Goals (MDG)**

**MDG 1: Eradicate extreme poverty and hunger**  
**MDG 2: Achieve universal primary education**  
**MDG 3: Promote gender equality and empower women**  
**MDG 4: Reduce child mortality**  
**MDG 5: Improve maternal health**  
**MDG 6: Combat HIV/AIDS, malaria, and other diseases**  
**MDG 7: Ensure environmental sustainability**  
**MDG 8: Develop a global partnership for development**  
Source: United Nations Development Group Guidance Note on MDG Reporting, October 2003

#### **MDG 1: Eradicate extreme poverty and hunger**

MDG 1 focuses on efforts to reduce the number of people living in extreme poverty, generally defined as living on less than \$1.25 per day, to assure that able adults have jobs and to improve nutritional standards.

#### **Reducing Poverty and Achieving Sustainable Development**

At the 2005 World Summit, the international community reaffirmed its commitment to cut in half the number of people living in extreme poverty by 2015 and achieve the eight Millennium Development Goals (MDGs), a series of time-bound and quantified targets to attack poverty's root causes in a multi-dimensional way. The scale of the challenges, and the benefits of success to individuals, communities and the family of nation, are enormous: Global population is expected to increase from about 7 billion today to 9.3 billion by 2050, and the population of the 48 Least Developed Countries will more than double to reach 1.7 billion. Almost all of the net increase in

population is occurring in the urban areas developing countries, and in many of them, the number of people living in poverty is rising. Moreover, the supportive development environment that prevailed in the early years of this decade is now threatened as the world faces a global economic slowdown and a food security crisis. At the same time, the effects of climate change are becoming more apparent.

### **Dimensions of poverty**

Substantial evidence suggests that slower population growth and investments in reproductive health and HIV prevention (particularly among adolescents), education, women's empowerment and gender equality reduce poverty. Carrying out the Programme of Action adopted at the International Conference Population and Development (ICPD) in Cairo and reaching its goal of universal access to reproductive health information and services by 2015 is an essential condition for achieving the MDGs. A central premise of the ICPD is that the size, growth, age structure and rural-urban distribution of a country's population have a critical impact on its development prospects and on the living standards of the poor. Poverty is multidimensional: impoverished people are deprived of services, resources and opportunities, as well as income. The ICPD realized that investing in people -- and empowering individual women and men with education, equal opportunities and the means to determine the number, timing and spacing of their children -- could create the conditions to allow the poor to break out of the poverty trap.

Evidence from India suggests that higher starting rates of human capital can lead to more rapid rates of economic growth and poverty reduction (Ravallion & Datt 2002). Research on India finds that government investments in education have a modest impact on poverty and productivity, but that investments in rural roads and agricultural research are more effective in this respect (Fan et al 2000). A similar study on China finds that government expenditure on education had the largest impact in reducing rural poverty and regional inequality and significant impact on production growth (Fan et al 2002). This finding that investing in human capital is more likely to drive poverty reduction and balanced growth than investment in physical capital is supported by a number of other studies on China (Hare & West 1999, Heckman 2005, Fleischer et al 2008). Several studies estimate that extending basic services in poor countries can deliver large growth benefits, and that the return on investment associated with this expansion is good compared to other avenues of spending (Hutton et al 2006, Frontier Economics 2012). These estimates should however be treated with caution

### **Critical investments for poverty reduction**

Generally studies have shown that countries in which poverty levels are the highest are generally those that have the most rapid increases in population and the highest fertility levels. Countries that have reduced fertility and mortality by investing in universal health care, including reproductive health, as well as education and gender equality, have made economic gains. A 2001 study of 45 countries, for example, found that if they had reduced fertility by five births per 1,000 people in the 1980s, the average national incidence of poverty of 18.9 per cent in the mid-1980s would have been reduced to 12.6 per cent between 1990 and 1995.

### **MDG 2: Achieve universal primary education**

The most important of the MDGs is to achieve universal primary education, one of the most recognized pillars of human development. The priorities contemplated by the MDGs are comprehensive and mutually reinforcing, so while enhancing education is a development goal by itself, it is also widely recognized as the main avenue of social mobility and, therefore, of escaping poverty (MDG1). MDG 2 focuses on education. Improved educational opportunities, especially starting with the earliest years, opens the doors to better income and advanced agricultural productivity, helps combat harmful legacy views of gender roles, allows people to make smarter choices surrounding health risks and behaviors and offers a broader view of the environment and global economy. MDG 2 centers on universal access to a full course of primary education. Several country case studies show a clear link between efforts to extend education to rural areas and improvements in school enrolment rates (MDG 2). Case studies on Cambodia (Engel & Rose 2011), Benin (Engel & Cossou 2011) and Ethiopia (Engel 2011) describe how targeted investments in rural education have contributed to rapid improvements in enrolment rates and more equitable service provision. These case studies find that these successes cannot be attributed entirely to programmes to extend services – they have also been assisted by broader improvements in governance and in social and economic development. They also stress that rapid increases in access levels have tended to be accompanied by a decline in quality.

A small number of studies have examined the broader economic benefits of extending education to people with disabilities. These studies (from Nepal, the US, South Africa, Bangladesh and Vietnam) find that extending education to people with disabilities has significant economic benefits, by increasing subsequent levels of employment and income (Lamichhane & Sawada 2009). They also stress that inclusive education is more cost-effective than specialist provision for people with disabilities.

### **Wide-reaching impact**

Education has wide-ranging effects throughout society and links directly to poverty-reduction efforts. Poverty levels are lower among families in which the head of the household has had some education than in those where the head of the household has no education. In Serbia, the poverty level was three times the national average in households that were headed by someone with no education. Education is also directly related to improved health. In Syria in 2008, 77 percent of the mothers who had a child who died prematurely were illiterate or had not finished primary school. Educated mothers are also much more likely to have their children immunized.

### **MDG 3: Promote gender equality and empower women**

Girls and boys have equal rights to quality education. According to DFID (2010) the fact that 39 million girls fail to attend primary school is both a tragedy for the girls themselves and a disaster for development. An increase of 1% in the number of girls with secondary education boosts annual per capita income growth by 0.3% and four years additional schooling lowers fertility rates. Access to education, through primary school and beyond, is also a critical factor in creating gender equality and, as more countries adopt the principle of universal primary education the focus is beginning to shift toward preventing girls from dropping out. “The main challenge is the ability to keep girls in school once enrolled, including up to secondary level and higher,” According to the MDG Country Report (2006) from Niger. “This requires improvements in productivity among poor households to enable them to reduce the opportunity cost of sending girls to school. [...] Thus, this issue covers the whole challenge of reducing poverty.”

In Ghana, where the MDG Country Report (2008) puts it on track to fulfilling MDG 3, the country has initiated some efforts that make remaining in school an attractive option for girls. Among these interventions are the construction of women’s dormitories in secondary schools, the provision of school supplies [and] uniforms to needy girls, the sponsoring of scholarships for girls, the opening of ‘gender-friendly’ toilets and the offering of meals, including rations that can be taken home. “Active implementation of activities to promote girls’ education has helped to eliminate barriers to enrolment and encouraged participation and attendance,” the Country Report states.

For many countries, major steps made toward gender equality have included drafting an appropriate legal framework and building representation of women on the national legislations that create those laws. The principles of gender equality have been written into the constitutions of some countries, but individual laws have often had to be changed or repealed altogether to

reflect adequately the principles of gender equality set out in the Committee on the Elimination of Discrimination Against Women (CEDAW) and reflected in MDG 3. In many countries, legislation dealing with inheritance rights, land rights, asset ownership, access to credit and protection from violence, has been scrutinized and revised to ensure gender equality.

#### **MDG 4: Reduce child mortality**

Improved outcomes for women and children more education, lower fertility rates, higher nutritional status, and lower incidence of illness, among others have broad individual, family, and societal benefits (World Bank 2011). Though the evidence is thin on the causal relationship from maternal and child health to growth or poverty reduction, it is robust in establishing the intrinsic importance of general health to the individual and its instrumental importance as an input into the accumulation of human capital which in turn is a determining factor of economic growth (WHO 2002). Several studies point to a strong correlation between health and poverty (Strauss and Thomas 1998, Bloom and Canning 2000, WHO 2001, Gallup and Sachs 2001, Sachs and Malaney 2002). There is also evidence of a health-related poverty trap (Gallup and Sachs 2001, Bloom and others 2003, Bonds and others 2010). Despite the lack of good studies on the existence of a potential causal (instrumental) link between MCH and household or national wealth, maternal and child health is intrinsically valuable not only to mothers and children but also to the broader global community as is evident from the prominent placement of MCH in the Millennium Development Goals (MDGs). Child and maternal health now has a more prominent place on the international development agenda. The global initiatives on nutrition, child survival and maternal well-being announced at both the G8 summit in 2009 and the MDG summit in 2010 are welcome. However, current approaches fail to recognize the catalytic role that education – especially maternal education – can play in advancing health goals.

Equal treatment in education for girls and boys is a human right, and it is also a means of unlocking gains in other areas. Education improves child and maternal health because it equips women to process information about nutrition and illness, and to make choices and take greater control over their lives. Evidence from household surveys consistently points to maternal education as one for the strongest factors influencing children's prospects of survival. If the average child mortality rate for sub-Saharan Africa were to fall to the level for children born to women with some secondary education, there would be 1.8 million fewer deaths – a 41% reduction. In Kenya, children born to mothers who have not completed primary education are twice as likely to die before their fifth birthday as children born to mothers with secondary education or higher.

The 2011 EFA Global Monitoring Report provides striking new evidence on the health benefits associated with maternal education. Using household survey data, it shows that, in many countries, mothers who are more educated are more likely to know that HIV can be transmitted by breastfeeding and that the risk of mother-to-child transmission can be reduced by taking medicines during pregnancy. In Malawi, 60% of mothers with secondary education or higher were aware that drugs could reduce transmission risks, compared with 27% of women with no education. Quality education has also been a factor in reducing maternal and infant mortality rates. According to Gakidu et al. (2009) over half of the reduction in child mortality worldwide since 1970 is linked to “increased educational attainment in women of reproductive age.” Educated women are also more likely to seek out healthcare for themselves and their families. Studies on maternal health show that 90 percent of women with a secondary education in South and West Asia seek neonatal care, compared with only 50 percent of women with no education.

A case study of Bangladesh shows that improvements in targeting rural populations (Rodriguez Peres & Samuel 2011) have led to rapid falls in child mortality (MDG 4). This study acknowledges that success in achieving these outcomes has also been underpinned by broader factors such as economic growth and cultural homogeneity. A programme-level impact evaluation in Ethiopia presents evidence that extending preventive and basic curative health services to previously under-served areas has led to an increase in the proportion of children vaccinated, but that the effect on preventive maternal care was limited and there was no broader decline in diarrhoea and cough diseases among children (Admassie et al 2009).

The 2011 MDG progress report claims that ‘targeted interventions’ in health have succeeded in reducing child mortality, with the number of deaths of children under the age of five having declined from 12.4 million in 1990 to 8.1 million in 2009, although no detail is provided about how this calculation was made (UN 2011).

### **MDG 5: Improve maternal health**

Enabling people to have fewer children contributes to upward mobility and helps to stimulate development. When women can negotiate their reproductive health decisions with men, this exercise of their rights leads to an increased decision-making role within families and communities that benefits all. Because smaller families share income among fewer people, average per-capita income increases. Fewer pregnancies lead to lower maternal mortality and morbidity and often to more education and economic opportunities for women. These, in turn, can lead to higher family income. As women become more educated, they tend to have fewer children, and

participate more fully in the labour market. Families with lower fertility are better able to invest in the health and education of each child. Spaced births and fewer pregnancies overall improve child survival.

Sexual and reproductive health services are key to curbing HIV. The pandemic is killing large numbers of people in their most productive years, increasing the ratio of dependents to the working-age population. Preventing AIDS-related disabilities and premature deaths translates into a healthier, more productive labour force that can improve a countrys economic prospects, many developing countries have large youth populations. Reproductive health programmes that address the greater vulnerability of adolescents to unprotected sex, sexual coercion, HIV and other sexually transmitted infections, unintended early pregnancies and unsafe abortions, and enable young women to delay pregnancy and marriage are important factors in breaking the intergenerational cycle of poverty. Investments in reproductive health, particularly in family planning, that result in lowered fertility can open a one-time only 'demographic window' of economic opportunity.

Evidence of the relationship between health status and education demonstrates that lower levels of educational attainment are associated with poorer health outcomes throughout life (Case, Fertig & Paxson, 2005; Poulton et al., 2002; Sacker, Schoonb & Bartleya, 2002). Level of education has been found to be a powerful predictor of mortality and overall morbidity across the lifespan (Lleras-Muney, 2005), with people who have not completed high school at risk of a shorter life compared with those who do complete (Muller, 2002; Sundquist & Johansson, 1997). As well as being associated with a substantial reduction in educational outcomes, low socioeconomic status and poverty during childhood and adolescence are independent predictors of a number of illnesses including heart disease, cancer and diabetes (Albano et al., 2007; Kinsey, Jemal, Liff, Ward & Thun, 2008; Raphael, 2006). Children from such backgrounds are more likely to miss school due to illness, have poorer school performance and overall lower expectations about their educational achievements (Jackson, 2009). The importance of early life experiences as a social determinant of health has been widely recognised by social researchers (for example, Raphael, 2006) and was endorsed in 2005 by the World Health Organisation, with the establishment of the Commission on Social Determinants of Health (World Health Organisation, 2010).

The foundations of adult health are determined in early childhood with the impact of early development and education setting the scene for future health outcomes and educational achievement. Poor emotional support and stimulation can lead to reduced readiness for school, low educational attainment, problem behaviour and the risk of social marginalisation in later

life (Wilkinson & Marmot, 2003). In most parts of the developing world children are disproportionately affected by poor health. The combined consequences of illness and social factors in this population have an adverse effect on educational outcomes for children, resulting in lower levels of achievement and attainment compared with other children (Schwab, 1999). There has been growing evidence over the last few decades of considerable disparities between poor and rich families across a number of health and social determinants (Ring & Brown, 2003). Illnesses and diseases that are more prevalent among children from poor family background compared with children from rich family contribute to a considerable burden of disease among these children and their families (Thomson et al., 2010). In addition, psychosocial factors such as overcrowded housing, domestic violence, greater interaction with the justice system, and alcohol and substance use negatively affect health status and mental and emotional well-being (Bailie & Runc, 2001).

Other indices such as life expectancy, the rate of teenage pregnancies, and infant and maternal mortality demonstrate poorer outcomes for families with low incomes (Thomson et al., 2008). Health status and educational achievement are inextricably linked but, for the most part, the two sectors operate independently of each other in the provision of health and educational services.

### **MDG 6: Combat HIV/AIDS, malaria and other diseases**

MDG 6 calls on countries to stop and reverse the spread of HIV/AIDS and to secure universal access to antiretroviral drugs for people living with HIV/AIDS by 2015. For many countries fighting their way out of poverty, the ravages of HIV/AIDS represent not only a singular health crisis, but also the single greatest obstacle to economic growth and well-being. In 2008, sub-Saharan Africa accounted for almost three quarters of the global deaths related to AIDS and for about two thirds of those infected with HIV worldwide. In Asia, about 6 million households will sink into poverty between 2008 and 2015 as a result of the economic consequences of AIDS, based on an estimate by the Commission on AIDS in Asia.

Despite significant gains in universal access to treatment, significant gaps remain for most countries. And with new infections outpacing treatment scale-up for every two people put on treatment, five more are newly infected along with millions of AIDS orphans, AIDS is indeed a long-wave event, one that countries will have to address for many years to come. MDG 6 also takes into account efforts to combat malaria, tuberculosis and other deadly diseases, striving to halt or reverse the spread of these diseases by 2015.

### **The role of education in HIV prevention**

Education has been identified as a key element in HIV prevention; even in the absence of HIV-specific interventions, education was seen to offer an important protection against HIV. The Global Campaign for Education (2004), for instance, estimated that universal primary education alone would prevent 700,000 new HIV infections each year. More recent studies and reviews find similar evidence: in their systematic review, Hargreaves et al (2008), for instance, find a tendency for higher HIV prevalence rates to be associated with the least educated in sub-Saharan Africa. Similarly, in their study in South Africa, Hargreaves et al (2008b) also found that attending school can be associated with lower-risk sexual behaviours; lower HIV prevalence among young men; and that secondary school attendance may influence the kinds of sexual relationships in which young people engage and thereby can also reduce HIV risk. They conclude generally that school attendance may reduce HIV transmission among young people.

### **The role of HIV and AIDS-related education**

Given that education per se is a protective factor against HIV-acquisition, HIV-specific interventions within educational / learning environments, are likely to have an even greater protective effect. And indeed, a number of studies conclude that there is sufficient evidence to support wide-spread implementation of school-based HIV related interventions (e.g. UNAIDS, 2011; Kirby et al, 2006; Ross et al., 2007; Harrison et al, 2010). In their systematic review, for instance, Mavedzenge, et al (2010 and 2011) conclude that school-based, adult-led, curriculum-based interventions showed clear evidence of reductions in reported risky sexual behavior; similarly, Yankah and Aggleton (2008) state that “Overall, effective interventions were shown to have positive effects on knowledge, attitudes, skills and sometimes on behaviours” (pg 468).

For young women, who in many countries are particularly vulnerable to HIV and AIDS, a recent literature review concludes that one way to empower them to assert their sexual and reproductive rights is by increasing access to education, particularly secondary education (Hargreaves and Boler, 2006). More broadly it can be argued that HIV and AIDS-related education is critical for young people since it provides them with information before they become sexually active or potentially engage in risk behaviors, including drug use (see also World Bank, 2002 and 2010). For young people who are already sexually active or using drugs, such education can also help protect them through providing information and knowledge about where and how to seek help, information and services.

**MDG 7: Ensure environmental sustainability**

MDG 7 takes a longer-term view of national development and efforts to reduce poverty, to ensure food security and to create the infrastructure needed to underpin social and health care advances. In doing so, it considers the protection of natural resources and an area's biodiversity. In addition, this Millennium Goal calls for significantly better access to safe drinking water and basic sanitation, as well as improved living conditions for people living in slums. The Country Reports show that, although there has been progress toward these targets, many countries are struggling with environmental sustainability. In addition, MDG 7 has produced a wide range of ambiguity, with data often insufficient to allow assessment of the status.

A study comparing the impact of Dutch assistance on water and sanitation programmes in a number of countries finds that rural water programs are broadly beneficial to poor communities and that the poorest people usually enjoy the benefits of improved water supplies. It also finds, however, that the very poorest and most marginalized communities typically have less access to these programs and benefit less from them (MFA Netherlands 2012). A few studies have estimated that there are considerable economic benefits associated with improving access to water and sanitation (Hutton et al 2006, Frontier Research 2012).

An impact evaluation study shows that two water supply and sanitation projects in rural Pakistan improved households' access to water supply and improved school attendance among high-school-age girls. However, the projects had no significant impact on the incidence and intensity of diarrhea and on increasing labour force participation and hours available for work (Rauniyar et al 2011). Several other case studies (Uganda, Ghana, and Ethiopia) show that targeted efforts to improve rural water and sanitation have been successful (MDG 7C), though these studies do not examine broader impacts of these interventions on health outcomes, poverty reduction, or economic growth.

**MDG 8: Develop a global partnership for development**

The final Millennium Goal takes broader view of development that supports national efforts to achieve the other MDGs. Among a diverse set of targets within MDG 8 that range from internet access to flows of official development assistance, one of the clear priorities encouraged by the Millennium Goal is integration with the global economy with equal opportunities through market access, international cooperation, debt policies and fiscal acumen. In the current volatile global environment, progress toward individual goals is difficult to assess.

## Conclusion

Investing in education will be central to addressing 21<sup>st</sup> century challenges, including global competitiveness, climate change, conflict and insecurity. This is a two-way relationship. While measures are needed to counter the negative impact of economic recession, climate change and conflict on education, education must offer its own ways of combating and responding to the wider economic, environmental and social threats. If it fails to do so, educational gains will be lost, and education will quickly lose its relevance.

In our knowledge-based world, education is the single best investment countries can make towards building prosperous, healthy and equitable societies. It unleashes the optimal potential in people, improving individual livelihoods and those of future generations. If all students in low-income countries acquired basic reading skills, 171 million people could be lifted out of poverty, equivalent to a 12% cut in world poverty. By expanding educational opportunities, we can open the door to more equitable, dynamic and resilient patterns of globalization. It will be difficult to achieve sustainable development or lasting peace without the knowledge, skills and values cultivated through education. Indeed, education is the critical thread tying together all our hopes for the achievement of the Millennium Development Goals (MDGs).

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## **B-SLIM Model as an English Teaching Model in Thailand**

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### **Abstract**

In the business world, English language is considered as an important language for communication among people. According to the Act of Thai Education during B.E. (2008-2015:39), the sustainable development for Thai people has become the main focus in this era. To transform the education especially in the 21<sup>st</sup> century is needed to be integrated the new methodology in language teaching into three main areas. They are: education development, education extension and cooperation in services and educational management. The objectives of the study were: 1) to develop learning activities in and outside classroom context by using B-SLIM Model with the University students in Thailand 2) to compare the results of learning with the B-SLIM Model in the course of listening and speaking in Business English II after using B-SLIM Model 3) to investigate the level of listening and speaking of students following B-SLIM Model. The conceptual framework applied in the study was the development of Listening and Speaking skills by using B-SLIM Model as a teaching model in the course of Listening and Speaking in Business English II

The qualitative method was mainly used, combined with the quantitative data collected from 27 students studying at Chandrakasem Rajabhat University and registering in the course of BENG 1102 Listening and Speaking in Business English II. The normal classes of Listening and Speaking course II in and outside university campus such as Suvarnabhumi International Airport was a place of data collection. In addition, B-SLIM Model (Bilash's Second Language Instructional Method) was applied and used in creating the criteria for data analysis by means of experimental step and teaching step by step according to B-SLIM Model. The method of data analysis was the use of basic statistics.

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**Keywords:** B-SLIM Model

## **Introduction**

At the present, Thai government policies have been geared up the education in the country to be equal to other ASEAN neighboring countries. As in 2015, Thailand will take a full effect in being one of the ASEAN members, therefore, Thai government has tried to develop, support, and reinforce people such as educators, students and educational organizations in both private and public sectors to realize the importance of English ability of the young generation. Thai government has cooperated with its ASEAN members such as Malaysia, Singapore, Indonesia, The Philippines, Burma, Laos, Singapore, and Indonesia in terms of strengthening the prosperity of economy, politics, stability of society and culture. To do this, it will not be easy to finish in a short period of time. It takes time to transform education to be equal to other civilized nation.

This research, therefore, aims to explore the new teaching method “B-SLIM” Model by Olenka Bilash (2006) in order to improve the listening and speaking skills of university students in the course of Listening and Speaking in Business English II. Listening and speaking skills are reserved as the direct skills for communication. Therefore, the B-SLIM Model was proposed in the research study.

## **Objectives of the study**

The study aimed to:

1. Develop teaching and learning activities according to the use of B-SLIM Model in and outside classroom context.
2. Study and compare the results of students after learning through the B-SLIM Model.
3. Investigate the level of students' skills after learning by a B-SLIM Model.

## **Research Questions**

1. How do the B-SLIM Model activities improve students' speaking and listening competence in the Rajabhat context?
2. What are the levels of listening and speaking skills of students according to Chandrakasem Rajabhat University students?

## **Population**

The population of the study was the Business English students of Chandrakasem Rajabhat University, Bangkok, Thailand, who were taking a Course of Listening and Speaking in Business English II.

## Sample

The sampling size was 27 students who passed the Course of Listening and Business English I by means of a purposive sampling.

## Research Instruments

The research instruments of this study include:

1. The Coursebook of Listening and Speaking which contains 10 units starting from unit 19-30 (from Survival English Textbook)
2. The teaching method “B-SLIM Model” by Olenka Bilash (2009) focusing on 5 main criteria: Language awareness, Pronunciation, Vocabulary, Grammar, and Situations and Fluency.

## Research Methodology

The B-SLIM teaching model applied in the study as follows:

### 1. Planning and Preparation

This is the first step which the researcher chooses the activities and contents based on the “Survival English “Textbook in order to meet the objectives of the course and prepare the appropriate materials for English communication.

### 2. Comprehensible Input

This step aims to provide the students background of English sentences, conversations and opportunities to ask questions. At the end, the students are required to demonstrate the language they learn in the situational activities. The 5 inputs are related to this step are Language awareness, Pronunciation, Vocabulary, Grammar, and Situations and Fluency.

### 3. Intake Activity

As this step is intended to assist the students who are not able to understand the language they learn, the teacher can organize a new activity in order to help them to have the opportunity to practice and understand what they have learnt. At this stage, the students will be able to use complicated sentences, difficult words as it is a stage of “Intake-Using-It”.

### 4. Output

This is an important step in which the students have the opportunity to use language they have learnt outside the classroom context. The frequent found activity at this step is an individual activity such as “Introducing University”. They are required to make a video clip for a purpose of introducing university in 3-5 minutes. Then, the video clips will be uploaded into a facebook with a name of “BENG 1202: Aj. Jumjim.”

## 5. Evaluation

The data are collected by means of observation and enquiry in order to ask for the students' problems and to be useful for the future research. Besides, the self-evaluation of a researcher and students' evaluation, participation, assignments, tests, mid-term and final examination are examined as well.

## Findings

The results of the study indicated that the overview of students' ability was in a medium level. It revealed that the students were able to communicate with the appropriate tenses which were in a Good level. The students were able to develop their speaking skill rather than listening skill especially their pronunciation was clear and easy to understand when communicate with others. Language awareness, listening for main idea, words and sentences stress, vocabulary, meaning of words, expressions, grammar, accuracy and fluency and continuation right situations were in the middle level with the mean of ( $\bar{X}$ ) respectively: 2.37, 2.96, 3.18, 3.11, 3.25 and 3.11 which were in a good level. The findings met 'a learning by doing and learning in interaction' which aims at the learner-centred approach (Brown, 2001; Foster, 1999; Richards & Rodgers, 2001)

## Conclusion

This study reconfirms that the activities of B-SLIM Model could improve students' speaking and listening competence of Chandrakasem Rajabhat University students. Overall, the students were at the medium level of improvement in terms of listening and speaking skills particularly in terms of five criteria for B-SLIM Model which were Language Awareness, Pronunciation, Vocabulary, Grammar and Situations and Fluency. In addition, the results of this study point that the students need more opportunities to practice in a real situation and have an overseas excursion in order to build the students' self-confidence outside the classroom context.

## The Author

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# **GENDER COMPARISON, SCHOOLING AND SOCIABILITY RATINGS IN NIGERIA, *EVIDENCE FROM YOUTH SURVEY IN IFE TOWN***

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## **Abstract**

This study investigates factors that affect sociability ratings among youths between 10 to 30 years of age in Nigeria, using a survey carried out in Ife town. The results show that in-school females were likely to socialize more than out of school females. Schooling was found to be affecting youth sociability rating in general. There was also a noticeable level of reduced socialization among out of school youths as it was found that they were less likely to interact as much as in-school youths owing to their family backgrounds. The implication of the findings is that schooling does affect the level of social interaction among youths in general since youths out of school had some level of inferiority complex that prevented them from socializing with in-school youths.

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**Keywords:** Extraversion, Gender Comparison, Schooling, Sociability

JEL Classification: I21, J16, Z18

## **Introduction**

Only very few studies have investigated the effect of –schooling- on -sociability ratings -among –youths- in Nigeria. The impacts of schooling on youth sociability ratings remain largely unknown while the extent to which schooling affects extraversion for females remains unclear. Past literature, e.g. Ojeaga, Ojeaga, Imohnopi, Omosefe and Ogundipe (2013), discussed the impact of school enrollment for females on labor market participation using data for some selected African countries and finds that women were more

employable when educated and that wages also improved for educated females in the sample under consideration.

Sociability ratings for male and females is also likely to differ quite significantly, many factors often affect sociability ratings among youths in general some include youth age brackets, family religious disposition, education, gender and cultural values. Sociability ratings among youths is also of immense significance since this is likely to affect youths in their formative stages of life, understanding the factors that determine the extent of socialization among youths is also likely to give an incite as to what factors often affect social behavior and peer interaction among youths of different age brackets. While school enrolments rates have been on the increase, Africa still continues to experience the lowest school enrollment rates in the world. The implication of this is that Africa is likely to have the largest untrained and least educated manpower in the World for many years to come. This is likely going to affect the level of sociability among African youths in general compared to those in other regions , since they are likely to interact less sociably compared to those in other regions with higher school enrollment rates.

The level of interaction among youths in their formative stage can have strong consequences for the overall society; this is likely to have a spill-over effect into their adult life and subsequently on how they perceive the society at large. For instance youths that grow in free and friendly environments are likely to be less disturbed psychologically than youths who have to pass through experiences of many restrictions and hostile conditions, which are attributable to differences in culture and religion across societies.

The nature of the spill-over effect on the society is that these experiences often shape their general conception of the larger society as well as their global outlook. Gender discrimination is also prevalent in many parts of Nigeria today; the factors responsible for such abnormality cannot be divorced from differences in cultural beliefs, religious affiliation, the level of education of parents and individual family endowment. This study investigates the effect of schooling on gender sociability ratings using primary data for Ife town in Nigeria. The method of estimation used is the multivariate regression analysis. The rest of the paper is divided into the review of literature, stylized facts on schooling and sociability ratings amongst youths, theory and methodology, data and sources, empirical analysis and results and finally the concluding section.

### **Scope and Objective of Study**

The study presents empirical evidence on how schooling affect gender discrimination (sociability ratings differences among in and out of

school male and female youths) by studying male and female sociability ratings in Ife town. The objectives of the study are;

- a.) To determine the extent to which schooling affect sociability among youths.
- b.) To determine if in-school youths have a higher sociability rating than out of school youths.
- c.) To determine if in-school female have a higher sociability rating than out of school females.
- d.) To determine the general difference in sociability between male and females in and out of school.

### **Review of literature**

Past studies find strong evidence that childhood sociability affect adult behavior Ozer and Benet-Martinez (2005). Other studies find that moderate child stability has a strong effect on adult behavior DelVecchio and Robert (2000). There is also a strong link between sociability and extraversion, suggesting that childhood sociability ratings affect adult temperament conditions Ahadi and Robert (1994) and Capsi (1998). Few studies if any have addressed issues of youth sociability ratings and schooling adequately from a gender perspective.

The study by Goldberg (1992) and Saucier (1994) state five basic childhood traits that are likely to affect adult behavior as talkative, shy, sociable, energetic and reserved as a measure of extraversion. Methen and Methen (2004) also study the dynamics between sociability and hostility using Pearson correlation coefficient and find that sociability was related to extraversion and hostility was negatively related to emotionally stability.

Some studies e.g. Svensson, Andrew and Walker (2003) also deal with implicative factors of sociability on the human behavioral formation process and the preventive measures to be used in stemming the negative effects that can arise due to poor sociability traits among children. They suggest that preventive measures such as putting children in more friendly environment is likely to reduce poor sociability ratings among youths.

The study by Wachs (2004) analyses sociability among youths in elementary school and finds that elementary schools have strong effect on youth sociability ratings and has the capability of affecting their genetic behavioral composition. The implication of this finding is that youth dysfunctional behavior can be addressed early and corrected in their formative years allowing for the adoption of preventive regimes to control poor sociability ratings that could affect their overall temperament and adult behavior. Shiner and Capsi (2003) also proposed a four dimensional hierarchical framework which describes extensively the factors that affect children behavior, from a personality and temperamental point of view. They

state that extraversion has strong effects on positive emotionality and can have strong effects on adult behavior on the long-run.

In this study we study the effect of schooling on sociability ratings among children in the Ife metropolitan region for in and out of school youths between the ages of 10 to 30 years of age. The effect of schooling on sociability for boys and girls was considered in order to determine if gender discrimination often associated with higher enrollments for boys than girls does affect female sociability ratings in a negative manner. The reason for this is that till date few studies if any have adequately addressed the issue in an exhaustive manner.

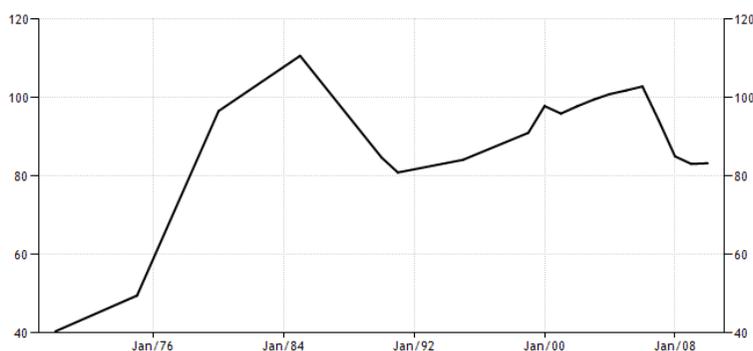
### **Stylized facts on schooling and sociability ratings among youths**

School enrollment rates have been on the decline, since 1986 in Nigeria and have not managed to reach its previous peak values of the mid 1980s see fig. 1 below. According to World Bank 2013 ongoing statistics for Nigeria, even with the current expansion in Nigeria's GDP in the third quarter of 2013 by 6.18% the lowest in the last four years, education still does not receive the deserved attention (World Bank statistics 2013).

Basic education provides children with the opportunity to learn basic reading, writing and mathematics solving skills which they often require in their formative stages in life. In addition children are instructed on how to be of good conduct and closely observed by teachers for unhealthy character traits which can be addressed early.

The ratio of female to male school enrollment rate is also steadily on the increase in Nigeria and this has been quite dramatic since the early 2000s see fig. 2. This is also probably attributable to improved understanding among parents that females become more employable when they are educated and also improved perceptions over time that women are not just home keepers but could take on specialized profession and contribute to the household income just as males.

Fig. 1 Primary school enrollment rate in Nigeria from 1961 to 2012

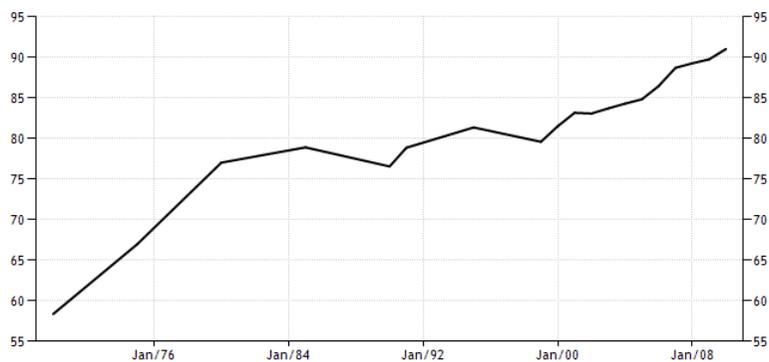


Source: World Bank statistics

Note: The figure above shows primary school enrollment for children between the ages of 0-15 years of age. The trend shows that school enrollment has been on the decline and has not been able to get back to highest peak of the mid 1980s.

Even though there have been improved perceptions against gender discrimination and on educating the girl child, the level of enrollment for girls still remains one of strong concern to policy makers who wish to address equal access to basic education for females, since studies still show that Africa's female enrollment rates still lag behind those of other regions see Ojeaga, Imohnopi and Omosefe (2013) and Ojeaga and Ogundipe (2013).

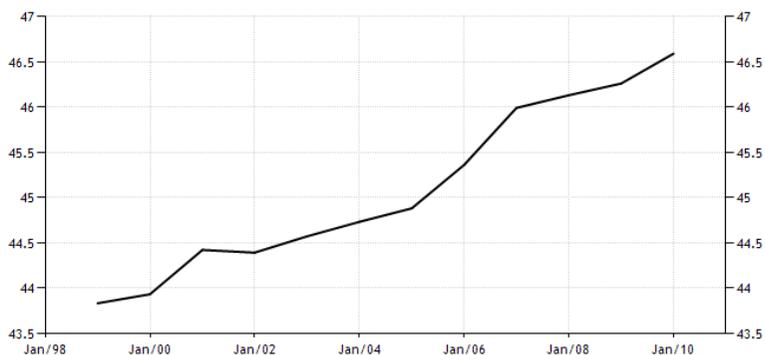
Fig.2 Ratio of Male to Female primary school enrollment in Nigeria 1966 to 2012



Source: World Bank Data

Note: Trends show that the ratio of female to male primary school enrollment has steadily been on the increase with noticeable increases from the early 2000s till date. This shows that female enrollment has almost caught up significantly with male enrollment particularly for the southern parts of the country.

Fig. 3 Female primary school enrollment rate in Nigeria from 1999 to 2010



Source: World Bank Data

Note: Female enrollment in primary schools has improved in a significant manner over the years, however trends suggest that enrollment for females currently stands at 46.5% as of 2010, showing that a greater percentage of girls were actually out of school.

Female school enrollment rate currently stands at 46.5 percent of the total eligible females that ought to be in school, showing that a greater percentage are actually out of school and not likely to receive basic educational training in their life time (World Bank statistics 2013). Schools are also probably the most sociable environments where children interact; it is highly unlikely that out of school youths are going to experience the same level of sociability as in-school youths. The trends show that if schooling is of any positive consequence in the sociability question it is likely that a greater percentage of girls are likely not to benefit adequately from the character formative stage that are likely to be developed during the basic education experience of a child Wachs (2004).

Studies have also consistently shown that school dropouts and youths who never had basic education are likely to exhibit dysfunctional behavioral characteristics as adults e.g. take to crime, violence and other forms of anti-social traits that are hostile in nature which could be attributable to poor extraversion in the early formative stage Shiner and Capsi (2003).

## **Theory and methodology**

### **Theory and Design**

Capsi, Shiner and Roberts (2005) study the relation between children temperament and adult behavior using a host of traits to analyze if children temperament has any connection with adult behavior. Hampson, Andrews, Barckley and Peterson (2007), used dummies constructed from a set of agreeable and disagreeable responses of a questionnaire survey to study the dynamics that affect child emotional stability and adult behavior by designing two constructs; sociability and hostility from factor analysis of teachers rating of children behavior using a linear regression model.

Few if any have tried to study the difference in sociability rating for in and out of school youths as well as how poor female school enrollment affect female sociability ratings as we do in this study. The study follows questionnaires responses served to youths between the ages of 10 to 30 years of age who were probably not in school at all, in their last year in the primary schools, in a secondary school or attending a tertiary institution or who were intending to gain entrance into one. Schooling was ascertained by taking note of the number of the population who were in school. Therefore the distribution of the questionnaires was randomized.

Sociability is measured from individual level of interaction among peers using different questions such as if they like having a friend, how long

they kept friends and if their friends were of the same sex etc. To ascertain the extent to which this reduces gender discrimination we consider the results for females and males differently.

## Methodology

In this study we present a scenario where sociability will depend on a host of factors such as schooling, age, family background, religious affiliation and gender. The method of identification will now be one in which schools been a place of interaction among youths is likely to improve youth sociability ratings positively, family background is also likely to affect where youths live and the choice of friends they are likely to have since parents of the same social status are likely to be friends therefore their children are more likely to meet more often and become accustomed to one another and this could lead to friendship, religious affiliation is also likely to affect choice of friendship since places of worship are also social meeting places, therefore children of parents of the same religious denomination are also likely to meet more often. Finally same sex friendship is likely to form more easily than opposite sex friendship this can also be attributable to situations where teenagers have to live in same sex dormitories in elementary school and probably in tertiary institutions making them more likely to run into each other quite often therefore such meetings may lead to friendship and social interaction thereby allowing us to express sociability below, as a function of the above stated factors.

Sociability (Soc) will now be a function of  $f$  (*schooling (Sch)*, *age (Age)*, *family background (Fam)*, *religious affiliation (Rel)* and *gender (Gend)*).

The model we estimate now becomes a

$$(1.) Soc_k = \alpha_1 Sch_k + \alpha_2 Age_k + \alpha_3 Fam_k + \alpha_4 Rel_k + \alpha_5 Gend_k + \epsilon_k$$

linear model where sociability depends on schooling, age, family background, religious affiliation and gender, other omitted variables that affect sociability are captured by the error term  $\epsilon_k$  where  $k$  is the index for youths. The method of estimation relied on is multivariate regression analysis.

## Data and sources

Questionnaires are used to measure the various degrees of sociability among in and out of school youths a host of question were asked some include, do you mix freely? Are you outgoing? Do you have a close friend? How spontaneously do you make friends? How long do you you're your last friend? Why did you end the friendships? Etc. In all a total of 200 respondents were interviewed at random, the male and female numbers interviewed were 100 respectively with 50 in school and 50 out of school.

The questionnaires also provide us with important information on gender, age, family background, schooling status and religious background of the respondent. The results obtained from the questions are converted into dummy variables assigning the value of 1 to questions where respondent agree and 0 to questions where they disagree. This allows us to capture the response measurement in a quantitative manner allowing us to gain insight on how various factors will affect sociability from a quantitative point of view. The data of dummies are available from the authors on request.

### **Empirical analysis and results**

In this section we present an argument why we believe that there exist a strong connection between schooling and youth sociability in Nigeria. The fundamental logic that we put forward is that schools provide children with the opportunity to spend time with each other conducting various activities from learning ,playing as well as imitating one another making the level of interaction in schools to be quite high compared to that of any other social or meeting place. It is therefore expected that schooling will affect sociability in a significant manner for in-school youths.

### **Results**

The table below show the response for some of the questions put forward in the questionnaire. It was found that about 60% of the respondent were willing to mix freely with their peers while, about the same number were also outgoing depending on the degree of freedom they were entitled to from their guardian. Most were likely to have friends of the same sex with 10% stating that they do not care about the sex of their friends. About 75% cared about having friends of the same age brackets preferring their close age mates as friends than those who are either senior or junior to them. Also about 75% were likely to attend social functions were it was likely that they can meet peers and interact with one another and share ideas. The implication of the results show that a host of factors are likely to affect the sociability variable while some are likely to improve sociability among youths others are likely to have a reducing effect on sociability some examples are the fact that youths are not likely to make friends spontaneously and are also likely to consider religion in the choice of choosing a friend causing them to reduce interaction with youths of different religious backgrounds.

Table 1. Total response for youths interviewed

| <i>Responses</i>                     | <i>Agree</i> | <i>Disagree</i> | <i>Indifferent</i> | <i>%<br/>agreed</i> | <i>%<br/>disagreed</i> | <i>%<br/>indifferent</i> |
|--------------------------------------|--------------|-----------------|--------------------|---------------------|------------------------|--------------------------|
| <i>Mix freely</i>                    | 120          | 40              | 40                 | 60                  | 20                     | 20                       |
| <i>Outgoing</i>                      | 120          | 80              | 0                  | 60                  | 40                     | 0                        |
| <i>Keep a close friend</i>           | 180          | 20              | 0                  | 90                  | 10                     | 0                        |
| <i>Spontaneously friendly</i>        | 70           | 120             | 10                 | 35                  | 60                     | 5                        |
| <i>Attend Social Function</i>        | 130          | 70              | 0                  | 75                  | 35                     | 0                        |
| <i>Have same sex friend</i>          | 180          | 0               | 20                 | 90                  | 0                      | 10                       |
| <i>Consider family background</i>    | 120          | 50              | 30                 | 60                  | 25                     | 15                       |
| <i>Consider same religion</i>        | 137          | 60              | 3                  | 68.5                | 30                     | 1.5                      |
| <i>Consider the same age bracket</i> | 130          | 10              | 60                 | 75                  | 5                      | 30                       |

Note: The total number of respondents is 200 with 50 randomly selected from in-school males, out of school male, in-school females and out of school females.

The results of the questionnaire for out of school female youths show that female youths out of school are less likely to interact with their peers compared to youths in school; they are also less likely to mix freely with only 49% out of school females stating they were willing to mix freely and about 58% agreeing that they were quite outgoing. Several factors were responsible for this it was likely that they were learning a hand trade making it less likely for them to have time to do so or that they were helping their parents out selling or farming. Those who were engaged in petty selling for their parents were found to be more sociable than those who were helping out in the farm.

Table 2. Total response for the questionnaire for out of school females

| <i>Responses</i>              | <i>Agree</i> | <i>Disagree</i> | <i>Indifferent</i> | <i>%<br/>agreed</i> | <i>%<br/>disagreed</i> | <i>%<br/>indifferent</i> |
|-------------------------------|--------------|-----------------|--------------------|---------------------|------------------------|--------------------------|
| <i>Mix freely</i>             | 49           | 30              | 21                 | 49                  | 30                     | 21                       |
| <i>Outgoing</i>               | 58           | 42              | 0                  | 58                  | 42                     | 0                        |
| <i>Keep a close friend</i>    | 85           | 15              | 0                  | 85                  | 15                     | 0                        |
| <i>Spontaneously friendly</i> | 40           | 50              | 10                 | 40                  | 50                     | 10                       |
| <i>Attend Social Function</i> | 40           | 60              | 0                  | 40                  | 60                     | 0                        |
| <i>Have same sex friend</i>   | 85           | 0               | 15                 | 85                  | 0                      | 15                       |

|                                      |    |    |    |    |    |    |
|--------------------------------------|----|----|----|----|----|----|
| <i>Consider family background</i>    | 50 | 25 | 15 | 50 | 25 | 15 |
| <i>Consider same religion</i>        | 60 | 38 | 2  | 60 | 38 | 2  |
| <i>Consider the same age bracket</i> | 50 | 5  | 45 | 50 | 5  | 45 |

Note: The total number of respondents is 200 with 50 randomly selected from in-school males, out of school male, in-school females and out of school females.

The results of the questionnaire for in-school female youths showed a higher level of sociability among in school female youths, this was however not surprising since they were likely to spend

Table 3. Total response for the questionnaire for in-school females

| <i>Responses</i>                     | <i>Agree</i> | <i>Disagree</i> | <i>indifferent</i> | <i>% agreed</i> | <i>% disagreed</i> | <i>% indifferent</i> |
|--------------------------------------|--------------|-----------------|--------------------|-----------------|--------------------|----------------------|
| <i>Mix freely</i>                    | 71           | 10              | 19                 | 71              | 10                 | 19                   |
| <i>Outgoing</i>                      | 68           | 32              | 0                  | 68              | 32                 | 0                    |
| <i>Keep a close friend</i>           | 95           | 5               | 0                  | 95              | 5                  | 0                    |
| <i>Spontaneously friendly</i>        | 30           | 70              | 0                  | 30              | 70                 | 0                    |
| <i>Attend Social Function</i>        | 90           | 10              | 0                  | 90              | 10                 | 0                    |
| <i>Have same sex friend</i>          | 95           | 0               | 5                  | 95              | 0                  | 5                    |
| <i>Consider family background</i>    | 70           | 25              | 5                  | 70              | 25                 | 5                    |
| <i>Consider same religion</i>        | 77           | 22              | 1                  | 77              | 22                 | 1                    |
| <i>Consider the same age bracket</i> | 80           | 5               | 15                 | 80              | 5                  | 15                   |

Note: The total number of respondents is 200 with 50 randomly selected from in-school males, out of school male, in-school females and out of school females.

More time interacting with one another through studying, playing and probably sharing lunch in school. The overall results for the in-school females show that they had a higher level of interaction than out of school females, while the case was not the same for males. The results for in-school and out of school males did not differ significantly. This is likely due to the fact that out of school males were probably less restricted while under parental or guardian control than out of school females.

### **Regression Results**

The result of the regression of the impact of schooling on youth sociability for all youths in the sample is presented in table 4 column 1. The result shows that age, family background and gender were important to their choice of friends and were affecting sociability ratings among youths in a positive significant manner. Youths were also mindful of individual religious

affiliation and this affected their choice of friendship and was limiting their willingness to interact with their peers of different religious background.

The result of the regression for out of school youths show that family background and gender were affecting choice of friendship see table 4 column 2. In-school youths were probably more concerned about individual family background and religious affiliation. Family background was found to have a weak significant effect on their choice of friendship while differences in religious affiliation was reducing interaction among youths significantly see table 4 column 3.

The impact of schooling on sociability ratings for in-school females was that schooling, common age brackets, family background, and gender consideration affected the choice of interaction for in-school females see table 4 column 4, while the case was the direct opposite for out of school females see table 4 column 5. The results for boys are left out for the sake of brevity as schooling had no significant effect on sociability for boys, however a negative co-efficient for out of school males was observed even though this result had little effect on sociability for males. The implications of these findings show that schooling was having strong effects on female sociability ratings in general since in-school youths were likely to mix more freely than out of school youths.

Table 4 Impact of schooling on youth sociability ratings

| Variables            | (1)<br>Sociability<br>All youths | (2)<br>Sociability<br>In-school<br>males | (3)<br>Sociability<br>Out of school<br>males | (4)<br>Sociability<br>In-school<br>females | (5)<br>Sociability<br>Out of school<br>females |
|----------------------|----------------------------------|--|--|--|--|
| Schooling            | 0.05<br>(0.07)                   | -0.13<br>(0.10)                          | -0.03<br>(0.12)                              | 0.16*<br>(0.09)                            | -0.08<br>(0.10)                                |
| Age                  | 0.20***<br>(0.07)                | 0.11<br>(0.12)                           | 0.15<br>(0.10)                               | 0.50***<br>(0.13)                          | 0.03<br>(0.10)                                 |
| Family<br>background | 0.32***<br>(0.07)                | 0.32***<br>(0.08)                        | 0.17*<br>(0.10)                              | 0.40***<br>(0.09)                          | 0.15<br>(0.11)                                 |
| Gender               | 0.18**<br>(0.08)                 | 0.54***<br>(0.10)                        | -0.18<br>(0.11)                              | 0.23**<br>(0.10)                           | 0.20<br>(0.12)                                 |
| Religion             | -0.13*<br>(0.07)                 | 0.08<br>(0.10)                           | -0.37***<br>(0.09)                           | -0.13<br>(0.10)                            | -0.16<br>(0.11)                                |
| Constant             | 0.19*<br>(0.10)                  | 0.07<br>(0.15)                           | 0.61***<br>(0.14)                            | -0.19<br>(0.16)                            | 0.41***<br>(0.15)                              |
| Observations         | 200                              | 50                                       | 50   | 50   | 50   |
| R-squared            | 0.16                             | 0.33                                     | 0.23   | 0.38                                       | 0.06   |

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Discussion

In this section we discuss the implication of the results for potential outcomes in adult behavior for youths under study. We rely on past literature already cited in this study particularly Shiner and Capsi (2003) and Wach (2004) who state that schooling is likely to have strong effects on the genetic adult behavior of individuals since schooling was probably promoting extraversion traits in youths and that the less sociable youths are in their formative years the likely that the lack of extraversion will have strong negative effects on their adult behavior, meaning the higher the likelihood they are going to exhibit dysfunctional behavioral traits in their adult stages of life. The results of this study portends that out of school youths and out of school females in particular are more likely to fall into this category since schooling is likely to be significant for their overall temperamental development and acceptance particularly in the Nigerian societal fabric.

Taking schooling seriously in the youth formative stages is likely to improve the overall behavioral composition of the larger society in the future as this could lead to less dysfunctional adult behavior, such as crime, bullying and other non conformist attitudes that adults are likely to exhibit, which could have been corrected earlier in their youth formative stages. The results of the study are also consistent with past findings that suggest strong evidence between childhood sociability and adult behavior Ozer and Benet-Martinez (2005) and that which states that moderate child stability is likely to have a strong effect on adult behavior DelVecchio and Robert (2000).

It is expected that the outcomes will be same for males even if the results we analyze do not show significant effect of schooling on sociability for males. It is likely that the out of school males in our population were probably engaged in some other form of informal training which was probably improving their sociability ratings better than those of the out of school females. Other factors also mentioned such as less parental control for males was also probably improving males sociability ratings in general. This was probably a major limitation in our study since we did not account for informal training or trade skill acquisition which was some form of informal schooling, rather we measured schooling from a formal western education style enrollment in public schools which was problematic and not a very good measure or representation of schooling for males.

## Conclusion

The study reflects on gender comparison and sociability ratings among youths. The extent to which schooling affects sociability ratings particularly for females within the ages of 10 to 30 years old was considered. It was found that, out of school females were probably less sociable than in-school females. Issues such as religious affiliations, age brackets, gender and

family backgrounds were taken into consideration by youths in their choice of friends and were probably factors that determined who they were likely to interact with.

The findings support previous findings by Wachs (2004) and Caspi, Shiner and Roberts (2005) who find a relation between children temperament and adult behavior, since schooling was also probably reducing gender discrimination among females because in-school females were probably less likely to be looked down upon and were also probably able to mix in a substantial manner with the rest of the female population.

The policy implication of the finding is that female education was probably quite important particularly in their early formative stages of life. This was also probably necessary in helping to build their self esteem which could have strong effects for their adult behavior since schooling is likely to improve qualities of extraversion in females.

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# USING HIGH-STAKES STANDARDIZED EXAMINATIONS FOR ESL STUDENTS: CHALLENGES > AND IMPLICATIONS

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## Abstract

While Alberta is serving a considerable number of English as a Second Language (ESL) <sup>1</sup> students, these students have been documented to be academically underrepresented compared to their native speaking peers. Within the framework of language policy and planning, this study examines the interplay between the macro and micro levels of the education system in relation to ESL students' educational outcomes. Through a one-year ethnographic study, the perceptions and practices of ESL students and their educators in a public school in Alberta were explored. The study explores the implications of using high-stakes standardized examinations as a key indicator of students' outcomes in Alberta.

The study suggests that the provincial achievement tests are not the most appropriate assessment tools to be used for ESL students due to the linguistic and cultural components of the tests. Moreover, these tests continue to impose undesirable changes in school programming and classroom instruction as long as they are dominantly applied in the education system to determine the students' outcomes and evaluate the performance of their schools. There is a need for alternative evaluation measures that could accommodate all students with different linguistic and cultural backgrounds.

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**Keywords:** Examinations, students

## Introduction

Canada is a leader in accommodating newcomers from diverse cultural, linguistic, social and economic backgrounds. According to the Census 2006, 20 percent of Canadians counted themselves as Allophones; people who speak a language other than English or French as their first language (Statistics Canada, 2007). An implication of this influx of immigrants is that ESL students comprise an integral part of Canadian school communities. In Alberta, the number of ESL students was estimated to be 37,300 students in 2006 (CBE<sup>2</sup>, 2006a; Howard Research and Management

Consulting Inc., 2006) and Calgary was reported to be the fourth largest city in Canada in terms of the number of immigrants and refugees it received (CBE, 2006a). It was estimated that 58 percent of the new ESL students in Alberta resided in Calgary (Howard Research and Management Consulting Inc., 2006). The population of ESL students in Calgary was estimated at 25,000 students in 2011, which represented 25 percent of the Calgary Board of Education's population (CBE, 2011). The percentage remained unchanged in 2013 (CBE, 2013a).

Learning experiences are different for ESL students compared to students whose native language is English. Their experiences are complicated by many factors, some of which can be considered advantageous, while others may create unique challenges (Alberta Education, 2007). In Alberta, extra help is offered to ESL students who are identified through a coding system. ESL support is provided to enable them to speak the English language fluently, further their education and make a productive contribution to the societies of both Alberta and Canada (Alberta Education, 2013a). The CBE states that the goal of ESL programming is to assist ESL students to reach success in regular academic programs of study (CBE, 2013b).

Within the framework of Language Policy and Planning (LPP), this article looks into the achievement levels of ESL students and the criteria commonly used for assessing their success in the province of Alberta.

### **Conceptual framework**

The discipline of LPP has evolved over the past 50 years (see Ricento, 2000 for discussion). Nekvapil (2011) referred to language planning as an academic discipline that developed "as a branch of sociolinguistics." Nekvapil elaborated on the historical evolution of language planning and argues that in its earlier form, language planning was described as "decision-making" about languages, their implementation and how it could be related to "social planning." The later critical turn in language planning tended to shape the discipline differently by bringing concepts such as social inequality, ideology and agency into the picture. This scholar goes on to add that the field developed to include the "macro" and "micro" dimensions of language management as well.

Chua and Baldauf (2011) also argued that language planning needs to include both macro and micro levels. They emphasize that micro level needs, goals, activities and conditions should be taken into consideration for effective language planning at the macro level.

In this article, I conceptualise the macro and micro level interactions in ESL education discourse within the LPP framework. To elaborate on this, I use the metaphor of an onion which was introduced by Ricento and

Hornberger (1996) to refer to the multi-layered nature of LPP and illustrates how the macro level official or non-official policies interact and interplay with the micro level domains including, classroom level interpretation and implementation of the policies. This article addresses the gap in language policy research that was pointed out by Ricento (2000) when he argued that LPP is not fully accounting for the interactions between the macro and micro levels. Ricento and Hornberger (1996) emphasize the role of classroom practitioners in the processes that lead to the implementation of language policies. Moreover, they suggest that looking into micro level practices and their interaction with macro level discourses can shed light on the multi-layered construct of LPP. This research intends to capture the interaction and interplay between the macro and micro level domains of ESL education, including the evaluation and assessment of ESL students' academic achievements and the notion of success for these students.

### **Macro level ESL discourse**

While celebrating the richness of the cultural heritage that Canada has embraced, the Canadian government aims to promote social cohesion by encouraging immigrant communities to enhance their level of social, cultural and economic integration, according to the Minister of Canadian Heritage, Status of Women and Official Languages and the Secretary of State (Multiculturalism and Canadian Identity) (Canadian Heritage, 2008). The essentialness of such integration was reiterated by the Minister of Citizenship, Immigration and Multiculturalism in a message where he referred to pluralism as “a pillar of Canadian society” (CIC<sup>3</sup>, 2011). Proficiency in one of Canada's official languages is one of the fundamental assets that new settlers should have in order to overcome the barriers that may exist on their way to integration. The Minister of Citizenship, Immigration and Multiculturalism referred to linguistic competence as “a pathway to socio economic integration” at the Eleventh National Metropolis Conference in Alberta (CIC, 2009a). In another of his speeches (CIC, 2009b), he emphasized that “language ability” is the “ultimate tool for” social, cultural and economic integration. While these speeches seem to primarily target adult settlers, the meaningful integration of younger generations of immigrants also depends on their mastering Canada's official languages. Having recognized the importance of language learning for young immigrants, the Government of Canada has provided supportive programs to help these students in school. A maximum of seven years of ESL instruction is provided for eligible ESL students in Alberta to help them achieve grade level expectations in regular subject areas (Alberta Education, 2007).

However, when it comes to ESL students' academic accomplishments, a shortage of studies on ESL students' educational

achievements has been noted. When it is available, research indicates that ESL students' academic outcomes are unsatisfactory (e.g., Ashworth, 1992; Duffy, 2005; Early, 1992). Derwing, DeCorby, Ichikawa and Jamieson (1999), Roessingh (2004) and Watt and Roessingh (2001) highlighted the higher dropout rate of ESL students and their lower performance on Provincial Achievement Tests (PATs) and Diploma Examinations (DEs) when compared to their Native English Speaker (NS) peers. On the provincial level, Howard Research and Management Consulting Inc. (2006) reported that NS students' achievement outcomes are generally higher than ESL students' academic results. This study found, for example, that "...NS students tend to maintain enrolment in the Alberta Education system, are more likely to be moved forward with their age peers, are more likely to complete PATs/DEs, and achieve at higher levels than ESL students at most grade levels" (Howard Research and Management Consulting Inc., 2006, p. 5). Another example is the Education Annual Report 2008-2009 in which the Deputy Minister (Alberta Education, 2009, p. 20) declared that the achievement results for ESL students were "below the results for the overall student population on a number of key indicators."

As it can be noted in the above examples, standardized tests have often been used to determine the educational outcomes of Alberta students. This article focuses on PATs which are administered at grades 3, 6 and 9. It is important to look into the role that PATs play in the educational system since they are frequently used as a key indicator of both NS and ESL students' achievement results at provincial and municipal levels (see CBE reports, 2005, 2006b, 2007, 2008 and 2009; Moffett and Wagner, 1992). Alberta Education (2012a) defines PATs as a tool for monitoring and evaluating province-wide standards of students' achievements. PATs are administered to help schools and parents be informed of the students' progress and evaluate the instructional outcomes of the programs offered by the schools (Alberta Education, 2013b). In other words, PATs are used as a "system-wide check" of students' achievements compared to provincial standards (Alberta Education, 2013c).

When it comes to ESL education, Alberta Education (2007) referred to PATs as both a placement and programming tool since these tests can provide detailed information about the students' English language proficiency. PATs results have also been used to evaluate the success rate of educational programs and systems. For example, while reporting higher PATs results for CBE ESL students relative to ESL students' provincial results, the Calgary Board of Education (2009, p. 5) quoted Assistant Deputy Minister, Dr. Jim Dueck who stated "these results demonstrate the CBE's success to the highest degree yet recorded. I believe the CBE has cause to celebrate."

Probing into the macro level discourse of Alberta Education, standardized tests function as one of the main tools used in Alberta to evaluate students' achievement results; a tool that documents the underachievement of ESL students at the municipal and provincial levels.

### **Micro level ESL discourse**

To examine the micro level discourse of ESL education, this article looks into the means of evaluating ESL students' achievement results by focusing on the role of the high-stakes standardized tests in the local level context. This article includes part of the data collected through a one-year (2010-2011) ethnographic research study conducted in a public school in Alberta. This school was selected as the study site mainly because it was mandated to exclusively serve the needs of ESL students.

The objective of conducting this study was to investigate the perceptions and daily experiences of ESL students and their educators at the local level of the school and to consider the ways in which the macro level discourse and the policies regulated at the macro level may influence the micro level practices. There was an interest in understanding how the macro level regulations are interpreted and implemented at the school level.

The participants in this study were comprised of 248 ESL designated students, 23 school educators, 27 parents and 14 people in other positions in the school; a total of 312 participants. The results of the study are interpreted from the data that was collected through field observation, interviews with the participants and analysis of the documents available on ESL education. Out of 248 student participants, 73 participated in individual and focus group interviews and others were involved in classroom observations and informal conversations.

Data analysis was conducted through typology and by producing taxonomies. The data collected through field observation and informal conversations with the study participants was used to form the guiding questions for interviews. The data obtained from the interviews was coded to produce patterns. Themes and categories emerged through saturation.

### **The participants' perception of PATs**

As mentioned earlier, PATs have a dominant role in the macro level discourse of education in Alberta and play a principal role in determining students' outcomes. Similarly, the significant role that PATs play in the educational system could be inferred from the interviews with the school's educators. They stated that PATs were used to demonstrate individual students' learning as well as the school's programming outcomes. Therefore, there was a clear need to prepare the students for the tests.

However, preparation for the PATs seemed to be a challenging task in the context of the school where the population was exclusively comprised of ESL designated students. All the interviewed educators and parents stated that ESL students needed additional support in their studies to be able to meet the requirements of the programs of studies. The majority of the interviewed students maintained that the one-on-one instruction provided in the school and the ESL strategies applied by the instructors played a significant role in their learning.

### **Impact of PATs on classroom instruction**

The interviews with the educators and the classroom observations indicated that classroom instruction for ESL students included content delivery of the subject area, as well as instruction of the language that carried the content. Therefore, preparing ESL students for PATs seemed to impose an additional challenge to the instructor. A grade 3 teacher explained, “English across the curriculum is integrating the language in all subjects as much as possible” thus raising concerns about not fully covering the curriculum in order to enhance the language surrounding it. He added that PATs preparation could put another constraint on the in-depth teaching of the curriculum. However, he explained:

*Unofficially, myself and a couple of other grade three teachers... we have agreed that we don't want to take away parts of the curriculum; we want to teach it as well done as possible, and the numbers that the school has posted in terms of the acceptable marks [... show] the fantastic progress that the kids have had, so ... In my idea, if you have a language focus, you can't spend so much time exclusively to choose test teaching... In a way, it is good because there is vocabulary and expressions that go with the test teaching but... but the more things you have to draw and teach, the more opportunities you have to integrate reading and writing and oral language as well.*

He added that it was important to prepare the students for PATs “by having them understand the instructions and being able to do some logical linking to figure out what was exactly being asked.” He explained the difficulties that the students might face while answering the test items:

*I have a higher group; so, their understanding of the concept is strong, but on the test when we are not monitoring their answers, they often get things wrong because they simply don't get the question. They need some help to reword the instructions for them or just tell them what to do. So, they are good readers. Most of their reading comprehension is quite high, but they are struggling and have trouble with instructions.*

He emphasized the role that vocabulary repertoire can play in an ESL student's performance. He suggested that vocabulary instructions should be "much more explicit and much more in depth" for ESL students.

The concern about English vocabulary was raised by the students as well. The majority of the students indicated that a lack of adequate knowledge of English vocabulary was a major area challenging them while learning the contents of a subject. Here are some quotes from the students explaining the difficulties that they faced due to their level of English vocabulary:

A student in Grade 5 explained:

*Sometimes my mom says me a word and I don't understand them. I usually know more words in Arabic and she tells me in Arabic and if I don't know she describes and defines those words.*

Several students in grade 1 mentioned that they might not understand all the words if the teacher talked fast. One of them said:

*You are not smart in words; you cannot figure out the problem.*

Another student added:

*If a teacher says something that you don't understand a big word, and she explains that, and you don't know what she's talking about; what could you do.*

A grade 5 student explained:

*Sometimes we don't know the words, then the sentence is confusing.*

The challenges that students faced due to the level of their English vocabulary were mentioned by the students at all grades. A grade 9 student noted: "... when it comes to social big words and science big words, I don't understand as much. That's why I have to go and ask teachers and they help me out."

The conversations with these ESL students and their teachers concur with the results of the studies conducted by Douglas (2010) and Roessingh (2010). Their research indicates a correlation between vocabulary repertoire and ESL students' academic success.

### **ESL students' preparation for PATs**

While the school educators raised concerns about the preparation for PATs resulting in an extra challenge on ESL education, they all stated that it was necessary to prepare the students for the tests. One of the grade 3 teachers referred to the outstanding results that the school had achieved that year in the grade 3 PATs. She emphasized that to achieve satisfactory results, it was essential to prepare the students for the tests by familiarizing them with the writing format of the tests and the grammatical structures that might appear on them. She added that the reading portion of the tests could create

more challenges than the writing part as the students might not have “enough language” to thoroughly comprehend the reading part. She explained that ESL students would often require a higher level of preparedness for the tests compared to their NS peers. She suggests that “intentional language teaching” and “repeated exposure” in terms of reading was necessary to familiarize these students with the vocabulary and the types of questions that might appear on the tests.

However, she stated that, despite such preparation, the results of the tests might vary, depending partly on the difficulty level of the tests each year. She added that it was important to assist the students in obtaining acceptable results since the parents regarded these tests as one of the main indicators of the students’ academic performance and improvement.

She restated that it would be possible for ESL students to perform well on PATs provided that both the teacher and the students make “extra effort.” However, in her final words, she added that PATs should be viewed as only one of the indicators of students’ achievements and that more attention needed to be paid to the emotional and personal factors influencing the students’ learning, such as motivation.

The extra pressure that PATs could put on ESL instruction was noted by the teachers of grades 6 and 9 as well. Moreover, they raised concerns in terms of the appropriateness of the standardized tests for ESL students. One of the middle school teachers suggested that PATs might create more challenges for ESL students relative to mainstream students as ESL students might not be able to relate to some of the themes or vocabulary appearing on the tests. These difficulties could result from the differences in the life experiences of these students and their degree of familiarity with Canadian culture and lifestyle. However, he stated that the students could be prepared for the PATs by using ESL/ELL strategies and differentiated instruction. He emphasized that ESL students should be taught to master the skills that are required for writing standardized tests beginning in kindergarten and continuing through post-secondary education.

One theme that emerged from the conversations with the educators was that the cultural content of the standardized tests might not be suitable for ESL students coming from diverse cultural backgrounds. A grade 9 teacher who could personally relate to the experiences of ESL students stated that PATs were not the most culturally appropriate tests for these students. However, he commented that the students had the potential to be well-prepared for the tests. He added that these tests could function as integration tools and ESL students had to be assessed based on the comprehensive system that was used “on the board” in the province. Moreover, he pointed out that developing alternative or supplementary assessment tools to evaluate ESL students’ achievement results might be another option to consider; but

standardizing alternative tests to assess both the mainstream and ESL students in a similar way might not be feasible. Therefore, he concluded that the main concern should probably be “whether PAT is the right path for everybody in the province.”

Another middle school instructor pointed out the same issue. She said that the tests’ incompatibility with ESL students’ cultural backgrounds stemmed from the fact that the tests were designed to target mainstream education students and that “the cultural piece [was] missing for these kids because some of them [didn’t] even engage in Canadian culture the way that mainstream students [did].” She added: “They are designed for just one group of the population; it is not representative of the whole population.”

She also pointed out another difficulty that ESL students might face when writing PATs. She said that these students often needed additional time for the reading comprehension part of the tests. She continued that it might take longer for ESL students to read, process and internalize the substance of the test items since these students might be “very literal,” and would often face difficulties in “comprehending the abstract contents of the tests.” She explained that “figurative language,” “sayings,” “proverbs” and “analogies” were the troublesome areas for these students, especially since these linguistic elements would often carry cultural themes as well. She noted that sometimes the amount of reading could be extensive for ESL students and they might not be able to finish the test, even if they were given extra time, which could be frustrating and discouraging for them. She hoped that the tests would be modified to address the needs of ESL students.

Another school educator who taught grades 6 and 8 science, commented that PATs are challenging for ESL students because they often know the concepts asked by the questions and their solutions, but it is the linguistic level of the test items that could prevent the students from performing well on the tests. However, she continued that, since the student population in the school was exclusively comprised of ESL learners, school programming was specifically geared towards teaching the language alongside the content. This programming has resulted in improvement in their ESL students’ performance on PATs.

Another teacher commented: “That’s a pressure ... And unfortunately when it comes to that provincials, it is not about ‘are we getting the kids ahead to learn’ ... It’s based on one test.”

Based on the educators’ comments, it appears that, while PATs are provincially accredited and applied, ESL students seem to be at a disadvantage compared to their NS peers when it comes to the cultural and linguistic components of the tests. Alberta Education (2007, p. 29) acknowledged this matter by stating, “Standardized tests for English speaking students are based on linguistic and cultural norms that are not

appropriate for ESL students.” Large-scale standardized tests have been questioned for their validity for ESL students as their content and types, as well as their contextual and cultural aspects, are designed and constructed for NS (Cheng, Klinger and Zheng, 2007, Kobayashi, 2002, Lee, 2002), PATs are no exception.

### **ESL education and application of PATs**

The school educators were questioned about positioning ESL students in relation to the tests and whether they would deem the tests necessary for these students. The interviewed teachers for grades 3, 6 and 9 stated that, as long as standardized tests were used as a key indicator of performance, ESL students should be given access to them like any other student. The school administrators expressed similar opinions.

One of the school administrators stated that PATs should be available to both mainstream and ESL students because he believed that “ELL students can do as well on the provincial achievement tests as any other child.” He continued that the school had proven ESL students’ potential to achieve outstanding results on PATs. He noted that preparing these learners for the tests and eventually for their successful integration into the mainstream education system was their role in the education system. He stated: “We need to support them so that they do well and I believe that we are seeing that type of success.”

Another school administrator also acknowledged the advantages of applying the standardized assessment tools, especially for the purpose of ascertaining that “teaching [was] happening at the standardized level” and that the curriculum guidelines were observed across the province. She believed that PATs should be available to ESL students to give them the opportunity to overcome that challenge. However, she pointed out that the tests might not be a fair assessment for students with low English proficiency levels. She added that the tests were not “the best assessment tools” and could be regarded as only “a part of the [student] portfolio;” one of the multiple indicators of students’ performance.

Looking into the education system at the school level, it can be inferred that standardized tests are regarded as one of the major factors in determining both the students’ outcomes and the school programming. ESL students require a greater understanding of the test requirements and should be prepared for the PATs through intentional instruction and specific supportive programming. Employing alternative and supplementary assessment tools, as well as multiple evaluation techniques for the evaluation of ESL students’ academic performance, were strongly recommended by the school’s educators.

## Discussion

Improving the students' achievement results and assisting them in reaching success have been the ultimate goals of Alberta's education system (Alberta Education, 2012b). In this province, the success rate in the students' achievement outcomes is often measured through standardized tests, including PATs. This article argues that the significant role that these tests play in determining the outcomes of educational programs and the students' learning results can have a major impact on planning and implementing school programming and classroom instruction. In other words, the policies and guidelines regulated at the macro level of the education system can influence and shape the daily practices of the educators at the local level of the schools, the educational experiences of the students and their parents' involvement and expectations. This concurs with Jardine (2005), whose research discussed how educators and students are affected by the constraints set by educational regulations. Jardine stated: "We often find ourselves put in the position of being subjected to school and state/provincial-level expectations which often do to us what we, in turn, are influenced to do to children" (p. 3). This study shows the influential role that PATs play at the macro level of educational discourse and, consequently, on the local level practices of school instructors.

Application of PATs as principal indicators of students' academic performance can lead to undesirable outcomes in the effectiveness of program delivery. Jardine (2000) quoted from teachers who expressed that they are in "constant tension" since they believe in "the effects that [their] decision has on [their] students each time [they] must choose to skim over helping [their] students learn in meaningful ways in order to teach so that [their] students will be well prepared and able to achieve high scores on their standardized provincial achievement tests" (p. 5). Jardine (2005) further relied on "Foucault's historical and philosophical analyses" and elaborated on the "conscious and unconscious" reactions that educators may show to "standardized curricula and standardized testing" and the "actual [negative] effects" of the tests on the education system.

While using high-stakes standardized tests are an increasingly common practice in many parts of North America, the validity issues of the tests have been questioned when they are used to evaluate the achievement results of students with special needs, including ESL learners. For example, application of standardized tests in the United States (Solórzano, 2008), Ontario (Cheng, et al., 2007) and British Columbia (Gunderson, 2007) have been identified as a factor creating extra challenges to ESL students' academic success, the performance of their instructors and the school programming. Standardised tests mandated by some provinces negatively impact second language acquisition in schools since teachers tend to deliver

the programs towards the needs of the tests, which may not correspond to the students' diverse needs (Jia, Eslami and Burlbaw, 2006; Meyers, 2006). This study confirms that the urge to accommodate the requirements of the tests may influence school programming. For example, classroom instruction may be geared towards test preparation at the expense of thorough curriculum delivery.

The appropriateness of the tests is also questioned by ESL educators in relation to the cultural and linguistic components of the tests. The study suggests that the life experiences of ESL students might be different from their NS peers since they may not have the same exposure to the mainstream linguistic and cultural norms. ESL populations can be at a disadvantage when it comes to writing standardized tests that are developed based on these norms.

While standardized tests have been questioned for their usefulness and fairness in evaluating ESL students' academic outcomes (Jia, Eslami and Burlbaw, 2006; Huang, 2008; Mahon, 2006), the participants in this study call for an alternative and more appropriate evaluation system for ESL students. However, assessment and evaluation of students with special needs, including ESL students, is a challenge for the education system as those populations are often not assessed appropriately and according to their specific needs (Wormeli, 2006). Eliciting the points of view of the stakeholders and experts in ESL education in Alberta, Howard Research and Management Consulting Inc. (2006) reported a lack of proper assessment tools which specifically address ESL students' needs.

In a study conducted in Alberta, Webber, Aitken, Lupart and Scott (2009) questioned the appropriateness of standardized tests when used as "league tables" for comparison purposes in the education system. While they referred to the vast range of available assessment practices applied in the province (see Webber et al., 2009), they emphasized the critical role that classroom teachers play in students' assessment and evaluation. They commented, "Most decision making about students' educational programming is premised upon the information generated by classroom teachers" (p. 1). The significant role that classroom educators can play in students' assessments was also stated by Jardine (2005). She stressed the importance that should be given to "the localized particular knowledge" of educators and the "differentiated knowledge" gained through teachers' day-to-day practices. Similarly, when it comes to ESL education, the teacher's assessment is one of the frequently suggested approaches for the evaluation of these students. Long-term, ongoing monitoring of ESL students' progress and their programming has been referred to as an alternative assessment (Jia, Eslami and Burlbaw, 2006; Lee, 2007; Ragan and Lesaux, 2006).

However, in their study, Webber et al. (2009) argued that “teachers in general are not proficient in student assessment practices in Alberta ...”(p. 6.) Moreover, Jia, Eslami and Burlbaw (2006) maintained that internal and external factors, such as state-wide standardized tests, parental expectations, number of students and materials, can influence teachers’ assessments of ESL students. The current study concurs that various factors, including parental expectations, policy requirements regarding PATs and time can have a significant impact on the teachers’ instructional practices.

There is evidently a need to develop alternative or supplementary assessment tools in the province. In this regard, Webber et al. (2009) suggested developing “a holistic framework for classroom assessment” in Alberta and recommended the use of differentiated assessment that could “accommodate the ability, social, cultural, and linguistic needs of every student” (p. 146). However, the call to develop evaluation measures which could be appropriately used in both the mainstream and special education continues.

## **Conclusion**

By looking at macro and micro levels of the education system, this study suggests that the policies and regulations set at the provincial or municipal levels are reflected in the daily practices of the students and their educators. By focusing on the role of standardized tests in the education system, this study shows that, as long as the macro level discourse acknowledges standardized tests as the prominent tool for evaluating educational outcomes, the educational practices at the local level of the schools should be adjusted to accommodate the preparation for the tests.

After carefully considering the role of standardized tests in the education of ESL students in Alberta, this study suggests that, while standardized tests could have potential benefits for the education system as defined by the objectives set for their application, they could lead to controversy when used to evaluate ESL students’ outcomes. The demands of the tests may impose undesirable changes in school and classroom programming which can affect the effectiveness of the instruction and the students’ learning. The tests are also questioned for their fairness in terms of their linguistic and cultural demands. Therefore, the application of these tests may lead to disproportionate representation of ESL students’ outcomes compared to their NS peers. This study suggests that it is necessary to create targeted support for these students in order to minimize the consequences of the irrelevant factors inherent in the tests.

ESL students are documented as one of the disadvantaged groups in the education system, especially when their academic achievements are compared to NS students. The under-representation of ESL students can be a

challenge for the ESL population, their parents, their school educators and the education system. To preserve ESL students' rights in having equal opportunities to education and improving the educational programs offered to them, more attention should be given to the local experiences of the students and their educators. The local requirements of these students need to be understood and met to facilitate their integration into Canadian society. This will guide the education system in reaching its ultimate goal, which is success for all students.

### Notes

<sup>1</sup>Discussions on English language education have often highlighted the complexities inherent in dichotic categorizations such as "ESL" versus "NS" (e.g. Davis, 2013; Phillipson, 2000; Ricento, 2005). In this article, the terms "ESL" and "NS" have been used with reference to Alberta Education and Calgary Board of Education's publicly available documents and the studies mentioned in the article. However, the author recognizes the highly heterogeneous characteristics of the student population.

The terms, ESL and ELL, have often been used interchangeably in the discourse of English language education (e.g. Batt, 2008; Ortmeiere-Hooper, 2008; Sandefur, Watson and Johnston, 2007). Since these two terms are often used synonymously in most documents published by Alberta Education and the Calgary Board of Education to refer to the same population and their education in Alberta (e.g. CBE, 2013a; LearnAlberta, n.d.), ESL is used as the umbrella term in this study to represent the ESL/ELL population.

<sup>2</sup>Calgary Board of Education (CBE)

<sup>3</sup>Citizenship and Immigration Canada (CIC)

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# COMPUTERIZED MATHEMATICS LESSONS

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## Abstract

E-learning will be gradually introduced to all schools and to all specialties including math lessons. Mathematics courses have increased flexibility and can be accessed from anywhere , anytime via computer linked to internet and web technologies.

Characteristics of e-learning in mathematics are : efficiency, immediate, large viewing opportunities , complete and rigorous calculations. These privileges technology offers new opportunities open up new horizons as agreed upon by more and more students. The technology honors two requirements of contemporary education: space and demography.

E-learning that has the same quality as traditional education, technology having negative influences on it except that it is a major change shape representation.

Formative and summative exemplify using WebCT , Web Course Tools through which the teacher provides the student to be read and assimilated with formative and summative evaluations tests.

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**Keywords:** E-learning, Internet, web, tests formative, summative assessment, interactive forms , virtual laboratories

## Introduction

E-learning will be gradually introduced to all schools and all specialties. It will be introduced to math lessons contradicting precept specialist teachers saying that this matter is done only by pencil and chalk.

In the rows below I list some advantages of e-learning in the mathematics lessons.

It can be said that e-learning offers opportunities for training courses and mathematics at all levels to create professional learning opportunities.

## Main Text

Possibilities for computing and development has met the math makes this a subject to be asked to be learned and used.

Malleability course via the Internet and web technologies makes math lessons can be accessed from anywhere and anytime

Once the technology development we are witnessing the improvement of communication with the student's teacher: at school, at home or on the Internet

Activities can be determined in common teacher student or group of students. Virtual group can have a greater number of students than conventional class. Virtual class is usually made up of students who access the Internet from home, work or a place with Internet access. Images and graphs help improve the course on the Internet. It is easier to handle and maintain than traditional book.

To submit materials for learning such as demonstrations of theorems and solve problems use web and video conferencing technologies.

Peculiarities of e-learning in mathematics are efficiency, immediate results, ways to view the complete and rigorous calculations. Math lessons are designed for e-learning solve equations, derivatives, integrals, graphs of functions and make geometric calculations. This range is used for demonstration lessons and training, formative and summative tests.

This creates both mathematics education and in the experimental new vision of e-learning.

Due to the development of software applications was possible the writing of code and data, was made mathematical problems in new forms.

It is studied practical and physical virtual systems design to be used in computer simulation and mathematical modeling. Are investigated, recorded and studied geometric structures realizing dynamic three-dimensional and four-dimensional images that include time.

To solve equations are unexpected source computer algebra systems.

These privileges technology offers new opportunities open up new horizons as agreed upon by more and more students. The demands of technology honors two contemporary education : space and demography.

Students we refer are far from places of instruction and their financial possibilities are low.

Traditional class becomes larger once resolved demographic demand to capture attention and cause students to study teacher was forced. Are used online interactive forms that occur with virtual laboratories and online interactive materials.

In addition to these requirements, current technology provides the ability self training so used in mathematics.

We can say that e-learning have the same quality as traditional education, technology having not negative influences, a major change is shape of representation.

As shown researchers Cohen and Ball quality education is conditioned by three factors: student, course and teacher.

We can say that proper training of students depends on the teacher, course and they tooth relationships.

The teacher takes care of course made available to students so that the matter can be learned easily and without obstacles.

To understand the mathematical problems and to solve them math teachers build on new technologies that graphs and figures are designed to emphasize key points which highlight the reasoning and the mathematical precision.

For a variety of problems are created images that lifted changes in a variable, confirming a solution or rotational parameters, translation or variation.

Representation of numerical symbols and geometric or algebraic calculation, or other area of mathematics is done by constructing precise figures which uses colors and hachures.

One problem or a theory is presented as algorithm sets using computer graphics and figures, thus clarifying the matter in question and made available.

The student is thus urging to individual study since the matter has been simplified to self-perfecting and to participate in the work of the house where he will make a substantial contribution.

A striking result of the training is recording work during lessons such as text and formatted materials and discussions and research conducted with students.

Traditional class work is lost, old sheet is removed, while still recorded in digital form work becoming an archive of math course that is an rich source of information for students who wish to review the course and learn on their own. It can be used by other students like the students who have been absent at the time surrendered the matter. Notably, the work of the class is to develop math teacher who often has mastery of mathematics and abilităși loving species

The work of the class is made under the guidance of math teacher who often has outstanding skills and abilities in mathematics

The work in the classroom can be accessed and manipulated. Students wishing to access these records can learn alone or in groups.

These requirements must be created electronically by the instructor, these students with access to the essence of the course will be able to understand the lesson. The training is more malleable and accessibil.

Due to the development of e-learning teacher communicate more easily with the students they are more motivated to learn than regular class.

Student -teacher link is established by email or web. Traditional course becomes easier and easier to assimilate. Traditional classroom is replaced by the virtual in all processes. For any questions students use the e-mail and the attach. A student - teacher discussion elearning platform can be taken by a third person being delineated as group discussions.

The discussion between student and teacher on an e-learning platform can be taken over by another person in a discussion group.

Students ask questions about what is not understood and so subject becomes repetitive, repetition being a feature of it.

Virtual course emphasizes the essence of which is marked by computer graphics and other technical means.

E-learning focus on students and groups of students which makes winning both student and teachers.

E-learning platforms, generally on sites that make e-learning a great importance is given to privacy and confidentiality

To assimilate the materials, we have at hand both formative and summative evaluation, that can be made using the computer.

Formative assessment is done throughout a course or project and is usually used to support learning. This form is accompanied by a student feedback. These forms of assessment are diagnostic tests. For example, if we are to Algebra, Algebraic Structures Chapter formative assessment can be done by presenting each concept. Thus the group structure definition and related theorems after which Construct a bank of questions from the lesson which includes problems and theory. The bank can be selected by evaluating computernizta 5, 6 or more questions to summarize the lesson.

Formative assessment is used by teachers taking into account teaching and individual work and class.

Summative assessment is usually conducted at the end of a course or project.

These assessments are used to assign student grades. Summative assessment are examinations that are meant to show that learning outcomes will then be made known to students, parents, and stakeholders.

Summative assessment is made at the end of a chapter of a semester in a course.

For example, if I finished chapter Algebraic structures can be summative questions to a bench comprising group theory and problems, ring, body from which the computer automatically selects a set of questions to be solved by the student.

Summative assessment is the so-called assessment to learn when formative assessment is an assessment that measures learning.

A form of formative assessment is diagnostic assessment. Diagnostic assessment measures the skills of a student in order to identify a suitable

program of learning, and also because this assessment can be set easily programmable still learning.

We can say that self- evaluation is a form of diagnosis, being tilizatã by students to assess themselves.

The assessment takes into account future hypothetical situations is called anticipatory evaluation.

Exemplify formative and summative assessment using WebCT, Web Course Tools through which the teacher provides the student to be read and assimilated with keywords, course objectives. Course topics are announced for that fall naturally from it and questions resulting from the course.

Examination using WebCT is online, the results are immediate.

Use WebCT has a number of privileges, among which note that students may know that they can take the test immediately after the end of the verification. The student is protected from arbitrary and subjective process in assessing his knowledge. We recall here that the student has access throughout the session to book online notes are listed materials from the session at which exams, date and time set for this time of completion.

On completing the test the students with extra comfort on the computer screen displayed the time passed from the start of the test and the time remaining to complete the degree grids at a time and the opportunity to return to a response and change. WebCT also gives teachers opportunities to review teachers comfortable multiple and complex. Making up test questions are selected at random with little chance of occurring again at the bank next door neighbor. The questions are constructed, usually a professor bench complex questions, varied and numerous.

In the WebCT find ways of testing students' knowledge through a variety of methods to review recall here some of the large number of categories of grills that it provides. The grid mention true / false used to check if the student has retained some important clarifications course that answer "true" and "false ". Thus chapter after body structure algebraic structures can be formulated for the bank of questions, questions like " Answer true or false to the question: a body is a structure defined as a ring algebraic  $K$   $1 \neq 0$  such that  $\forall x \in K, x \neq 0$  is reversed. "

Another important scale is category choose the correct multiple - choice that puts the student in a position to choose from a range of responses appropriate question the version proposed by the teacher. This option can be used to recognize partial values obtained by the student in solving a math problems and the value or final values .

Here remember matching grille that emphasizes knowledge

Regarding student learned concepts that have to fit in a variety of ways. We can use the knowledge taught and fixed partial results and the final results.

To check how well students have learned the material available to teachers and grid completion the student completes the blanks with appropriate words from the material studied.

A grid is important for Numeric Response mathematicians whose replies are natural numbers, integers, real specific math course.

Work and life is changed by technology in all stances, web and email is irreplaceable. For these blessings of technology must consider what we avantage for math instruction during class, maintaining the current quality of education that goes hand in hand with progress.

### **Conclusion**

E-learning have the same quality as traditional education, technology having not negative influences, a major change is shape of representation.

E-learning will solve two problems that traditional invatamtul not solve, namely: reducing the distance between the school and the student and increasing class of students that need population explosion

Math lesson is introduced with the technology platforms for e-learnig using enhanced graphics and computing capabilities and forms of formative assessment and summative assessment but remains in electronic form.

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**William D. Graziadei, Sharon Gallagher, Ronald N. Brown, Joseph Sasiadek  
Building Asynchronous and Synchronous Teaching-Learning Environments:  
Exploring a Course/Classroom Management System Solution**

# DIFFERENCES IN VISUAL WORKING MEMORY AMONG STUDENTS

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## Abstract

The visual working memory serves as the basis for cognitive processes. Precisely because it forms the basis for cognitive processes in learning, it is of interest to us as teachers to gain greater insight into the possible differences and similarities among students of different specializations. We therefore wanted to see if there are differences between students in the humanities disciplines and students of the science disciplines when it comes to issues of visual working memory. We were based on students at two colleges in Norway, and everyone who participated in the study completed a computer-based test developed by Andreassen at the Department of Psychiatry at Vestfold Hospital (2013). The starting point was the following question: Is it possible to find differences in visual working memory in students of science and humanities disciplines?

We found significant differences. Students in science disciplines score better on visual short-term memory for concrete and abstract. We found also that the spread among the students of humanities disciplines is greater than among students of science studies. There is a need for more studies in order to know if extent learning to use strategies can improve the visual working memory of students who score low on this type of testing.

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**Keywords:** Visual working memory, students, humanities disciplines, science disciplines

## Introduction

Visual working memory (VWM) is the short-term memory system that maintains visual representations of stimulus inputs. It serves as a foundation for numerous cognitive processes and tasks, including the ability to locate targets embedded in distractors, to comprehend and reason about visual displays, and to detect changes in visual scenes. (Donkin et

al.2013:873). Since visual working memory forms the basis of cognitive processes, we believe that it is relevant for teachers to gain further insight into differences and similarities that may exist between the abilities of students from different fields to make use of functional strategies.

Donkin and Shiffrin (2013) note that working memory in the short term is a memory system that maintains visual representations of stimulus inputs, and serves as the basis for a variety of cognitive processes and tasks. According to Hollingworth and Maxcey-Richard (2013:1047), there is a close link between visual working memory and visual attention. They show that visual working memory supports the brief maintenance of multiple visual representations of interference in perceptual input, and that visual attention can be understood as a mechanism that selects one or more sites containing relevant perceptual information of the image.

Using a test for visual working memory, developed (2013) by neuropsychologist, Tor Herman Andreassen, at the Department of Psychiatry at Vestfold Hospital, we wanted to investigate the possibility of detecting differences between Natural Sciences students and Humanities students. We decided to base our study on four groups of students from two Norwegian university colleges. Our aim was to investigate whether we could find differences in visual working memory between sciences students and humanities students.

## **Method**

The study was conducted at two University Colleges, with a sampling size of 131 participants. The sample consisted of two groups of students: one group consisted of Natural Sciences students (N = 48), and the other humanities students (N = 83). The data was analysed using SPSS.

The participants received information about the test and what we hoped to achieve with the results. The study was based on voluntary, informed participation. All the participants signed an agreement of participation, and were informed that they could withdraw from the tests at any time without stating a reason and without this having any consequences for them.

Participants were presented with a computer screen containing 20 black squares and were told that they would be asked to link the squares in pairs: first images of concrete objects (different coloured socks) followed by abstract shapes. The images were revealed when participants turned the cards. If a pair was found, the cards remained turned. The test was repeated five times, and the images (both concrete and abstract) stayed in the same positions. When the first round had been completed, participants were shown the images for eight seconds.

Having been shown five sets showing concrete objects, participants were shown five sets with abstract shapes. After five minutes, they were again shown two sets with the same concrete images followed by two sets with the same abstract images. The time taken by each participant to complete the tasks was registered automatically, as well as the number of moves needed to complete the task.

The scheduling of the tests was determined by the availability of the computer rooms. The tests were conducted over a period of five days. Virtually all the students in the selected study groups agreed to participate in the tests (91% positive response).

### **Presentation and analysis of the findings**

The empirical findings are presented by mean scores for the variables, standard deviation, mean differences between analysis groups, and the effect size (ES) (Cohen, 1992).

The calculation of ES is based on standard deviation of mean score (M) in the two samples, in the following way:

Effect size =  $(\text{mean}_B - \text{mean}_A) / \text{sum of standard deviations}$

The calculation of the significance of effect size is shown by Hattie (2009:9) according to the following groupings:

- ES < 0.2 implies no effect.
- ES between 0.2 and 0.4 implies low effect.
- ES > 0.4 and < 0.6 implies moderate effect.
- ES > 0.6 implies high effect.

Hattie (2009) uses these measures of effect size in analysing pupil achievement in schools and states that these ranges should be considered as guidelines that must be interpreted within each specific context and situation.

Mean difference (MD) and effect size are presented such that a positive number points to the first main column (marked "Concretes") and a negative number indicates the second column (marked "Abstracts").

### **Concrete vs. abstract images**

We wanted to see if there were any differences between the different groups of students in terms of their visual memory ability when recalling abstract images and concrete images. Participants spent longer on abstract than concrete images (MD = 17.725). This difference was moderately significant with an effect size of 0.705. The mean difference for the number of times the cards were turned is lower (MD = 11.438), but when effect size is calculated, the value is high (ES = 1.276), which can be attributed to a wider variance in the student group for the abstract images than the concrete.

Students seem to spend longer looking at the abstract images than at the concrete images, suggesting that the concrete images are easier to remember than the abstract images.

All:concrete images vs. abstract images

| concrete images vs. abstract images |                 |     |                |                 |     |                |                 |                       |                        |
|-------------------------------------|-----------------|-----|----------------|-----------------|-----|----------------|-----------------|-----------------------|------------------------|
| Variables                           | concrete images |     |                | abstract images |     |                | Mean difference | Pooled Std. Deviation | Effect Size (Cohens d) |
|                                     | Mean            | N   | Std. Deviation | Mean            | N   | Std. Deviation |                 |                       |                        |
| Time                                | 49,214          | 131 | 19,018         | 65,939          | 131 | 27,642         | 16,725**        | 23,725                | 0,705                  |
| Moves                               | 38,482          | 131 | 10,952         | 49,921          | 131 | 14,199         | 11,438**        | 8,966                 | 1,276                  |

\* $p > 0,05$ , \*\* $p > 0,01$

This indicates that abstract images are more difficult to remember than concrete images, thus measuring a different variable. It is not particularly surprising that it is easier to remember concrete images than abstract images. It is easier to connect colours since participants already have created a rule for this connection; they have prior experience of making this type of connection and therefore make a faster connection. The abstract shapes initially appear meaningless for the majority of participants. Here the task depends on creating an effective strategy for coding, making it easier to recall matches and differences.

Studies on visual working memory indicate that units of memory representations are linked to objects (Vogel, Woodman & Luck 2001, Gajewski & Brockmole 2006). Luck and Vogel (1997) discovered that observers are equally good at recalling single objects that vary according to four functions (colour, size, direction and shape), as objects that vary according to a single function only (just colour or direction).

### Humanities vs. Natural Sciences – concrete images

We also wished to discover whether we could find significant differences between Natural Sciences students and Humanities students in terms of visual memory of concrete images.

For concrete images, Humanities students needed longer (MD = -10.051, ES = -0.579) than the Natural Sciences students. However, the Humanities students made fewer moves than the Science students. This indicates that science students are better able to recall concrete images than humanities students, whereas the humanities students used fewer moves, indicating that they spent longer looking at each image.

Concrete images: Humanities students vs. sciences students

| concrete images |                     |    |                |                           |    |                |                 |                           |                        |
|-----------------|---------------------|----|----------------|---------------------------|----|----------------|-----------------|---------------------------|------------------------|
|                 | Humanities students |    |                | Natural Sciences students |    |                |                 |                           |                        |
| Variables       | Mean                | N  | Std. Deviation | Mean                      | N  | Std. Deviation | Mean difference | Pooled Standard Deviation | Effect Size (Cohens d) |
| Time            | 52,896              | 83 | 21,095         | 42,846                    | 48 | 12,596         | -10,051**       | 17,373                    | -0,579                 |
| Moves           | 36,467              | 83 | 9,309          | 41,967                    | 48 | 12,69          | 5,499**         | 7,869                     | 0,699                  |

\* $p > 0,05$ , \*\* $p > 0,01$

When recalling concrete images, it is probable that the ability to code colours was useful. Connecting colours is a relatively simple task since participants already have developed rules for this; they have prior experience of making this type of connection and therefore understand more quickly what they should look for. Most people initially find the abstract images meaningless; here the challenge is to develop an effective way of coding these images and a strategy for remembering them.

Brady et al., (2013:791) show that when we perceive a visual scene, we experience an organized and coherent set of objects and surfaces, not the disjointed patches of colour or light that fall on the retina. We also appear to remember coherent, meaningful units. Moments after perceiving a living room, for example, we might remember seeing objects such as a chair, a cup and a picture. In our subjective experience, it may seem that we perceive and remember each object as a coherent and integrated unit. However, a central question at the core of object representation is whether an object is actually represented as a completely bound unit, or whether it is represented with separable properties or dimensions.

### Humanities vs. sciences – abstract images

When we consider the time variable, the Humanities students used significantly longer time ( $MD = -24.019$ ), as also reflected in the high negative effect size ( $ES = -1.01$ ).

We discovered that the Science students turned the cards more times ( $MD = 0.231$ ), but the effect size is insignificantly low ( $ES = 0.023$ ).

There are several possible explanations for this, but we believe the reason to be that with the concrete images, where additional information is available in terms of colour, time is not considered to be as important. This implies that time is a more important factor when remembering visual abstracts.

Abstract images: Humanities students vs. sciences students

| abstract images |                     |    |                |                           |    |                |                 |                           |                        |
|-----------------|---------------------|----|----------------|---------------------------|----|----------------|-----------------|---------------------------|------------------------|
| Variables       | Humanities students |    |                | Natural Sciences students |    |                | Mean difference | Pooled Standard Deviation | Effect Size (Cohens d) |
|                 | Mean                | N  | Std. Deviation | Mean                      | N  | Std. Deviation |                 |                           |                        |
| Time            | 74,74               | 83 | 28,621         | 50,721                    | 48 | 17,635         | -24,019**       | 23,771                    | -1,01                  |
| Moves           | 49,836              | 83 | 14,858         | 50,067                    | 48 | 13,134         | 0,231           | 9,915                     | 0,023                  |

\*p&gt;0,05, \*\*p&gt;0,01

When we consider abstract shapes that are initially perceived as meaningless by most participants, the challenge lies in discovering an effective method for coding, or a functional strategy for remembering the images more easily. Metacognitive learning strategies are not just about the ability to vary learning strategies, but also about finding individual solutions. In this context, this refers to the participants' ability to make associations, with various degrees of creativity, which in turn requires a high level of cognitive activity.

Metcalfe and Kornells (2005) discovered that students put aside parts of their syllabus they consider to be most difficult, in order to first focus on what they believe will be easiest to learn. In other words, students focus first on tasks they see as surmountable, but which require a little effort (zone of proximal development). The learning process thus entails a degree of selection or ranking.

The distinction between cognitive and metacognitive learning strategies may be somewhat unclear. However, Samuelsen (2005) points out that cognitive learning strategies emphasise the cognitive activities associated with the relevant task. These are strategies we use to acquire, organise and expand information in order to create meaning. An example of this would be memorization strategies based on previous knowledge. For example, if the participants had been familiar with Chinese characters, they would have been better skilled at associating the abstract images with words and meanings.

### Visual short-term memory vs. visual working memory

When we compare visual short-term memory with visual working memory, we see a significant difference only for the group as a whole when considering the concrete images (MD = 2.034). This means that participants used less time for the second test than for the first. However, this only gives a weak effect size (ES = 0.155). When the group is divided according to what they study, and when we look at the results for abstract images, there is no significant difference.

Natural Sciences students display better visual memory scores for concrete images than abstract symbols. This may be partially explained by the fact that these participants were more experienced in using computers and computer games and therefore had shorter reaction times than the Humanities students.

Concretes vs. abstracts:short-term memory vs. working memory

|                 | Variables   | short-term memory |     |                | working memory |     |                | Mean difference | Fouere | Effect Size (Cohens d) |
|-----------------|-------------|-------------------|-----|----------------|----------------|-----|----------------|-----------------|--------|------------------------|
|                 |             | Mean              | N   | Std. Deviation | Mean           | N   | Std. Deviation |                 |        |                        |
| concrete images | Alle        | 35,824            | 131 | 13,67          | 33,79          | 131 | 12,617         | -2,034*         | 13,154 | -0,155                 |
|                 | Humanistisk | 38,319            | 83  | 14,027         | 36,614         | 83  | 13,616         | -1,705          | 13,823 | -0,123                 |
|                 | Realfag     | 31,51             | 48  | 11,981         | 28,906         | 48  | 8,856          | -2,604          | 10,535 | -0,247                 |
| abstract images | Alle        | 47,813            | 131 | 23,791         | 45,531         | 131 | 20,267         | -2,282          | 22,099 | -0,103                 |
|                 | Humanistisk | 54,554            | 83  | 24,521         | 51,048         | 83  | 21,2           | -3,506          | 22,921 | -0,153                 |
|                 | Realfag     | 36,156            | 48  | 17,249         | 35,99          | 48  | 14,326         | -0,167          | 11,211 | -0,015                 |

\* $p > 0,05$ , \*\* $p > 0,01$

We see that when the humanities students spent more time, the differences decreased. They looked at the images for a longer period of time; this applied particularly to the abstract symbols. This seems to affect how well they remembered what they saw. Atkinson and Shiffrin (1971) also discovered that slower presentation results in better recall.

In time, the sciences students similarly scored better on remembering concrete images. This means that they remember concrete images better than the Humanities students. The Humanities students needed fewer attempts, but more time. This means that, for concrete images, they too spent longer looking at each image.

It is possible that time may be significant in connection with visual working memory, but we cannot conclude this with any certainty. When it comes to students spending more time on each image, this may be related to them "coding" the information as they look at it.

This may suggest that humanities students develop a less functional learning or recall strategy than science students, but further study is necessary before any such conclusions can be reached.

### Summary of findings

- There are differences related to visual working memory between humanities students and sciences students.
- Sciences students score better on visual working memory for both concrete and abstract images.
- There is a greater spread within the group of humanities students than the sciences students.

- All the participants spend more time on the abstract tests than the concrete tests.

### **Method Limitations**

Motivation for learning and interest for the subject matter are important factors in relation to learning and memory. In this study we have eliminated these factors by developing a test we believe to be equally meaningless for all the participants.

Bruner (1960) shows that in an ideal setup, interest for what is being learned is the best motivation for learning. There is every reason to question the participants' motivation for doing their best in the tests in this study. They may have been better motivated if they had been offered the possibility of seeing their own results afterwards. Several of the participants expressed an interest in receiving feedback, but this was not possible. To ensure anonymity, we did not register the participants' names, meaning that we were unable to provide information on individual profiles.

Some of the participants failed to understand that the concrete images and abstract images were placed in the same positions each time the tests were repeated. Those who understood this naturally did better on the tests.

Eisenberger and Cameron (1996) have discovered that external encouragement undermines internal motivation. There is a possibility that the students took part in the tests to assist us, meaning that their inner motivation may not have been optimal. This would reduce the validity of our findings. However, the situation was identical for all participants, and there is no reason to believe that sciences students are more or less motivated to complete the tests than the humanities students. This is reinforced by the fact that there is very little variance in the results from the sciences students.

It may also be possible that the results are affected by psychological factors such as Natural Sciences students being more competitive than humanities students, there being a higher percentage of male participants in the group of sciences students. We could have gained greater insight into this if we had chosen to take gender differences into consideration. However, this was not realistic since the numbers of male humanities students and female sciences students were far too low. The students had already chosen what to study based on their own interests and priorities, so it would be uncertain whether any differences could be attributed to gender or individual differences related to the choice of studies.

### **Conclusion**

One method of measuring cognitive ability is to look at the ability to recall information in both the short term and long term. This does not only depend on heredity and environment, but also on maturity and on associative

and strategic thinking skills. Alexander et. al. (1998:130) shows that learning strategies are characterised by being purposeful, willful and effortful, and that the ability to use different strategies is related to a form of metacognitive control.

Whereas metacognition refers to a level of awareness of how one thinks, a metacognitive learning strategy is related more to the effectiveness of cognitive learning strategies.

Metacognitive learning strategies also refer to the ability to switch between using different strategies. Zimmerman (2002) shows that self-regulated learning strategies enable a higher degree of active participation in one's own learning processes. However, De Corte (2003) shows that any form of preparation for future learning should be seen as a form for transference, and that in this context, transference means the degree to which students are able to use functional strategies that may be transferred to concrete learning situations.

Even though visual working memory is affected by individual differences, the picture is more complex than this. Hollingworth and Maxcey-Richard (2013: 1056) write that the idea that selective maintenance in VWM is equivalent to sustained visual attention is attractive, but it neglects the flexibility, complexity, and representational diversity of the systems involved.

A greater understanding of how visual working memory may be affected by the time factor would be useful. In order to prepare for learning, greater insight into ways in which students can improve their visual working memory is also highly relevant. Is it possible that greater awareness of the use of strategies may assist in memory processes? If we investigate this topic more closely, it would be preferable to use humanities students since these displayed the greatest variation within the total group.

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# ACADEMIC PERSEVERANCE, CLASS ATTENDANCE AND STUDENTS' ACADEMIC ENGAGEMENT: A CORRELATIONAL STUDY

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## Abstract

The study investigated academic perseverance and class attendance as correlates of students' academic engagement among secondary school students in Ogun State. The study adopted survey design of ex-post-facto type.

Three instruments were used with one adopted and two designed by the researcher.

200 students participated in the study. Three hypotheses were formulated and tested at 0.05 level of significance using Pearson Product Correlation Matrix statistical method.

The study revealed among others that

- (i) there is significant relationship between academic perseverance and academic engagement.
- (ii) there is relationship between class attendance and academic engagement.

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**Keywords:** Academic Perseverance, Class Attendance, Academic Engagement, Ogun State

## Introduction

Education is a corner stone upon which the development and growth of any country is dependent upon. Any country that wants to develop should pay adequate attention to the education of her citizen. This probably made the Nigerian government at all levels paid special attention to the provision of educational opportunities to all Nigerians irrespective of tribe or location. The National Policy on Education (2004) confirmed that education is an instrument for effecting national development. In spite of this, the attitude of Nigerian students towards education had left much to be desired. Many students were in school not necessarily because they were committed but just to please their parents or guardians. This led them into not being seriously involved in school activities otherwise referred to as academic engagement in

this study. Non committance of many of the students led to abysmal performance that had been source of concern to all stake holders in education (Fakunle 2010).

Academic engagement is the time and energy that students devote to educationally sound activities inside and outside of classroom and the policies and practices that the schools use to include students to take part in the activities (Kuh 2003).

Academic engagement are behaviours that signal serious psychological investment in class work which include being attentive in class, doing the assigned works, taking initiatives to raise and ask questions, partake in group activities and regular attendance at class. Academic engagement had been found positively related to objective and subjective measures of gain in general abilities and critical thinking (Hn&Resper 2000; Pike, Kuh and Gonyen 2003). This implies that for any student to benefit immensely from school academic activities, such student should be academically involved.

Moreso, Aderson, Christenson and Lehr (2005), found out that parents have pivotal role to play in vostering their wards academic engagement (Ukwueze 2010) observed that bearing becomes effective process through listening, writing, asking question and contributing to discussion, brainstorming and working in group under the guidance of a teacher. This suggests that teachers also has role to play in enhancing students academic engagement. No wonder that Onyechere 2010 observed that students failure in external examinations could not be blamed on the students alone but also on teachers and other stake holders.

This notwithstanding, students themselves are more concerned and involved in the enhancement of their academic engagement than any other person. For any student to be involved in academic activities, such student should attend class, which possibly explains why class attendance is also considered in this study.

Class attendance is ability of students to be physically and psychologically present in the classroom. The student should be seen in class at the same time his/her soul should also be present. It is possible for student to be present but his/her mind be somewhere else or that the student engages in other things like, gisting, playing or copying note with little or no attention being paid to the teacher. Regular attendance in class in school (Chung 2004). It is an obvious fact that students that miss too many classes might not perform well academically.

Caviglia-Haris (2004) investigated that impact of mandatory attendance policy on students grades and found out positive impact.

Very close to class attendance is the academic perseverance on the part of the student. Kwong, Mokand Kwong (1997) defined perseverance at

the ability of an individual to endure in the presence of deterrents. It is an attempt of an individual to press further inspite of difficulties. Academic perseverance therefore is the extent to which a student could continue engaging in academic activities inspite if difficulties or obstacles.

Mok and Kwong (1999) observed that persistence could be understood interms of individuals motivation, deterrents, personal dispositions, attitude, beliefs, social economic status etc.

Furrer and Skinner (2003) found out that teachers could influence student motivation thus improving student's perseverance through classroom reward structure. Apart from this, the type of people the students interacts with within the school setting could enhance both the class attendance and perseverance. This position is in line with Pieice and Sarason (1990) confirmed others acts as buffer to allowing people to show more self-reliance and tenacity in the face of obstacle.

Anderman (1999) concluded that feeling of relatedness, quality of teacher-student relationship, feeling of belongings, inclusion acceptance, interpersonal support have been found to be related to important academic outcomes which include self-efficacy, success expectation, achievement values, positive effect, interest in school and school engagement.

From the foregoing, it is obvious that many scholars had examined variables like, class attendance, perseverance and academic engagement.

However, non of the related literatures combined class attendance and perseverance to test their relationship with academic engagement as in this study. It is with this view in mind that this study set out to investigate whether there is correlation between academic perseverance, class attendance and academic engagement among senior secondary school students in Ijebu-North Local Government Area of Ogun State.

It was hypothesized that:

- (i) There is significant relationship between academic perseverance and academic engagement.
- (ii) There is relationship between class attendance and academic engagement.
- (iii) There is significant relationship between class attendance and academic perseverance.

## **Method**

### **Design**

The study adopted a descriptive survey research of expost-facto type. This is because the researcher is just interested in the interaction between the predictor variables and the criterion variable.

## **Sample**

The target population for this study include all the senior secondary school students in Ijebu-North Local Government area of Ogun State. A sample of 200 students were randomly drawn from 10 randomly selected secondary school among 19 senior secondary schools in the local government area.

It follows from the above that 20 students were randomly selected from each of the schools.

## **Instrumentation**

The study adopted three research instruments:

Academic engagement scale designed by (Joreskog 1971) and confirmed as valid by March &O'Nell 1984 was adopted to collect information on academic engagement of students. It was an 11 items of 5 point likert scale type. The scale has reliability index of 0.72.

Academic perseverance and class attendance questionnaires were self designed by the researcher. Academic perseverance has 8 items while class engagement contained 15 items. These instruments were initially 15 items each making 30 items, but after the two were subjected to factor structure, only 23 items reported earlier survived and those were the one used for the study.

Test-retest reliability was adopted for pilot study on 40 students who were not part of the selected sample but has the same characteristics with the sample. After two weeks, the retest was done and the results revealed 0.81, 0.68 respectively.

## **Procedure**

The researcher visited the selected schools by himself, to administer the questionnaire on the first 20 SSS class students in each school. The fact that the administration was done by the researcher who guided the respondents and collect the questionnaire back after filling made 100% success possible in retrieving the instruments. The data collected were analysed using Pearson product correlation statistical method.

## Result

Table 1: Correlation matrix of the relations between academic perseverance and academic engagement.

|                       |                 | Academic Perseverance | Academic Engagement |
|-----------------------|-----------------|-----------------------|---------------------|
| Academic Perseverance | Pearson         | 1                     | .551(**)            |
|                       | Sig. (2-tailed) |                       | .000                |
|                       | N               | 200                   | 200                 |
| Academic Engagement   | Pearson         | .551(**)              | 1                   |
|                       | Sig. (2-tailed) | .000                  |                     |
|                       | N               | 200                   | 200                 |

\*\* Correlation is significant at the 0.01 level (2 tailed).

Results in Table 1 above revealed that there is a significant relationship between academic perseverance and academic engagement ( $r=.551$ ;  $p<0.5$ ); the implication of this finding is that the higher the academic perseverance, the higher the academic engagement and the lower the academic engagement, the lower the academic perseverance.

Table 2: Correlation Matrix of the Relations between class attendance and academic engagement.

|                     |                 | Class Attendance | Academic Engagement |
|---------------------|-----------------|------------------|---------------------|
| Class Attendance    | Pearson         | 1                | .616(**)            |
|                     | Sig. (2-tailed) |                  | .000                |
|                     | N               | 200              | 200                 |
| Academic Engagement | Pearson         | .616(**)         | 1                   |
|                     | Sig. (2-tailed) | .000             |                     |
|                     | N               | 200              | 200                 |

\*\*Correlation is significant at the 0.01 level (2-tailed).

From the results in Table 2 above it was revealed that there is a significant relationship between class attendance and academic engagement ( $r=.616$ ;  $p<.05$ ); the implication of this finding is that the higher the class attendance, the higher the academic engagement and vice versa.

Table 3: Correlation Matrix of the Relations between class attendance and academic perseverance.

|                       |                 | Class Attendance | Academic Perseverance |
|-----------------------|-----------------|------------------|-----------------------|
| Class Attendance      | Pearson         | 1                | .473(**)              |
|                       | Sig. (2-tailed) |                  | .000                  |
|                       | N               | 200              | 200                   |
| Academic Perseverance | Pearson         | .473(**)         | 1                     |
|                       | Sig. (2-tailed) | .000             |                       |
|                       | N               | 200              | 200                   |

\*\*Correlation is significant at the 0.01 level (2-tailed)

From Table 3 above, the result stated that there is a significant relationship between class attendance and academic perseverance ( $r=.473$ ;  $p<.05$ ); the implication of this finding is that the higher the class attendance, the higher the academic perseverance and vice versa.

## Discussion

The result in table one revealed a significant correlation between academic perseverance and academic engagement. This result is not surprising since it is obvious that some with high level of perseverance is more likely to be engaged in whatever assignment he/she found him/herself doing. It is like wherever could be academically engaged could academically persevere or vis-à-vis. The outcome of this study is in line with that of Pike, Kuh and Gonyea (2003) that found positive relationship between academic engagement and objective and subjective measures which include perseverance. The result also corroborated Bannett and Garcisk (2006) who found out that high academic engagement while low academic perseverance contributed to low academic engagement.

The result in table two revealed that there is a significant relationship between class attendance and academic engagement. The result here is in line with Chung (2004) who found out that prerequisite for academic engagement. This implies that students with high level of class attendance are more likely to be highly involved in academic activities (academic engagement). It was also discovered that significant relationship existed between academic perseverance and class attendance. The result here is not surprising because regular attendance at class is in itself an act of academic perseverance. Whoever that could not persevere may have the tendency of not attending class regularly. The result in this study could also be supported by Furrer & Skinner's view that teachers could in return improve students perseverance through classroom reward structure. It is obvious that only

students could also attend classes regularly if there is mutual respect understanding between the teacher and the students.

From the findings of this study, it is clear that a strong relationship existed between academic perseverance, class attendance and academic engagement. Thus, for any student to achieve well in academic, such student should be able to persevere, attend class regularly and also be academically engaged.

### **Recommendations**

Pursuant to the abysmal performance of students at various educational levels, which had in a way been a source of concern to all stake holders of education, it could be recommended based on the outcome of this study that:

Teachers should make the class less boring so as to encourage the students to attend regularly. Teacher should make themselves more assessable to their students. Parents should give necessary support to their wards interms of providing educational support materials such as payment of school fees, purchase of books, uniform, school bags and school sandals, since lack of all these could discourage students from attending classes.

Students on their part should make it a point of duty to attend classes regularly. They should not be easily discouraged whenever there was any obstacle or difficulty in course of their study and above all should be adequately involved in all academic activities going on in their classes in particular and in the school in general.

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# **THE IMPACT OF SPEECH AND LANGUAGE DISORDERS ON PUPILS', LEARNING AND SOCIALIZATION IN SCHOOLS OF KALOMO DISTRICT-ZAMBIA**

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## **Abstract**

This study investigated the impact of speech and language disorders on pupils' learning and socialization in schools of Kalomo District, Zambia. The Descriptive research design was employed for the study. The sample consisted of 48 pupils with speech and language disorders purposively selected from 6 schools. The instruments used for data collection were a questionnaire and a test for speech and language disorders. The instruments were both faced and content validated by experts. The questionnaires and test items were taken to experts at the University of Zambia and the Zambia Institute for Special Education (department of speech and language disorders) for validation. The questionnaire and the test were administered to the sampled students. The data collected were coded and analysed using the Statistical Packages for Social Sciences. Descriptive statistics and the regression analysis were employed. The result of the study revealed that the performance of pupils with speech and language disorder in English Language was low, but were average in their socialization. It was also discovered that 77.2% variance in academic performance was accounted for by the level of speech and language disorders. The positive beta value of 11.885 showed that, the less the severity of speech and language disorder, the better was the academic performance of pupils. The study also revealed that type of disorder and socialization accounted for 79% variance in academic performance. Type of disorder accounted 77.2% while socialization accounted 1.8%. The positive beta value of 11.648 for the type of disorder, and 6.099 for socialization indicated that, the less the severity of the disorder and the more pupils with speech and language disorders

socialize the better is their academic performance. Type of disorder had greater influence on their academic performance.

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**Keywords:** Speech disorder, Language disorder, Learning, Socialization, Disabilities, Articulation disorder, Communication disorder, Stuttering

### **Introduction**

Speech-language disorders are the most common of childhood disabilities that affect about 1 in 12 children or 5% to 8% of pre-school children (Disability info: speech and language disorders Factsheet (FS11), 2008). A speech and language disorder refers to an impairment of speech or sound production, fluency, voice or language which significantly affects children's educational performance or their social, emotional or vocational development. Children may stutter or experience problems with articulating words. They may have a lisp or voice disorder. Children who have a hearing loss commonly experience difficulties with speech as well.

The inability to articulate speech sounds correctly could be caused by biological factors, such as brain damage, damage to the nerves controlling the muscles used in speech or gross abnormalities of the oral structures like a cleft palate (Hardman, Drew and Egan, 2002). Other possible conditions that might contribute to speech and language disorders are environmental factors such as the quality of parent-child communication, emotional disturbances, and hearing loss. Speech and language disorders are characterized by fluency disorder, articulation disorder, and voice disorder.

In Zambia, the most frequently quoted figure in the speech pathology literature suggested that about 7- 10% of the population is affected (Hardman, Drew and Egan, 2002). Majority of children with speech and language disorders do receive their education in the mainstream, except for fewer severe cases that could be handled in special schools. These children have difficulties in producing sounds properly, maintaining an appropriate flow or rhythm in speech, or using voice effectively. At the same time, they have problems in understanding or expressing the symbols and rules people use to communicate with each other. These may affect their level of socialization as well as academic success.

The Educational reforms document of 1977, focus on learning document of 1992, and educating our future document of 1996, all made emphasis that every child in Zambia has a right to education. This right is not limited by any disability, physical or mental, from which the child may suffer. Therefore, the school system must provide for the needs of those who are disabled and those who are able to benefit from education, including children with speech and language disorders (Ministry of Education, 2008).

There was little understanding among many Zambians on how lack of fluent speech and language could affect the child's academic performance. The ability to communicate with peers and adults in the educational setting is essential for pupils to succeed in school. According to Hardman, Drew and Egan, (2002), children with communication disorders frequently did not perform as expected at grade level. They may struggle with reading, have difficulties in understanding and expressing language, misunderstand social cues, avoid attending school, poor social interaction, and under achieves in tests.

Most speech and language disorders exhibited by school children are developmental, that is, roots of the problem exist from birth and manifestations of the problem emerge as the child develops and it becomes obvious that is slower or atypical compared to peers. In a minority of cases, speech and language disorders are acquired when a child suffers from an illness or accident that affects brain function. This type of speech disorder is known as aphasia (American Speech-Language-Hearing Association (ASHA), 2000).

Pre-school children identified as language disordered often have long term problems with language and academic skills. The school aged language disordered children may continue to have difficulty in expressing their ideas. They may begin to compensate by producing only short, simple sentences on which they are not likely to make a grammatical error or they may avoid talking, except when necessary. They may also have difficulty in comprehending complex sentences and figurative language such as idioms and metaphors. Poor language skills put these children at risk for reading problems. Therefore, it is not surprising that even children with relatively mild language disorders may have academic problems (Plante and Beeson, 2004).

On socialization, Mansson (2000) asserted that socialization was a developmental process in which an individual came in contact with people and things that allowed them to be socially acceptable. This process begins at birth and is constant throughout a person's entire life-span. There are many things that could factor a person's perception of the world as they see it and how they behave in it. These influences are known as socializing agents, which are determined by the surroundings and experiences the individual has been exposed to. Socialization agents may bring both positive and negative impacts to an individual.

According to Smith and Tyler, (2009) the early stages of an individual's life span dictate the vulnerability and dependant on others to guide him or her. This responsibility comes to the parents to teach their children with speech and language disorders, the right from wrong according to their socially acceptable attitudes. A child also learns things from other

members of the household such as siblings or other relatives. However, the predominant influence is that of the parents. Parents play a big role because they are primarily in control of the individual during childhood and adolescent years. The involvement of parents can be a good ground for model behaviour. However, it could also have a negative impact on the child. Situations such as violent environment could greatly impact how children think, act and emotionally feel.

Thomas (2009) postulated that children with speech and language disorders needed additional opportunities to both talk and listen; yet due to their disability may be presented to fewer chances. Children with speech and language disorders who could not get their message across may simply stop trying. Morales (2009) argued that speech could seriously limit the manner in which an individual interacted with others in school, social, and even home environments. Inability to correctly form speech sounds might create stress, embarrassment, and frustration in both the speaker and the listener. Over-time, this could create aggressive response on the part of the listener for being misunderstood or out of embarrassment. Alternatively, it could generate an avoidance of social situations that created these stressful situations.

Smith and Tyler (2009) supported the above statement when they stated that language disorders created similar difficulties in communicating with others, but may also include difficulties in understanding what others were to say (receptive language). Because of the pervasive nature of language disorders, communicating, reading, writing, and academic success could all be compromised in these pupils. Similar to individuals with speech disorders, individual with language disorders also encountered a long term difficulties associated with school, social, and home environment.

Blood, Boyle, Blood and Nalesnik (2010) also stated that children with speech and language disorders could easily be bullied and was more common in childhood. Bullying involves the consistent and intentional harassment of individual, and may be physical or verbal in nature. This trend has a great effect on the socialization of children with speech and language disorders. Blood, Blood, Tramontana, Sylvia, Boyle and Motzko (2011) stipulated that the social implications of speech and language disorders were so powerful that they had the potential to influence self-esteem, depression levels and academic success. Blood, Blood, Tellis and Gabel (2003) equally indicated that the stigmatization associated with speech disorders influenced self-esteem, as children with speech disorders often experienced depression, social isolation, and poorer performance on academics and standardized tests. Social acceptance, confidence, and overall life satisfaction could be at stake. Without the ability to hold fluent and successful conversations, many huge milestones such as maintaining friendships could be unsuccessful.

Individuals with speech impediments could become a target for exclusion and bullying.

The above statement is supported by Ross and Weinberg (2006) when they stated that inability or hesitancy to communicate hindered connections to others. Often individuals who struggled with language will have a tougher time making and maintaining friendships. In addition to challenges of bonding with peers, individuals who have speech disorders are more likely to have lower life satisfaction (Blood et al, 2011). Rose (2005) noted that children with speech and language disorders have a harder time in the classroom than children without speech and language disorders. Reading, comprehension, spelling, writing, and mathematics prove to be a problem to them. It is against this background that the study investigated the impact of speech and language disorders on pupils' learning and socialization in schools of Kalomo District, Zambia.

### **Research Questions**

1. What is the general academic performance of pupils with speech and language disorders in English language?
2. To what degree do pupils with speech and language disorders socialized with other pupils?
3. To what extent is the academic performance of pupils with speech and language disorders affected by the level of speech and language disorder?
4. To what extent is the academic performance of pupils with speech and language disorders affected by their level of disorder and socialization?

### **Research Hypothesis**

1. The academic performance of pupils with speech and language disorder is not affected by levels of disorder and socialization.

### **Research methodology**

The study investigated the impact of speech and language disorders on pupils' learning and socialization in schools. The quantitative and qualitative descriptive research designs were employed. The population for the study was drawn from 6 schools of Kalomo district with a population of 48 learners with speech and language disorders. All the 48 learners were selected purposively and used for the study. Of the 48 pupils with speech and language disorders used for the study, 29 (60.4%) were male while 19 (39.6%) were female. Eighteen (37.5%) were in grades 5-8 and 30 (62.5%) in grades 9-12. On the types of disorders, 9 (18.8%) had Language problems,

9 (18.8%) Articulation, 15 (31.2%) Fluency and the remaining 15 (31.2%) had voice problems.

Questionnaire and test items were the sole instruments for data collection. The August 2013 school end of term English results was used as a measure for academic performance of the learners. A test was also administered by the researcher to find out the levels of pupils' speech and language disorders. To ascertain the validity and reliability of the questionnaire and test items as an instrument for data collection, one expert in the department of speech and language disorders at the Zambia Institute of Special Education (ZAMISE) and the other two experts from the University of Zambia were consulted. These three experts moderated the research questions and test items before the researchers administered them to the learners. The data were coded and analysed using the statistical packages for social sciences (SPSS version 16). The descriptive statistics and the Regression analysis were employed.

## Results

**Research Question One:** What is the general academic performance of pupils with speech and language disorders in English language?

Table 1 presents the academic performance of pupils with speech and language disorders in the August 2013 end of term examination in English language.

Table 4.1: Academic Performance

| Grade Range | Description | Frequency | Percentage |
|-------------|-------------|-----------|------------|
| 0-39        | Fail        | 15        | 31.2       |
| 40-59       | Pass        | 24        | 50.0       |
| 60-74       | Merit       | 9         | 18.8       |
| 75----Above | Distinction | ---       | ---        |

It is evident from the table that 9 (18.8%) of pupils had merits in the school end of term examination, 24 (50%) obtained pass grades, while 15 (31.2%) failed. This is a clear indication that the majority of the pupils with speech and language disorders performed at a lower level. It is noteworthy that none of the pupils with speech and language disorders had distinction. The above finding is supported by Hardman, Drew and Egan (2000) when they stipulated that children with speech and language disorders did not frequently perform as expected at grade level because of their continuous struggling with reading and under achievements in tests.

**Research Question 2:** To what degree do pupils with speech and language disorders socialize with other pupils?

From table 2 below, pupils with speech and language disorders agreed that they avoided social situations that created stress, avoided speaking in order to reduce frustration and embarrassment with colleagues,

experienced bullying from other pupils due to their speech and language disorders and also failed to differentiate jokes from sarcasm with mean scores of 1.8723, 2.0208, 2.3958 and 1.7708, respectively. The low standard deviations of 0.82402 and 0.86884 for avoiding social situations that created stress and experiencing bullying from other pupils respectively showed that the pupils were homogeneous in their responses.

Table 2: Descriptive Statistics

| Items   | Mean          | Std. Deviation |
|---|---------------|----------------|
| I have a successful social interaction across school community                                | 3.4167        | 1.39655        |
| I am always involved in a social play when at school  | 3.3958        | 1.19822        |
| I do not avoid social situations that create stress   | 1.8723        | .82402         |
| I am easily accepted by other pupils during social learning                                   | 3.4375        | 1.23609        |
| I do not avoid speaking in order to reduce frustration and embarrassment when with colleagues | 2.0208        | 1.06170        |
| I have not experienced bullying from other pupils due to my speech and language disorders     | 2.3958        | .86884         |
| I have no problem in making friends   | 4.2917        | .94437         |
| I fail to differentiate jokes from sarcasm because of speech and language disorders           | 1.7708        | 1.09621        |
| I am able to express thoughts and feelings of other pupils                                    | 3.8750        | 1.16006        |
| I have no difficulties in getting words started   | 3.0208        | 1.36038        |
| I have equal social status with pupils who are developing normally, in school                 | 4.2083        | .94437         |
| My friends always assist me pronounce difficulty words when playing                           | 2.9792        | 1.40651        |
| I do not experience social isolation because of speech and language disorders                 | 2.5625        | .98729         |
| I do not produce short simple sentences in order to avoid grammatical errors                  | 1.5833        | .61310         |
| I have no problem in expressing ideas   | 4.0625        | .90873         |
| I can easily understand the spoken language of others   | 3.0208        | 1.36038        |
| I have a lot of chances to talk when playing  | 2.4583        | 1.18426        |
| I can easily hear when my friend call me  | 1.7708        | .83129         |
| I have no problem in using language in different social situations                            | 4.0208        | .95627         |
| I am encouraged by my friends to talk about activities that are outside the school            | 2.3125        | 1.18781        |
| <b>Socialization Average</b>  | <b>2.9340</b> | <b>.36729</b>  |

The pupils with speech and language disorders also agreed that they produced short simple sentences in order to avoid grammatical errors, had fewer chances to talk when playing, could easily hear calls from friends and that they were usually encouraged by friends to talk with the means of 1.5833, 2.4583, 1.7708 and 2.3125, respectively. They were homogeneous in their responses on the use of short simple sentences and easily heard when called by friends. The pupils were found to either disagree or indifferent on other socialization items. The overall mean of 2.9340 showed that pupils with speech and language disorders were moderate in their socialization while the standard deviation of .36729 indicated that they were homogeneous in their responses.

**Research Question3:** To what extent is the academic performance of pupils with speech and language disorders affected by the level of speech and language disorder?

Tables 3a and 3b below, show the model summary and the coefficients for the Regression analysis on the effect of level of speech and language disorders on pupils' academic performance.

The model summary showed that 77.2% variance in academic performance is accounted for by the level of speech and language disorders. The F value of 159.926 was found to be significant, an indication that the results of the regression analysis was true and not by chance. The high coefficient of 0.881 showed that there was a high positive relationship between the level of speech and language disorders and pupils' academic performance.

Table 4.3 (a) model summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .881 <sup>a</sup> | .777     | .772              | 7.07765                    | .777              | 159.926  | 1   | 46  | .000          |

a. Predictors: (constant). Types of Disorder. F= 159.926, Sig= 0.000

Table 3b shows the coefficients for the regression analysis on the effect of level of speech and language disorders on pupils' academic performance. The positive beta value of 11.885 showed that the less the severity of speech and language disorder, the better is the performance of pupils. In support of the above statement, Plante and Beeson (2004) stated that pupils with speech and language disorders have long term problems with language and academic skills. These children may continue to have difficulty in expressing their ideas. They may also have difficulty in comprehending complex sentences and figurative language such as idioms and metaphors.

Therefore, it is not surprising that even children with relatively mild language disorders may have academic problems, though at a minimum level.

Table 3b: Coefficients<sup>a</sup>

| Model             | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------------------|-----------------------------|------------|---------------------------|--------|------|
|                   | B                           | Std. Error | Beta                      |        |      |
| 1 (Constant)      | 21.982                      | 1.933      |                           | 11.374 | .000 |
| Types of Disorder | 11.855                      | .937       | .881                      | 12.646 | .000 |

a. Dependent Variable: Academic Performance

**Research Question4:** To what extent is the academic performance for pupils with speech and language disorders affected by their level of disorder and socialization?

Tables 4a and 4b show the extent to which the academic performance of pupils with speech and language disorders were affected by their levels of disorder and socialization

From the Model Summary, type of disorder and socialization accounted for 79% variance in academic performance. Type of disorder accounted 77.2% while socialization accounted 1.8%. The F values were then found to be significant, an indication that the results of the Regression analysis was true. Further, the beta value of 11.648 for the type of disorder, and 6.099 for socialization were found to be positive, an indication that, the less the severity of the disorder and the more pupils with speech and language disorders socialize the better their academic performance. However, the type of disorder was the major factor that affected pupils' academic performance.

Table 4a: Model Summary

| R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| .777     | .772              | 7.12635                    | .777              | 157.058  | 1   | 45  | .000          |
| .800     | .790              | 6.83656                    | .022              | 4.896    | 1   | 44  | .032          |

F1= 157.058 Sig= 0.00 F2= 87.775  
Sig= 0.00

b. Predictors: (Constant), Types of Disorder, Socialization

Table 4b: Coefficients<sup>a</sup>

| Model             | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig. |
|-------------------|-----------------------------|------------|---------------------------|--------|------|
|                   | B                           | Std. Error | Beta                      |        |      |
| (Constant)        | 4.358                       | 8.156      |                           | .534   | .596 |
| Types of Disorder | 11.648                      | .910       | .868                      | 12.799 | .000 |
| Socialization     | 6.099                       | 2.756      | .150                      | 2.213  | .032 |

a. Dependent Variable: Academic Performance

This is in agreement with the assertion of Rose (2005) who noted that children with speech and language disorders have a harder time in the classroom than children without speech and language disorders. In the same vein, Smith and Tyler (2009) stipulated that the pervasive nature of speech and language disorders in pupils could cause the following problems: communication, reading, writing and academic failure, especially among those with severe or profound disorders.

### Findings

Following are the findings of the study:

1. The general performance of pupils with speech and language disorders in English language was low
2. The overall mean of 2.9340 showed that pupils with speech and language disorders were moderate in their socialization, while the standard deviation of .36729 indicated that they were homogeneous in their responses.
3. Speech and language disorder accounted for 77.2% variance in academic performance of pupils with speech and language disorders. The positive beta value of 0.881 showed that, the less the severity of speech and language disorder, the better the performance of pupils.
4. Type of disorder and socialization accounted for 79% variance in academic performance. Type of disorder accounted 77.2% while socialization accounted 1.8%. The positive beta value of 11.648 for the type of disorder, and 6.099 for socialization indicated that, the less the severity of the disorder and the more pupils with speech and language disorders socialize the better their academic performance.

### Conclusion

The study clearly revealed that the performance of pupils with speech and language disorder was low and that their academic performance was affected by the type of disorder and level of socialization however type of

disorder had greater influence on their academic performance. The less the severity of the disorder and the more pupils with speech and language disorders socialize the better their academic performance. It was therefore recommended that teachers make early identification of pupils with speech and language disorders upon enrolling in schools for early educational interventions and that District Education Boards organise sensitization programs on the teaching and socialization of pupils with speech and language disorders.

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# INETRDISCIPLINARY CURRICULUM: GROWING NEEDFOR HIGER EDUCATION SYSTEMS

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## Abstract

This paper presents a brief review of interdisciplinary curriculum design and its challenges and opportunities in the context of higher education systems. A brief description to curriculum design in general leading to content design for interdisciplinary curriculum has been incorporated. The main purpose of this paper is to define curriculum integration, issues related to interdisciplinary curriculum design and integration, present the popular interdisciplinary curriculum and discuss the challenges and present the important implications curriculum integration will have on education.

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**Keywords:** Interdisciplinary, Disciplinary, Multi-disciplinary, Cross-disciplinary, Trans-disciplinary

## Introduction

Academic curriculum is a dynamic phenomenon that must be capable of recognizing the changes in the environment and respond to the growing demands and challenges. Education is a large system and it is nearly impossible to predict its behavior over distant future since the system parameters show a high rate of change. Mobility of professionals across the national boundaries has changed the demand-supply perspective and this may eventually force the educational planners to take a global view. Careful extrapolation of these and other relevant inputs may permit us to predict the near future behavior of the education systems. However, predictions over medium or long ranges are difficult primarily because of the involvement of a large number of fuzzy parameters.

In order to make the current higher education systems more relevant and career-oriented with focus on quality and excellence, higher educational institutions around the world need to re-orient and reshape their programs and policies. It is envisaged that professionally qualified graduates with a sound knowledge of interdisciplinary studies will have more opportunities in higher academic institutions and employment sectors in the years to come.

Demand and scope for such professionally trained interdisciplinarians are visible in the applied fields in the changing complex global scenario and is likely to increase in the future. Consequent upon the need of reorientation and reshaping of academic programs, many institutions of higher learning either have already started redesigning/ reorientation of their curricula while many are perhaps in their planning phases. Preliminary survey of such programs reveals that in many occasions, the interdisciplinary curriculum designers put their best efforts with all good intentions but fails to attract large number of students and faculties because of lack of focus and well-defined curriculum objectives. It may also be observed that many interdisciplinary curricula are not perfectly interdisciplinary, rather multi-disciplinary or trans-disciplinary. It is also not rare to see interdisciplinary curriculum where the content is merely a sampling of knowledge of the constituent disciplines.

### **Why Interdisciplinary Curriculum?**

There exist various important as well as complex real world problems, phenomena and concepts that can not be clearly understood or resolved when approached from a single discipline. While disciplinary depth is considered to be a must for investigating these complex issues, they also require what Howard Gardner calls a 'synthesising mind' (2006). These issues demand investigators competent to engage themselves as a part of team or individually, in order to develop a complete resolution that would have not been possible from a single discipline. Lyon (1992) and Brew (2008) show that this is not a deviant exception, but a common path for the modern academics.

Educational researchers have opined that an integrated curriculum is more likely to result in greater intellectual curiosity, improved attitude towards schooling, enhanced problem-solving skills, and higher achievement in college (Austin, Hirstein, & Walen, 1997; Kain, 1993). Barab and Landa (1997) indicated that when students focus on problems worth solving, motivation and learning increase. And one of the best ways to promote problem solving is through an enriched environment that makes connections among several disciplines (Wolf & Brandt, 1998).

The implication is that universities and other institutions of higher learning need to design academic curriculum to impart education simultaneously in both disciplinary as well as interdisciplinary expertise

### **What is Interdisciplinary Curriculum?**

"The very notion of 'integration' incorporates the idea of unity between forms of knowledge and the respective disciplines" (Pring, 1973).

In Jacobs' (1989) definition, interdisciplinary means conscientiously applying methodology and language from more than one discipline to a theme, topic, or problem.

The interdisciplinary approach has been defined by William H. Newell and William Green (1982) as “inquiries which critically draw upon two or more disciplines and which lead to an integration of disciplinary insights” (Haynes, 2002).

Although several variants of the definition of interdisciplinary studies have recently been emerged the version proposed by Allen Repko (2008) is the most accepted one. He identifies a ten-part interdisciplinary process that culminates in a deconstruction of interdisciplinary integration: identify conflicts between insights; create common ground; integrate insights; and produce and test an interdisciplinary understanding of the problem.

Many educators represent the view that knowledge in interdisciplinary studies is a repackaging and, perhaps, enhancement of discipline-based knowledge (Kain, 1993). The following example will probably give a more clear insight of interdisciplinarity. The chemist Willard Libby who discovered radiocarbon dating, applied his findings in chemistry to the discipline of archeology and won the Nobel Prize in 1960 (Youngblood, 2007).

To ensure a holistic understanding of interdisciplinarity, it is imperative that one should also understand the other disciplinary variants very often mistaken for one another. The different scientific orientations of disciplinarity along with their definitions are depicted in Table-1.

The interdisciplinary approach is uniquely different from a multidisciplinary approach, which is the teaching of topics from more than one discipline in parallel to the other, nor is it a cross-disciplinary approach, where one discipline is crossed with the subject matter of another. An interdisciplinary curriculum may therefore be closely related to an integrated curriculum.

| <b>Scientific orientation</b> | <b>Definition</b>  |
|-------------------------------|--|
| Uni_<br>disciplinarity        | One discipline works to address the problem intended for.  |
| Cross_<br>disciplinarity      | Two or more disciplines work side-by-side without mutual involvement to solve their problems. Disciplinarians are confined within their disciplines only.  |
| Multi_<br>disciplinarity      | Two or more disciplines work independently on a common problem. There is little or no commonality in terminology and methodology to address the problem. Practitioners work within their discipline but recognize that there exist different facets to a common problem. |

|                          |  |
|--------------------------|--|
| Trans_<br>disciplinarity | Two or more disciplines work together on a common problem with some overlap in methodology and terminology. Some integration between disciplines is likely to occur leading to common concepts, potentially new models and theories, but there is no complete overlap. Practitioners still feel mostly confined to their traditional disciplines |
| Inter_<br>disciplinarity | Two or more disciplines work integrally on a common problem. Disciplines are synthesized and extend discipline-specific theories and concepts with potentially novel methodology that is relevant to all involved disciplines. Practitioners feel at ease in all the involved disciplines.   |

**Table-1.** An overview of definitions used to classify scientific orientation, based on (Rosenfield, 1992; Stokols et al., 2008).

### Challenges and Opportunities

The design of any curriculum for such a dynamic system is a very challenging task. Further difficulties arise when the multifarious nature of interdisciplinarity functions - each requiring differing skills, abilities and attitudes are needed to be brought into consideration.

Interdisciplinary courses are primarily intended to reflect the linkages and interdependencies among subjects, disciplines, and courses and the associated concepts, skills, and applications, and are perhaps much more than the sum of the disciplines included in a curriculum. Interdisciplinary education also needs to supplement disciplinary teaching and learning so that students can learn to respond to challenges that go beyond disciplines, work in the confluence of multiple disciplines, and develop research trajectories that do not conform to standard disciplinary paths. Interdisciplinary education should also go beyond the above goals by allowing students to see different perspectives, work in groups, and make them competent to synthesize various disciplines as their ultimate goal.

As the interdisciplinary approach continues to synthesize the characteristics and methods of multiple disciplines while developing lifelong learning skills, they will have met the goals that Newell (1982) has laid out. Interdisciplinary curricula is time consuming and takes collaborative team work to create, which is undoubtedly hard and exhausting, but results in many skills that are sought by future employers. Also the students and their teachers will advance themselves in critical thinking, communication, creativity, pedagogy, and essential academia with the use of interdisciplinary techniques.

The students of interdisciplinary curriculum are expected to gain fluency in the ideas and languages of various constituent disciplines and also in the behaviors expected from various disciplinary communities. This is considered to be the unique challenge to an interdisciplinary curriculum. Interdisciplinary students and scholars very often confront the need for

fluency in multiple fields which results in conflicts between the idealized and enacted interdisciplinary curriculum. The interdisciplinary curriculum is delivered in disciplinary organizations, the universities where disciplinary ways of thinking and behaving prevails and it is , therefore, very difficult to accomplish interdisciplinary ways of thinking and behaving. Again, it is very likely that the teachers delivering the interdisciplinary curriculum are trained in a disciplinary field. These challenges need special organizational and pedagogical strategies.

Interdisciplinary teaching and learning is a challenge to both teachers and students (Woods, 2007; Bleakley et al., 2011). Teachers are often specialized in a particular discipline and find it difficult as well as challenging to engage themselves with other teachers, as there is lack of a common vocabulary and educational vision. However, it is this competence in communication between disciplines that is at the heart of interdisciplinary teaching (Woods, 2007).

It is very difficult to design interdisciplinary course curricula because of the reasons like student prerequisite and academic respect which is a function of previous observations. Students enrolled in an interdisciplinary program face lots of difficulties to adjust to a new field having broad and shifted boundaries. Also it is very difficult to get prerequisites in all the constituent disciplines of an interdisciplinary program without which it is likely to be rejected by both the practitioners as well as students of individual component disciplines. Moreover, any undergraduate curriculum has the requirement to train the students in a broad field rather than specializing in a too narrower field of study. Most of the unsuccessful interdisciplinary curricula are found to fail because of lack of these technical issues.

Preliminary survey of various models and approaches to interdisciplinary curriculum design reveals that many interdisciplinary courses were planed with good intentions but failed due to the following problems associated with content selection (Jacob, 1989):

*The Potpourri Problem-* This problem arises when many units become a sampling of knowledge from each of the constituent discipline. Hirsch (1987) and Bloom (1987) have criticized this approach for its lack of focus. While discipline based curriculum have an inherent scope and sequence, there is no apparent scope and general structure in interdisciplinary curriculum. Curriculum planners and developers have to design the content scope and sequence very carefully for interdisciplinary courses.

*The Polarity Problem:* The discipline fields and the interdisciplinarity have been so far seen as an either/or polarity which resulted in a series of conflicts such as lack of clarity, threat to teachers who

are highly territorial about their disciplines as interdisciplinary curriculum promotes new views of their subjects.

In view of the above, it may be concluded that the interdisciplinary curriculum needs to incorporate interdisciplinary as well as disciplinary field perspectives in the curriculum design since the goal of an interdisciplinary curriculum is to train future scholars and practitioners who can bridge multiple disciplines in their work.

Most of the academic systems around the world are still very much structured as far as concentration of specific cores as disciplines are concerned and the integration of interdisciplinary studies have become unusual to the traditional fields of study. Most of the existing education systems suffer from rigidity (F.Gider et al, 2012) and therefore unable to follow frequent changes in order keep pace with modern world demand. A change in orientation of the course curriculum from knowledge towards competencies along with strong emphasis in innovation is needed in order to generate human resource with leadership quality and professionalism in order to meet global competition requirements. We therefore, need to reorient the existing performance criteria-driven alignment and integration of course curricula to competency based curricula particularly while designing competency-based interdisciplinary curricula.

It is, therefore, important to develop a conceptual framework in which students can be taught interdisciplinary, rather than multidisciplinary thinking. The ten generic points in curriculum design proposed by Kirkpatrick and stated below may be taken into consideration in the design of the interdisciplinary curriculum.

- Establishing the learning needs
- Defining learning objectives
- Determine an appropriate subject content
- Selecting participants
- Determining the best schedule
- Selecting appropriate facilities
- Selecting appropriate instructors
- Selecting and preparing audio-visual aids
- Coordinating the program
- Evaluating the program

Prior to designing the curriculum, communication between the different actors such as university administrators, course designers and coordinators, teachers and prospective students is important, as aims, objectives and learning outcomes will be the most important factors that define the learning process in a top-down fashion (Prideaux, 2003).

According to Newell (1983) “best undergraduate education asks students to go back and forth between disciplinary and interdisciplinary

courses, since interdisciplinary courses need the disciplines for depth and disciplinary courses need interdisciplinarity for real-world applicability”.

Interdisciplinary studies need to be conceived in a way that values diversity of perspective, demands integration of insights, and embraces holistic as well as reductionist thinking. Only then are students prepared to meet the challenge of coping with complexity (Newell, 2010)

## **Conclusion**

Whether a curriculum is interdisciplinary or multi-disciplinary should not be the main issue. Rather, the focus should be on designing a curriculum that is relevant, standards-based, and meaningful for students and future employers. At the same time, the curriculum should be able to make the students competent to solve real world problems. An interdisciplinary curriculum appropriately conceived and well grounded in constituent academic disciplines is expected to deliver the most effective education for the complex future world ahead.

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# DEVELOPING AN ITEM BANK FOR HOMOGENEOUS SECOND ORDER DIFFERENTIAL EQUATIONS BY CALIBRATED ITEMS

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## Abstract

Item bank is one of the main components of adaptive tests. In this research, a test was made in order to design and calibrate items for Homogeneous Second Order Differential Equations. The items were designed according to the goal-content's table of the subject and the Bloom's taxonomy learning domain. Validity and reliability of these items was confirmed by academic staff who have taught the course for years. For calibrating items, 13 levels of ability were considered. By using Monte Carlo simulation, 32500 simulated examinees (2500 simulated examinees for each ability level) participated in the exam. Calibrating items were done by difficulty and discrimination parameters using item response theory and priory method. The results showed that chi-square indices of parameters is less than the standard chi-square indices, and therefore the estimated parameters are acceptable. These items can be used in adaptive tests in order to estimate examinee's ability level in this subject.

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**Keywords:** Item calibration, Difficulty parameter, Discrimination parameter, Ability level

## Introduction

Currently universities usually use conventional fixed length tests to measure students' ability. This means, they ask a set of items from all students and then compare their scores. The main disadvantage of this method is when a student's ability is far from the difficulty of the test, thus his score is measured inaccurately (Weiss, 2011). In adaptive tests, by asking items with proper difficulty from each student, the standard error of measurement will decrease. One of the main components of adaptive tests is

the item bank, that consists of calibrated items from which the items of test will be selected from it. Obviously, without designing a proper item bank, administering an adaptive test will become impossible.

### **Adaptive Test**

An adaptive test has six main components:

- Theory of measurement: A network of hypotheses and deductions associated with the construct we are attempting to measure (Sympson, 1970). Two main theories in adaptive tests are Classical Test Theory (CTT) and Item Response Theory (IRT) (Weiss, 2011).
- Item bank: A set of items which their psychometric properties like difficulty, discrimination and guessing parameters are calibrated (Thompson & Weiss, 2011).
- Starting point (Initial ability): Before the test begins, based on the prior information about student, a number will be assigned to him as his initial ability. The first item of the student depends on his initial ability (Weiss, 2004).
- Item selection algorithm: This algorithm selects the next item of test from the item bank (van der Linden, 2005).
- Scoring algorithm: After answering an item, the scoring algorithm estimates the student's new estimated ability according to his answer (Weiss, 2011).
- Termination criteria: The conditions which their satisfaction will terminate the testing process (Babcock & Weiss, 2009).

In the present study, we design an item bank for homogeneous second order differential equations that can be implemented in an adaptive test.

### **Item Response Theory (IRT)**

The main property of Item Response Theory is estimating the chance that a person with  $\theta$  (ability) level answers an item with  $b$  (difficulty) parameter correctly (Thompson & Weiss, 2011). Obviously, in two-parameter model of IRT, the chance that a person with  $\theta$  (ability) level answers an item with  $b$  (difficulty) and  $a$  (discrimination) parameters will be correctly estimated (Baker, 2001). This chance can be calculated by:

$$P(\theta) = \frac{1}{1 + e^{a(b-\theta)}} \quad (1)$$

This function is also called as item characteristic curve.

### **Priory method**

Assume  $M$  students answered  $N$  items of the test. In this method, the initial abilities of students were calculated from their final score of the test.

For comfort, we consider  $J$  levels of ability (ranging from -3 to 3) and distribute all students into these levels. In level  $j$ , there will be  $m_j$  students ( $j = 1, 2, \dots, J$ ).

For estimating an item's parameters, the proportion of students in  $j$  level that have answered the item correctly, denoted by  $P_o(\theta_j)$ , is considered as an estimate of  $P(\theta_j)$ . The same process will be repeated for all  $j = 1, 2, \dots, J$ .

Now initial values for the item parameters, such as  $b = 0.0$ ,  $a = 1.0$ , are established as *a priori*. Then, using these parameters, the value of  $P(\theta_j)$  is computed at each ability level. The agreement of the observed value of  $P_o(\theta_j)$  and computed value  $P(\theta_j)$  is determined across all ability groups. If there was significant difference between  $P_o(\theta_j)$  and  $P(\theta_j)$ , then the  $b$  and  $a$  parameters will change and the same process will repeat. This process of adjusting the parameters is continued until the adjustments get so small that little improvement in the agreement is possible. One can select the  $b$  and  $a$  parameters which leads to the least sum square of difference between  $P_o(\theta_j)$  and  $P(\theta_j)$ . At this point, the estimation procedure is terminated and the current values of  $b$  and  $a$  are estimations of the item parameter.

An important consideration within item response theory is whether a particular item characteristic curve model fits the item response data for an item. The agreement of the observed proportions of correct response and those yielded by the fitted item characteristic curve for an item is measured by the chi-square goodness-of-fit index. This index is defined as follows:

$$\chi^2 = \sum_{j=1}^J m_j \frac{[P_o(\theta_j) - P(\theta_j)]^2}{P(\theta_j)Q(\theta_j)} \quad (2)$$

Where  $J$  is the number of ability groups,  $\theta_j$  is the ability level of group  $j$ ,  $m_j$  is the number of students having ability  $\theta_j$ ,  $P_o(\theta_j)$  is the observed proportion of correct response for group  $j$ ,  $P(\theta_j)$  is the probability of correct response for group  $j$  computed from the item characteristic curve model using the item parameter estimates and  $Q(\theta_j)$  is equal to  $1 - P(\theta_j)$ .

If the value of the obtained index is greater than a criterion value, the item characteristic curve specified by the values of the item parameter estimates will not fit the data (Baker, 2001).

### Monte Carlo simulation

Monte Carlo simulation is based on the fact that IRT provides an estimate of the exact probability of a correct response to an item for a given value of  $\theta$  (Thompson & Weiss, 2011). For example, suppose that an item has estimated to have  $b = 0$  difficulty and  $a = 1$  discrimination parameters. The first simulated examinee with arbitrary ability (usually -3) will be considered. The probability of the correct response is:

$$P(\theta) = \frac{1}{1 + e^{1(0 - (-3))}} = 0.05$$

Now a random number is generated from a uniform distribution with a range of 0 to 1. If the number is 0.05 or less, the first simulated examinee is supposed to give a correct answer. Otherwise, the answer is incorrect.

This process repeats for simulated examinees with various ability levels and their responses will be gathered.

## Methodology

The present study offers calibrated items for developing the item bank of homogeneous second order differential equations. Initially, 61 items were designed by researchers according to the goal-content's table of the subject and the Bloom's taxonomy learning domain. Validity and reliability of these items were confirmed by academic staff who have taught the course several times. For calibrating items, 13 levels of ability were considered. By using Monte Carlo simulation, 32500 simulated examinees (2500 simulated examinees for each ability level) participated in the exam. The initial values for items' difficulty and discrimination parameters were selected by academic staff who have taught the course several times. After generating simulated examinees' answers, items were calibrated for difficulty and discrimination parameters using item response theory and priory method. Finally, the agreement of the observed proportions of correct response and those yielded by the fitted item characteristic curve for the item was measured by the chi-square goodness-of-fit index.

## A practical example of calibrating an item

In the present study,  $M = 32500$  examinees answered  $N = 61$  items. The ability scale (from -3 to 3) has been divided into 12 equal pieces which leads to 13 ability levels. In each ability level, there were 2500 simulated examinees. These ability levels and their ability values ( $\theta_j$ ) are shown in Table 1.

**Table 1.** The value of ability in each level

|               |    |      |    |      |    |      |   |     |   |     |    |     |    |
|---------------|----|------|----|------|----|------|---|-----|---|-----|----|-----|----|
| Ability level | 1  | 2    | 3  | 4    | 5  | 6    | 7 | 8   | 9 | 10  | 11 | 12  | 13 |
| Ability Value | -3 | -2.5 | -2 | -1.5 | -1 | -0.5 | 0 | 0.5 | 1 | 1.5 | 2  | 2.5 | 3  |

For example, the process of generating simulated examinees' answers and calibrating the item 16 will be described step-by-step:

For generating simulated examinees' answers, the initial values for difficulty ( $b$ ) and discrimination parameters ( $a$ ) were asked from two

academic staff who have taught the course several times. One of them suggests  $b = 1$ ,  $a = 1$  and the other one suggests  $b = 0.5$ ,  $a = 0.7$ . So, the mean of these values,  $b = 0.75$ ,  $a = 0.85$ , were accepted as the initial values for difficulty and discrimination parameters. These values will be used in the Monte Carlo simulation as follows. The first simulated examinee with ability -3 will be considered. The probability of the correct response is:

$$P(\theta) = \frac{1}{1 + e^{0.85(0.75 - (-3))}} = 0.04$$

Now a random number is generated from a uniform distribution with a range of 0 to 1. The generated number is 0.43. Since 0.43 is greater than 0.04, the generated answer will be supposed incorrect.

For generating the next 2499 answers, the ability level ( $\theta$ ) of simulated examinees will establish on -3, and by generating random numbers, they will be compared to 0.04. After generating the first 2500 answers, the ability level ( $\theta$ ) of simulated examinees will establish on -2.5, and after calculating the probability of correct answer,  $P(\theta)$ , the next 2500 random numbers will be compared to it. This procedure will repeat for all ability levels in order to generate all 32500 answers for item 16.

After generating the simulated examinees' answers, the examinees that answered the item 16 correctly will be classified by their ability levels. In this study, 11563 examinees have answered correctly to item 16. These examinees are classified as follows: 86 examinees were from first level of ability (value of -3), 114 examinees were from second level of ability (value of -2.5), 227 examinees were from third level of ability (value of -2), 310 examinees were from fourth level of ability (value of -1.5), 405 examinees were from fifth level of ability (value of -1), 541 examinees were from sixth level of ability (value of -0.5), 708 examinees were from seventh level of ability (value of 0), 911 examinees were from eighth level of ability (value of 0.5), 1183 examinees were from ninth level of ability (value of 1), 1484 examinees were from tenth level of ability (value of 1.5), 1693 examinees were from eleventh level of ability (value of 2), 1884 examinees were from twelfth level of ability (value of 2.5), and 2017 examinees were from thirteenth level of ability (value of 3). Table 2 shows this information.

**Table 2.** Number of correct answers in each ability value

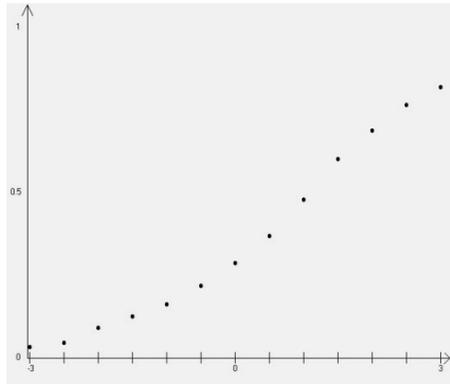
| Ability Value            | -3 | -2.5 | -2  | -1.5 | -1  | -0.5 | 0   | 0.5 | 1    | 1.5  | 2    | 2.5  | 3    |
|--------------------------|----|------|-----|------|-----|------|-----|-----|------|------|------|------|------|
| Number of correct answer | 86 | 114  | 227 | 310  | 405 | 541  | 708 | 911 | 1183 | 1484 | 1693 | 1884 | 2017 |

Then, the proportion of correct answer,  $P_o(\theta_j)$ , was calculated for each ability level (Table 3).

**Table 3.** Proportion of correct answer in each ability value

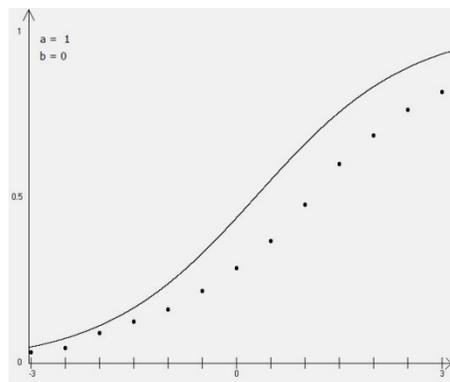
|                        |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ability Value          | -3   | -2.5 | -2   | -1.5 | -1   | -0.5 | 0    | 0.5  | 1    | 1.5  | 2    | 2.5  | 3    |
| Prop of correct answer | 0.03 | 0.05 | 0.09 | 0.12 | 0.16 | 0.22 | 0.28 | 0.36 | 0.47 | 0.59 | 0.68 | 0.75 | 0.81 |

Now, the  $(\theta_j, P_o(\theta_j))$  pairs are plotted on the coordination screen (Fig.1).



**Figure 1.** Plotted  $(\theta_j, P_o(\theta_j))$  pairs for item 16

Assuming  $b = 0.0$ ,  $a = 1.0$  as priori values, the item characteristic curve will be drawn by  $P(\theta) = \frac{1}{1+e^{1(0-\theta)}}$  function (Fig. 2).



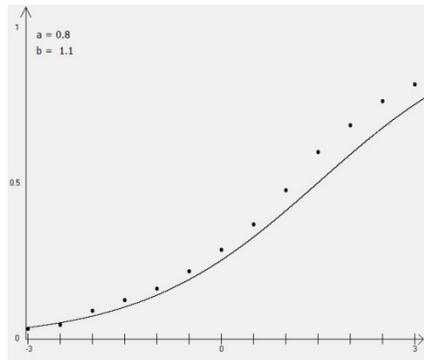
**Figure 2.** Item characteristic curve for item 16 by priori values

The sum of square of differences between  $P_o(\theta_j)$  and  $P(\theta_j)$  will be calculated:

$$\sum_{j=1}^{13} (P_o(\theta_j) - P(\theta_j))^2 =$$

$$\left(\frac{86}{2500} - 0.05\right)^2 + \left(\frac{114}{2500} - 0.08\right)^2 + \dots + \left(\frac{2017}{2500} - 0.96\right)^2 = 0.36$$

The sum of square of difference for this curve is 0.36. By using the minimum sum of square of differences method, and examining all  $b$  and  $a$  values (from -3 to 3, and by 0.1 step), the  $b = 1.1$  and  $a = 0.8$  values, with sum of square of difference equal to 0.001, were accepted as the item 16 estimated parameters. The curve produced by these parameters is shown in Fig. 3.



**Figure 3.** Item characteristic curve for item 16 by proper values

Finally the agreement of the observed proportions of correct response and those yielded by the fitted item characteristic curve for item 16 is measured by the chi-square goodness-of-fit index:

$$\chi^2 = \sum_{j=1}^{13} m_j \frac{[P_o(\theta_j) - P(\theta_j)]^2}{P(\theta_j)Q(\theta_j)}$$

$$= 2500 \frac{\left[\frac{86}{2500} - 0.04\right]^2}{0.04(1 - 0.04)} + 2500 \frac{\left[\frac{114}{2500} - 0.05\right]^2}{0.05(1 - 0.05)} + \dots$$

$$+ 2500 \frac{\left[\frac{2017}{2500} - 0.82\right]^2}{0.82(1 - 0.82)} = 24.77$$

The standard chi-square value (by 12 degrees of freedom) with 0.01 confidence interval is equal to 26.22. Since the chi-square goodness-of-fit index for item 16 is less than the standard value, the estimated parameters will be accepted.

## Results

Table 4 shows the estimated parameters of the items:

**Table 4.** The results of research (Number: Item's Number, *b*: Difficulty; *a*: Discrimination)

| Number | <i>b</i> | <i>a</i> | Number | <i>b</i> | <i>a</i> |
|--------|----------|----------|--------|----------|----------|
| 1      | -2.7     | 0.3      | 31     | 2.1      | 1.5      |
| 2      | -2.3     | 0.4      | 32     | 2.0      | 1.5      |
| 3      | -2.4     | 0.2      | 33     | -1.6     | 0.4      |
| 4      | -2.0     | 0.4      | 34     | -1.2     | 0.5      |
| 5      | -1.5     | 0.5      | 35     | 1.4      | 0.9      |
| 6      | -0.2     | 0.4      | 36     | 1.6      | 0.8      |
| 7      | -0.5     | 0.3      | 37     | 1.5      | 0.8      |
| 8      | -0.6     | 0.3      | 38     | 1.5      | 0.7      |
| 9      | 0.1      | 0.5      | 39     | 1.3      | 0.8      |
| 10     | -2.0     | 0.3      | 40     | 1.1      | 0.7      |
| 11     | -1.8     | 0.4      | 41     | 1.3      | 0.9      |
| 12     | -1.9     | 0.3      | 42     | 1.0      | 0.8      |
| 13     | -0.9     | 0.4      | 43     | 1.2      | 0.8      |
| 14     | -0.9     | 0.4      | 44     | 1.1      | 0.8      |
| 15     | -0.6     | 0.5      | 45     | 1.1      | 0.8      |
| 16     | 1.1      | 0.8      | 46     | 1.0      | 0.8      |
| 17     | -0.1     | 0.5      | 47     | 1.9      | 1.4      |
| 18     | 1.5      | 0.9      | 48     | 2.6      | 1.8      |
| 19     | -0.5     | 0.3      | 49     | 2.2      | 1.6      |
| 20     | 0.1      | 0.4      | 50     | 2.4      | 1.8      |
| 21     | 0.8      | 0.5      | 51     | 2.0      | 1.6      |
| 22     | 1.1      | 0.5      | 52     | 1.8      | 1.5      |
| 23     | 1.2      | 0.6      | 53     | 1.8      | 1.6      |
| 24     | 0.8      | 0.4      | 54     | 1.7      | 1.6      |
| 25     | 1.2      | 0.7      | 55     | 1.5      | 1.4      |
| 26     | 0.7      | 0.4      | 56     | 1.4      | 1.4      |

|    |     |     |    |     |     |
|----|-----|-----|----|-----|-----|
| 27 | 1.8 | 1.4 | 57 | 1.7 | 1.5 |
| 28 | 2.0 | 1.4 | 58 | 1.2 | 1.3 |
| 29 | 1.9 | 1.5 | 59 | 1.4 | 1.3 |
| 30 | 1.7 | 1.3 | 60 | 1.2 | 1.1 |
|    |     |     | 61 | 1.0 | 1.1 |

## Conclusion

The first step for designing an adaptive test is developing an item bank. An item bank with at least 60 items can reasonably support a two-parameter test (Hortensius & Weiss, 2012).

In this paper an effort has been made to develop an item bank for homogeneous second order differential equations. To accomplish this goal, 61 questions were created and calibrated through a simulated test. After estimating the item's parameters, their accuracy has been tested by the chi-square goodness-of-fit index.

For refining this research's results, one can use these items in a real-world test, and after comparing the results, make the appropriate changes in the parameters' values.

Developing calibrated item banks is crucial for designing adaptive tests. Thus, adding or refining the items introduced in this research is greatly appreciated.

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# QUANTITATIVE THEORY OF EFFECTIVENESS OF HIGHEST EDUCATION: ROLE OF INTERPERSONAL COMMUNICATIONS

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## Abstract

The influence of interpersonal communications inside and outside a University on effectiveness of education is investigated. It is shown, that low effectiveness of direct (traditional) education may be compensated by increasing of communicational activeness of students and stimulation of interpersonal communications. Hysteresis dependence of quality of education on communication activeness of students takes place at low effectiveness of direct education. The fact allows explaining of modern situation in post-soviet countries, particularly, in Kazakhstan, when sufficient efforts of the government gives no evident results in respect to increasing of education quality.

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**Keywords:** Interpersonal communications, post-industrial society, quality of education, hysteresis

## Introduction

Improving the quality of higher education is important for the vast majority of countries around the world. The transition from industrial to post-industrial society is a challenge for modern pedagogic sciences (Pereslegin S.,2011.): higher education built on the industrial paradigm is far from being fully able to meet the demands of the post-industrial labor market (Pereslegin S.,2011.) As noted in (Suleimenov, I. E. et. al., 2011), the post-industrial labor market is characterized by relatively rapid emergence of new professions (or a substantial transformation of existing ones), and many of

them require diverse skills. Modern High School, operating in the industrial paradigm, just do not have time to form the corresponding specialty. As a result, the training for many professions, in particular, the ones that appear in real time is actually performed outside of university programs.

As a consequence, in modern conditions the significance of self-education increases, specifically the education that is formed by the informal institutions or formal institutions not related to universities.

Consequently, the quantitative description of the factor «educational media» is relevant for the theory of education; it promotes learning of the individual in an informal way.

The quantitative model, which allows taking into account both the impact of educational media and direct training, is proposed in present article. This model allows identifying the conditions when the educational media is crucial. It also allows us to show that there are conditions under which the indicators of the quality of education change abruptly at gradual modification of the control parameters. This serves as a basis for the application of the "strategy of a miracle" (Pereslegin S., 2011.) to higher education in countries such as Kazakhstan, where post-transitional crisis phenomena (Suleymenova K., 2012), that affect higher education are apparent (Suleimenova K.I., 2013).

### Basic Model

A quantitative description of the effectiveness of educational programs, as will be seen below, can be developed on the basis of analogies with models that describe the promotion of innovations; the most known example is Bass's diffusion model (BDM). There are a number of results (Bass F. M., 1997) showing that this model adequately describes the dynamics of promotion of innovations.

One can say that promotion of innovation is determined by two types of informational impact on the consumer. One of them is determined by the influence of advertising and mass-media, and the other – by the transmission of information directly from one consumer to another («Word-in-mouth»). Accordingly, the Bass's equation using in the classical form consists of two terms reflecting the mentioned informational impacts.

$$\frac{dN}{dt} = \alpha(N_0 - N)N + \beta(N_0 - N), \quad (1)$$

where coefficients  $\alpha$  and  $\beta$  characterize the intensity of informational influences that determine the dynamics of the marketing of an innovation,  $N_0$  - market potential for this product or service,  $N(t)$  - the number of

consumers at a moment  $t$ . Traditionally, the term proportional to  $\alpha$  is associated with interpersonal communication, the term proportional to  $\beta$  - with the impact of the mass media and advertisement.

The analogy between the BDM and the proposed description of the effectiveness of educational programs and promotion of innovations is the following. As in the case of promotion of innovations, the volume of knowledge assimilated by a student is determined by two factors; one of them is the direct informational impact by a teacher during lessons, and the other is the result of interpersonal communications. For example, as shown by the results of the survey conducted in several Technical Universities in Kazakhstan, most of the skills in software application the inquired students received in interpersonal communications; the mutual influence of the students in the course of training further will be denoted by the term Word-In-Mouth Education (WIME). This term additionally underlines the analogy between the approach being developed and BDM and its modifications.

Formalization of education process may be developed on the base of theory on information transmission as follows. "Professional knowledge" may be considered as a set of information packages that should be assimilated by a student for obtaining correspondent qualification. Consequently the diagram, Fig.1 is applicable: a student obtains next information package and his knowledge is growing from level to level. It is supposed that transition on the highest level  $K$  corresponds to obtaining of complete professional knowledge.

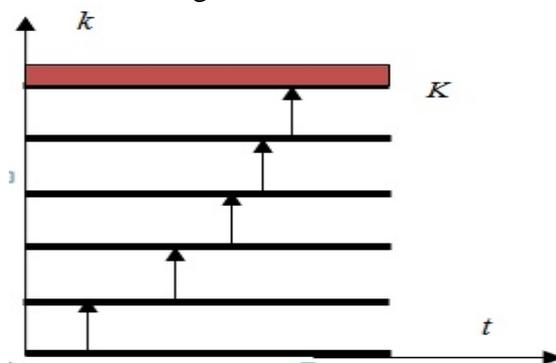


Fig.1. Formal scheme of learning paths during education period.

Statistically, transitions between the levels showed on Fig.1 may be described by next system of differential equations.

$$\frac{dN_0}{dt} = -N_0 \sum_{j=1} \alpha_{j0} N_j - \beta_0 N_0 + \frac{1}{\tau_1} N_1 \quad (2)$$

$$\frac{dN_k}{dt} = -\sum_{j=1} \alpha_{jk} N_j N_k + \sum_{j=1} \alpha_{jk-1} N_j N_{k-1} - \beta_k N_k + \beta_{k-1} N_{k-1} + \frac{N_{k+1}}{\tau_{k+1}} - \frac{N_k}{\tau_k} \quad (3)$$

$$\frac{dN_K}{dt} = \sum_{j=1} \alpha_{j,K-1} N_j N_{K-1} + \beta_{K-1} N_{K-1} - \frac{1}{\tau_K} N_K, \quad (4)$$

where  $N_k$  is a number of students corresponding to level of knowledge  $k$ , coefficients  $\alpha_{jk}$  reflects information impact of interpersonal communications resulting in growing of knowledge, coefficients  $\beta_j$  – direct information impact during lessons, etc. It is taking into account that a student may forget some information i.e. there are not only direct transitions between the levels showing on Fig.1, but inverse ones too. Inverse transitions are described by terms  $N_j/\tau_j$ . These terms take into account restricted time of education too; a student may leave university after finishing of education period and even earlier.

The system (2) – (4) is quite complicated for direct analyses; nevertheless some important results may be obtained with the help of simplified model that includes 3 levels only. Corresponding system of differential equations may be written as follows.

$$\frac{dN_0}{dt} = -N_0(\alpha_{20}N_2 + \alpha_{10}N_1) - \beta_0N_0 + \frac{1}{\tau_1}N_1 \quad (5)$$

$$\frac{dN_1}{dt} = -N_1(\alpha_{21}N_2 + \alpha_{11}N_1) + N_0(\alpha_{20}N_0 + \alpha_{10}N_0) + \beta_0N_0 - \beta_1N_1 - \frac{1}{\tau_1}N_1 + \frac{1}{\tau_2}N_2 \quad (6)$$

$$\frac{dN_2}{dt} = N_1(\alpha_{21}N_2 + \alpha_{11}N_1) + \beta_1N_1 - \frac{1}{\tau_2}N_2 \quad (7)$$

Summing Eq. (5) – (7) one can obtain that the total sum of students having different levels of knowledge should be a constant.

$$N_0 + N_1 + N_2 = C \quad (8)$$

I.e. the considering system is reduced to next two differential equations.

$$\frac{dN_0}{dt} = -N_0(\alpha_{20}N_2 + \alpha_{10}(C - N_2 - N_0)) - \beta_0N_0 + \frac{1}{\tau_1}(C - N_2 - N_0) \quad (9)$$

$$\frac{dN_2}{dt} = q(C - N_2 - N_0)(\alpha_{20}N_2 + \alpha_{10}N_1(C - N_2 - N_0)) + q\beta_0(C - N_2 - N_0) - \frac{1}{\tau_2}N_2 \quad (10)$$

The next connection

$$(\alpha_{20}, \alpha_{10}, \beta_0) = q(\alpha_{21}, \alpha_{11}, \beta_1) \quad (11)$$

is used in Eqs. (8) – (10). Connection (11) is likely to be valid while the considering coefficient are determined by product of frequency of information impacts on their effectiveness.

Let us consider the equilibrium state, then

$$N_0(\alpha_{20}N_2 + \alpha_{10}N_1) + \beta_0N_0 - \frac{1}{\tau_1}N_1 = 0 \quad (12)$$

$$N_1q(\alpha_{20}N_2 + \alpha_{10}N_1) + q_1\beta_0N_1 - \frac{1}{\tau_2}N_2 = 0 \quad (13)$$

From Eqs. (12), (13) one can easy obtain

$$\frac{N_1}{N_0} = \frac{\tau_1}{q\tau_2} \frac{N_2}{N_1} = k \quad (14)$$

Multiplier  $k$  may be used for further simplification of Eqs. (12), (13). Namely,

$$N_1 = kN_0, \quad N_2 = \frac{q\tau_2}{\tau_1}k^2N_0 = q_1k^2N_0 \quad (15)$$

where  $q_1 = \frac{\tau_2}{\tau_1} \frac{\beta_0}{\beta_1}$ .

Substituting relations (15) in (12), (13) and (8) one can easily show that considering systems of equations may be reduced to the only algebraic equation of third order.

$$q_1k^3 - (\tau_1\beta_0q_1 + \tau_1\alpha_{20}Cq_1 - 1)k^2 - (\tau_1\beta_0 + \tau_1\alpha_{10}C - 1)k - \tau_1\beta_0 \quad (16)$$

The relative number of students having complete qualification in this model is given as

$$\frac{N_2}{C} = \frac{q_1 k^2}{1 + k + q_1 k^2} \quad (17)$$

## Results

Some examples of numerical calculation of relative number of students having complete qualification (17) are presented on Fig.2,3.

It can be seen that for the both values used here  $q_1 = 0,5$  и  $q_1 = 1,5$  a similar behavior with decreasing the  $\beta_0 \tau_1$  parameter is observed, which reflects effectiveness of direct education (education during lessons, etc.). Namely, obtained dependences are close to straight lines at relatively large values of  $\beta_0 \tau_1$ , but if parameter  $\beta_0 \tau_1$  is relatively low, then the coefficient of effectiveness of education  $N_2/C$  changes by jump at certain value of  $\alpha_{20} \tau_1$ .

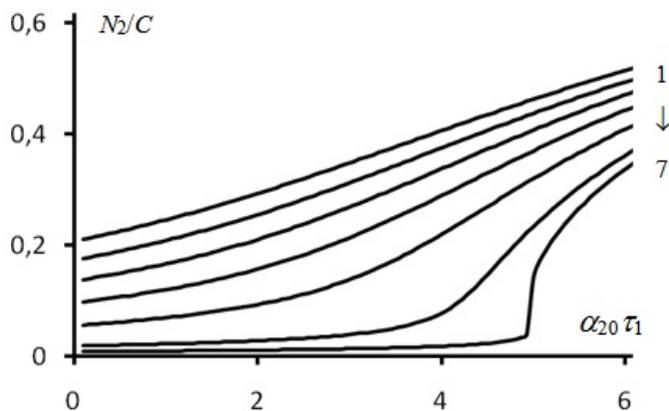


Fig.2. A set of dependences of relative number of students having complete qualification  $N_2/C$  on parameter  $\alpha_{20} \tau_1$  at different values of  $\beta_0 \tau_1$ ;  $q_1 = 0,5$ ,  $\alpha_{10} \tau_1 = 0,1$ ;  $\beta_0 \tau_1 = 1,2$  (1), 1,0 (2), 0,8 (3), 0,6 (4), 0,4 (5), 0,2 (6), 0,125 (7).

A further reduction of the parameter  $\beta_0 \tau_1$  leads to S-shaped relationships (Fig.4, 5)  $N_2/C$  on  $\alpha_{20} \tau_1$ .

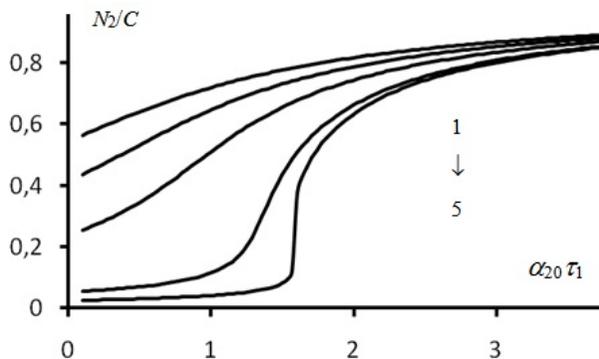


Fig.3. A set of dependences of relative number of students having complete qualification  $N_2/C$  on parameter  $\alpha_{20} \tau_1$  at different values of  $\beta_0 \tau_1$ ;  $q_1 = 1,5$ ,  $\alpha_{10} \tau_1 = 0,5$ ;  $\beta_0 \tau_1 = 1,1$  (1),  $0,8$  (2),  $0,5$  (3),  $0,19$  (4),  $0,125$  (5).

It should be emphasized that the construction of Fig.4, 5 used relatively large values of the parameter  $q_1$ , characterizes the ratio of the effectiveness of learning at higher and lower levels. A very low effectiveness of first level training index was also used, which corresponds to the reality in countries such as Kazakhstan. Nevertheless, as is evident from Fig. 4, 5, there are conditions when the low quality of "direct" education can be compensated by WIME, i.e. learning through interpersonal communications.

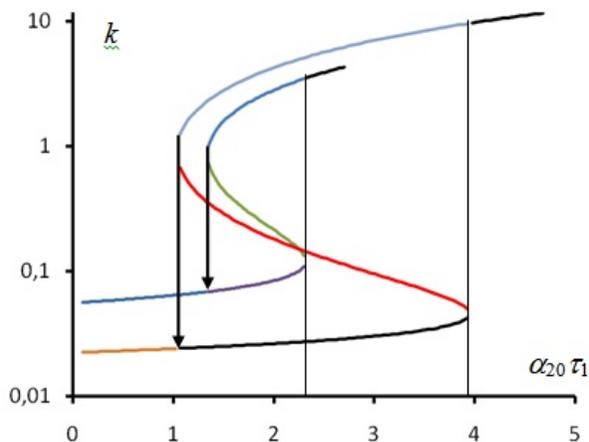


Fig.4. Dependences of coefficient  $k$  on parameter  $\alpha_{20} \tau_1$  at the next values of other parameters:  $q_1 = 2,0$ ,  $\alpha_{10} \tau_1 = 0,1$ ;  $\beta_0 \tau_1 = 0,05$  (1),  $q_1 = 2,7$ ,  $\alpha_{10} \tau_1 = 0,1$ ;  $\beta_0 \tau_1 = 0,02$  (2)

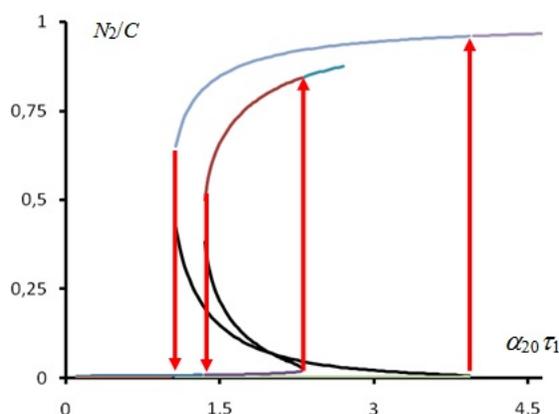


Fig.5. Dependences of relative number of students having complete qualification  $N_2/C$  on parameter  $\alpha_{20} \tau_1$  at the next values of other parameters:  $q_1 = 2,0$ ,  $\alpha_{10} \tau_1 = 0,1$ ;  $\beta_0 \tau_1 = 0,05$   
 (1),  $q_1 = 2,7$ ,  $\alpha_{10} \tau_1 = 0,1$ ;  $\beta_0 \tau_1 = 0,02$  (2)

## Discussion

The product of the lifetime of information packet in the memory of a student who has reached the lowest level in the efficiency of acquisition of the package, calculated in terms of frequency  $\beta_0 \tau_1$ , obviously, is a measure of the effectiveness of training in the primary stages. In the current environment, at least for the post-Soviet states, this value is known to be low, in fact, to enhance it by traditional (purely administrative) measures is not possible.

At the same time, the results show that improving the quality of education in general does not necessarily require increasing the quality of the "direct" training. For small values of correspondent parameter, its increase even by tens of percent will not give the expected result. Much more effective is the use of the factor of interpersonal communication, i.e. creating an environment in which information is shared among students. (As shown by the results of surveys, in this way most of the students get the skills in using the software, i.e. the factor considered already acts as a kind of informal institution).

Stimulating interpersonal communication makes possible qualitative change in the situation. As it follows from Figure 4, 5, with a gradual increase in indicators of the effectiveness of such communications, we can expect a quantum leap that from the mathematical point of view corresponds to the transition from one branch of solution to another. Moreover, the existence of multiple branches of solutions suggests that in this situation the "strategy of a Miracle", understanding in accordance with (Pereslegin S.,2011.), appears as possible for realization. This strategy corresponds to the transition of the system from one branch to another through the use of factors

that are not included in the proposed model ("quantum tunneling"). The creation of innovative research and educational clusters can be considered one of these factors; the corresponding program is now formed in the National Engineering Academy of the Republic of Kazakhstan.

## Conclusions

Thus, analogy with well-known theories of innovation promotion is of interest for building up of quantitative theories aimed to describe quality of education in frameworks of paradigm of theory of information.

Proposed theory gives possibility to show, that stimulation of interpersonal communications is of significance importance for increasing of quality of education, particularly. Moreover, this factor may leads to very high quality of education even in the situation, when effectiveness of traditional forms of education (direct education) is very low.

Proposed theory predicts the existence of few stable states in educational systems in quite wide region of conditions too. Some observations allow concluding that level of education in post-soviet countries corresponds to the lowest branch of solution of correspondent equations, i.e. education in these countries is at the lower possible position. The existence of other branches of solutions that meet a substantially higher quality of education implies that the formation efficiency can be increased by a jump through the use of unconventional measures, which together constitute the "strategy of a miracle" in the terminology of S.Pereslegin.

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# STUDENTS' PERCEPTIONS ON EDUCATION INTERNSHIP PROGRAM IN RWANDA: EFFECTIVENESS AND CHALLENGES

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## Abstract

The paper focuses on the experiences and perceptions of student internees in the College of Education under the University of Rwanda. The primary aim of the study was to reveal how internees perceive the internship program that was newly introduced. Findings reveal that where as internees consider the internship program as being beneficial in their career development, the level of supervision by both mentors and supervisors in regard to action research needs improvement. In addition emphasis given to action research during training was not sufficient. They also expressed their dissatisfaction by saying that they receive supervision on writing their action research report too late and that there is no harmony in presentation as there seems to be different viewpoints from supervisors

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**Keywords:** Internship, supervision, action research

## Background

Ask most parents and they will tell you that it is the teacher who matters most in the education of their children. The conversation then turns to what kinds of teachers we need, and, this focuses upon competencies and skills required of today's knowledge workers (Day et al, 2007). It is a known fact that apart from family background, it is good teachers who make the greatest difference to student outcomes from schooling. Individual teachers have more impact on student outcomes than do whole-school effects and particular classroom practices are linked to high-quality student performance(Hayes et al,2006) The current demand for **teacher** candidates to prove a positive impact on student achievement and work collaboratively in a field that is perennially in change has called for a new paradigm for **teacher** preparation, one that focuses on clinical field experiences, culturally responsive teaching and reflective, collaborative pedagogy (Janine et al.,2011). The co-teach model for student teaching offers improved student learning by allowing for differentiated approaches to instruction and

establishing communication practices necessary for professional collaboration.

Globally the teaching **internship** has been cited as the most significant, exciting, and difficult experience **teacher** trainees encounter throughout their entire **teacher** preparation program. In order to prepare student teachers for their **internships**, it is critical to understand the issues and challenges they face during their student teaching. Fletcher, Mountjoy and Bailey( 2011) observe that it is critical that **teacher** educators discuss strategies and techniques for classroom management, help form synergistic relationships with qualified and passionate mentor **teachers** and university supervisors, and only assign coursework that are critical for the development of the student **teachers** in their **internships**. Beginning **teachers** are confronted with numerous challenges especially in their first year of teaching. Without ample induction support, the beginning **teachers** could merely develop their capacity on their own (Tak, 2005). Therefore, some nations implement the policy of **internship** so as to increase effectiveness of the beginning **teachers**. While research has shown that the co-teach model for the student teaching **internship** yields improved learning for the students in the classroom, less focus has been placed on the student **teachers'** perceptions of their internship experiences.

### **Objectives Of the Study**

This study is specifically designed to:

1. Identify school, and classroom experiences of teacher internees in the college of education in the academic year 2012-13.
2. Determine the level of supervision given to internees by supervisors and mentors.
3. Establish benefits of the internship program to internees and suggest possible measures for the improvement of internship program in the University Of Rwanda College Of Education.

### **Research Questions**

1. What experiences do teacher internees get while in cooperating schools?
2. To what extent are internees satisfied with the guidance they receive from mentors?
3. Do supervisors from the college of education demonstrate adequate professional guidance to internees?
4. What significant benefits does the internship program provide to internees?

### **Internship program**

Internship is designed to prepare teachers not only for their roles as classroom teachers of students, but as professionals studying their own teaching practice, participating in site based decision making and coordinating their work with teachers and other members of the school community. Obviously, these cannot be accomplished without close coordination across all of the parts of the program and across the faculty as well. In the Intern Teaching Program, both mentors and university faculty are expected to work closely together to support and assist interns as they progress through the exercise.

The best way to student skills in any profession, especially teaching, is through personal experience. An education internship is expected to give students a chance to immerse themselves in the classroom teaching experience. Student teaching/internship is the culminating experience for the aspiring teacher. It is designed to be an intensive, full-time classroom experience that allows the pre-service teacher to further develop and refine the skills, competencies and dispositions needed to be an effective educator in today's schools. Student teachers/interns work closely with experienced mentor teachers and university supervisors to become reflective professionals who create environments, organize content knowledge, and teach in ways that promote student learning.

The purposes of the Intern Teaching Program are to improve the preparation of intern teachers, to offer professional development for the mentor teachers, to improve instruction for students in these schools and to assure the continuing professional development of college faculty. In this case an intern teacher is a university student who is assigned full time for one semester or two to a school and who is preparing to be a teacher by studying and teaching under the guidance of a mentor teacher. A mentor teacher is an experienced teacher who guides the practice of an individual intern teacher, or an intern pair and who participates regularly in studying and reflecting about his/her role with other mentor teachers and a university cluster coordinator.

The College of Education is dedicated to providing leadership and quality programs for advancing and merging the theory and practice of teaching. To this end, the College has established several new collaborative efforts with area public schools. The Intern Teaching Program is designed to be a high quality experience for intern teachers as well as their mentor teachers and students. Participating schools and school districts serve as "cluster sites" where several interns are placed in school with mentor teachers in order to work and learn together as reflective practitioners. The whole exercise is organized by the department of career advisory center. The

center identifies cooperating schools and makes placement of internees according to subject need of individual school. It also identifies and recruits mentors who happen to be experienced teachers working in the cooperating schools. To put everything in perspective a workshop for mentors and lecturers who will act as supervisors is then organized where all procedures regarding action research and internship are detailed.

The school practice program was anchored by the on campus learning programs where students would do course work on campus and then get attached to cooperating schools for a period of three months for observation, development and assessment of practical skills in teaching and learning. However in 2003, Kigali institute of Education(KIE) now known as University of Rwanda College of Education and the ministry of education extended the internship period for education students from three months to one year. The teacher trainees would spend their year, which is their final year in teaching practice. The objective of increasing periods for internship among students pursuing their respective degree and diploma courses was aimed at improving their practical teaching skills. In the college of education as it is the practice in higher learning institutions, students in their third year of training enroll for the module Educational Research and development to acquaint them with methods and procedures of undertaking research work. In addition to this the college through the faculty of education organizes workshops for this group of students before they proceed for internship. The aim of the workshops is to acquaint them with expectations and requirement in doing internship and action research.

### Conceptual framework

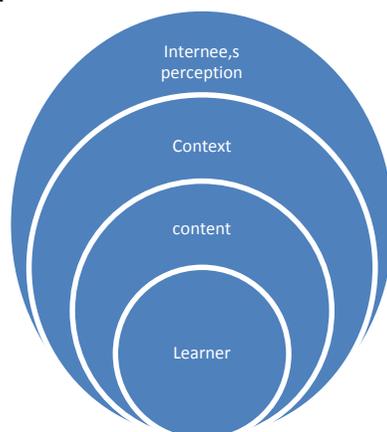


Fig.1 Internship experience

The quality of teaching in higher education institutions is key to unlocking the full potential of students and creating a healthy economy and

society. High caliber teachers, and the institutions and systems that support them, clearly impact on these challenges. Figure 1 shows that the internee continually and reflectively examines, builds and extends knowledge and practice about the learner, content and the context within which teaching and learning occur. This leads to the internee developing his perception about the internship program. It is at the same time expected that the internee will simultaneously be renewing his teaching practice. Experiences like these will enable the academic unit to focus its always scarce resources in the development of learning processes, in the application of technology, and in building alliances both with external constituencies within the university (Diamond, 2000). If an academic unit's strategies and resource allocations are aligned with its selected area(s) of focus, the result will be competent teachers who are empowered to mitigate the challenges in the teaching profession.

### **Action Research in internship**

Following entry into the workforce, there are limited opportunities for new graduate teachers to engage in critically reflective activities about their educative practice. In an increasingly complex and challenging profession, the need for teachers, administrators and school systems to become involved in professional development activities is ever present. Undertaking a unit in action research methodology provides those professionals working in the education system with a systematic, reflective approach to address areas of need within their respective domains.(Hine, 2013)

Action research is a paradigm that reflects the principle that reality is constructed through individual or collective conceptualizations and definitions of a particular situation requiring a wide spectrum of research methodologies. Ordinarily, action research studies a problematic situation in an ongoing systematic and recursive way to take action to change that situation. Action research is also seen as a process of concurrently investigating problems and taking action to solve them. It is a sustained, intentional, and dynamic process of inquiry in which the teacher takes an action purposefully and ethically in a specific classroom context to improve teaching/learning. Action research is an attractive option for teacher researchers, school administrative staff, and other stakeholders in the teaching and learning environment to consider (Mills, 2011). This practice assumes that teachers are the agents and source of educational reform because it empowers them to own professional knowledge through the process of action inquiry conceptualizing, creating, transforming and applying knowledge. It enables teachers to reflect on their practice to improve it, become more autonomous in professional judgment, develop a

more energetic and dynamic environment for teaching and learning, articulate and build their craft knowledge, and recognize and appreciate their own expertise. At the same time, action research can enhance the lives of those professionals who work within educational systems (Holter & Frabutt, 2012). Broadly speaking, action research enables teachers to develop a systematic, inquiring approach toward their own practices (Frabutt et al., 2008) that is geared towards effecting positive change in this practice.

Action research provides teachers with a systematic process to reflect, consider options, implement and evaluate potential solutions. Action research differs from the day-to-day decision making that teachers do (Alberta Teachers' Association[ATA],2000). Action research is a strategy teachers can use to investigate a problem or area of interest specific to their professional context. It provides the structure to engage in a planned, systematic and documented process of professional growth. At its core, action research encourages teachers to share their experiences about how they have worked through an educational concern. Therefore, providing teachers with the necessary skills, knowledge, and focus to engage in meaningful inquiry about their professional practice enhances this practice, and effect positive changes concerning the educative goals of the learning community. At the same time, and with the interests of best practice in mind, action research encourages teachers to become continuous learners within their classrooms and schools (Mills, 2011).

### **Empirical Review**

Haugan, et al.( 2012) carried a study on student **teachers'** relational concerns in **teacher** education,. They followed four Grade 3 Norwegian student **teachers**during their **internship** for two periods of two weeks each. Their analysis indicates that the student **teachers'** motives for their interpersonal relations with pupils are more sophisticated than what has been found with other research and are driven by personal and perceived pupil needs. Sahin and Serkan (2009) conducted a quantitative research to examine technological and pedagogical experiences of Turkish student **teachers**in a US Department of State sponsored international **internship** program. The **internship** program had a specific emphasis on student-centered teaching and technology integration. Findings suggested that the Turkish student **teachers**had the opportunity to observe the professional and educational applications of computer technologies during their **internship** program. These interns reported to have observed instructional computer use by the mentor **teacher**, effective student learning, and a variety of teaching strategies more frequently.

Rozelle, and Wilson (2012) Employed ethnographic methods to describe and explain changes to six beginning science **teachers'** practices

and beliefs during a yearlong **internship**. They found that initially, all six interns attempted to re-enact lessons they witnessed their cooperating **teacher** teach, including following lesson structures and borrowing representations, anecdotes, and jokes. Later, they independently implemented instruction that emphasized similar strategies as their mentors, regardless of whether or not they were experiencing success. Interns who were successful also shifted their beliefs to match their mentors. Exploring the understanding of classroom research of pre-service science **teachers** regarding the problems in conducting a classroom research project and the supports that they need from their cooperating **teachers** in conducting the classroom research project, Jantarakantee et al.(2012) established that most of the pre-service science **teachers** understood the principles of classroom research. The problems the pre-service science **teachers** encountered in conducting classroom research were the limitation of time, generating suitable research question and selecting the innovation to solve the problem. Further the findings revealed that Pre-service science **teachers** would like recommendations from their cooperating **teachers** more frequently for promoting the pre-service science **teachers'** confidence and efficiency in their chosen classroom research projects.

Fletcher, (2012) examined the perspectives of an expert panel of 31 business education university supervisors from the U.S. and Canada using a modified Delphi approach regarding the areas in which mentor **teachers** are typically most and least prepared. Findings indicated business education mentor **teachers** are most prepared in the areas of classroom management, teaching-related administrative duties, and establishing rapport. The majority of the university supervisors believed business **teacher** preparation programs could provide mentor **teachers** with professional development on mentoring and expectations prior to the **internship**. Investigating the professional identity development of **teacher** candidates participating in an informal afterschool science **internship** in a formal science **teacher** preparation programme Phyllis (2011) learned that the experience in an afterschool informal **internship** encouraged the **teacher** candidates to see themselves, and to be seen by others, as enacting key recommendations by science education standards documents, including exhibiting: positive attitudes, sensitivity to diversity, and increasing confidence in facilitating hands-on science participation, inquiry, and collaborative work. Phyllis also provided evidence that the infusion of an informal science education **internship** in a formal science **teacher** education programme influenced positively participants' professional identity development as science **teachers**.

Rhoads, Radu, and Weber (2011) interviewed Nine prospective secondary mathematics **teachers** about their teaching **internship** experience and found out that they had positive experiences with their cooperating

**teachers** and university supervisors while others had negative experiences. They further found that the participants valued freedom to use their own teaching methods, and a friendly and supportive relationship with their mentors. The differing teaching philosophies of student **teachers** and their cooperating **teachers** contributed to negative experiences only when student **teachers** were not allowed freedom in their teaching methods. All these studies basically reveal that internship programs play a significant role in both teaching and learning. More importantly they help in building confidence and familiarizing the teacher trainees with the best practices in the teaching profession.

### Methodology

The Design of the study was a descriptive survey aimed at bringing out the ways and extent to which teacher internees experience and perceive their internship program. The descriptive survey is selected because the primary purpose of this study is to determine the perception regarding the nature, effectiveness and weaknesses of internship program offered to students at the college of education. The study population involved fifth year students of 2012-2013 academic year of the college of education. A systematic random sampling technique was adopted in coming up with a sample of 422 teacher internees. The research employed likert scale questionnaire for the data collection. The questionnaire consisting of 21 items was piloted and modified accordingly and was administered directly. The data collected through questionnaire was analyzed by using descriptive statistical procedure by computing means and standard deviation and then presented thematically.

### Findings

The study findings are presented thematically based on research question and interpretations of the mean rating of the respondents were based on the interpretations of the mean rating of the respondents were based on the following scale: 4.20 – 5.00(Excellent), 3.40– 4.19(Good), 2.60 – 3.39(need improvement), 1.80 – 2.59(Poor), 1.00 – 1.79(Very poor)

Table 1 School and classroom experiences

| No             | Items of Concern  | Mean        | SD          |
|----------------|---|-------------|-------------|
| 2              | Attitude of learners towards interns                                    | 4.06        | 0.42        |
| 5              | Internship experiences  | 4.13        | 0.39        |
| 12             | School location   | 2.76        | 1.00        |
| 15             | Relationship of what was taught in action research and what was applied | 3.40        | 0.71        |
| <b>N = 422</b> |   | <b>3.58</b> | <b>0.63</b> |

The interns expressed satisfaction as far as the attitude of learners towards them was concern (4.06) as shown in table 1. They also described their internship experience as being very good (4.13). However as regarding the application of what was learnt to what was expected to be done in action research, majority of interns felt that the rating was somehow average (3.40). Other concerns were indiscipline among learners and this was attributed to interns being trainees making them not to be perceived as regular teachers. The complain of having to deal with large classes was also raised for this makes it difficult to effectively implement teaching strategies. Whereas interns derived a number of benefits in their internship program they expressed dissatisfaction in the way placement is done especially with regard to location of schools (2.76) with a SD of 1.00. In spite of these shortcomings a mean of (3.58) and a SD of 0.63 indicate that the internees generally had a good experience in their respective schools.

Table 2 Internee perception on supervisors

| No. | Item of concern                              | Mean        | SD          |
|-----|--|-------------|-------------|
| 1   | Level of Supervision                         | 4.32        | 0.30        |
| 4   | Level of guidance received                   | 2.99        | 0.90        |
| 6   | Supervisors understanding of action research | 3.46        | 0.69        |
| 8   | Advice in writing action research report     | 3.95        | 0.47        |
| 13  | Explanation of tasks in action research      | 3.43        | 0.70        |
|     | <b>N= 422</b>                                | <b>3.63</b> | <b>0.61</b> |

Findings as indicated in table 2 show that supervision the interns received was satisfactory (4.32). The guidance in classroom teaching and in writing action research was relatively poor (2.99). On the other hand the interns rated the supervisor level of understanding of action research as (3.46). They also indicated that the advice they received in developing the action research reports was good (3.95) and that the level of explanation given was equally fair (3.43). In as much as the interns rate the level of supervision as (3.63) with a SD of (0.61). They also expressed their dissatisfaction by saying that they receive supervision on writing their action research report too late and that there is no harmony in presentation as there seems to be different viewpoints from supervisors.

What marks teachers out as good, is not only their content knowledge and pedagogical skills. It is their commitment to their teaching, their students and their learning and achievement. Not only are supervisors expected to have strong knowledge of their content, they are expected to be skilled in using a variety of instructional strategies, be continuous learners themselves and excel at planning and analyzing student learning outcomes. This also requires additional training in action research which can easily be done through workshop

Table 3 Internee perception on mentors

| No | Item of Concern                              | Mean        | SD          |
|----|--|-------------|-------------|
| 7  | Assistance in action research process        | 3.41        | 0.71        |
| 14 | Assistance in planning internship activities | <u>2.63</u> | <u>1.51</u> |
|    | <b>N= 422</b>                                | <b>3.02</b> | <b>1.11</b> |

Mentors in carrying out their roles seemed to provide good assistance to internees in their action research work (3.41) as indicated in table 3 . However it was revealed that the quality of discussion and planning of internship activities between the mentors and interns was not adequate (2.63). In general a mean of (3.02) and a SD of (1.11) indicate that the level of supervision was not good. Internees strongly indicated that mentors lack sufficient information on how to conduct action research and that they don't spend enough time mentoring them as expected. Participants valued critical feedback that was constructive and contained concrete recommendations for improvement with their mentors. Fletcher, Mountjoy and Bailey( 2011) observe that it is critical that **teacher** educators discuss strategies and techniques for classroom management, help form synergistic relationships with qualified and passionate mentor **teachers** and university supervisors, and only assign coursework that are critical for the development of the student **teachers** in their **internships**.Johnson (2012)asserts that action research bridges the gap between research and practice. For instance, the theoretical components underpinning action research practice are used to help practitioners understand and observe what is happening in a classroom setting

Table 4 Benefits derived from internship program

| No | Item of Concern                                | Mean        | SD          |
|----|--|-------------|-------------|
| 3  | Opportunities to learn new things              | 3.85        | 0.51        |
| 9  | Action research and teaching practice          | 4.05        | 0.42        |
| 10 | Role of internship in preparing for work       | 3.83        | 0.52        |
| 11 | Action research in teaching and learning       | 3.94        | 0.47        |
| 16 | Confidence in handling school responsibilities | <u>4.23</u> | <u>0.35</u> |
|    | <b>N= 422</b>                                  | <b>3.98</b> | <b>0.45</b> |

Table 4 shows that the interns indicated that the exercise of conducting action research while undertaking their teaching afforded them opportunities to learn new things (3.85). Action research enabled them to reflect critically on their teaching style and practice (4.05). The internship program was also seen as a good way of preparing interns for the world of work as competent teachers (3.83). It was further revealed that action research contributes a lot towards improving teaching and learning (3.94). In general the interns expressed confidence in handling all school responsibilities after the internship exercise (4.23). It is evident that the

internees are positive about the benefits they derived from the whole program of internship (3.98) and SD of (0.45). This quite agrees with Phyllis (2011) findings that the experience in an afterschool informal **internship** encouraged the **teacher** candidates to see themselves, and to be seen by others, as enacting key recommendations, including exhibiting positive attitudes, sensitivity to diversity, and increasing confidence in facilitating hands-on science participation, inquiry, and collaborative work. These experiences indicate that we must support the programs that prepare highly effective educators and offer high-quality and substantive curricula and clinical preparation experiences. These preparation should include significant opportunities that involve highly effective teachers or principals to oversee, mentor, and evaluate aspiring educators in the school environments in which the candidates will ultimately work. Further, aspiring educators must meet a high bar for entering the profession, demonstrating strong knowledge in the content they teach; have mastered a repertoire of instructional strategies and know when to use each appropriately

### **Conclusion and Suggestions**

Peter Drucker a business guru says that the single most important thing to remember about any enterprise is that there are no results inside its walls. The result is a satisfied customer. The result of a hospital is a healed patient. The result of a school is a student who has learned something and puts it to work ten years later. Inside an enterprise there are only cost centers. Results exist only on the outside. In this regard internship program is an effective way to give training to the student-teachers about real world of work. It provides an opportunity to integrate theory and practice in teaching. The program help student teachers to plan and deliver lessons properly, critically analyze their own and peers teaching styles and improve. Internship coupled with action research provides internee teachers an opportunity to critically reflect and improve on their practice. The whole program then cannot be perceived to be effective if those who are charged with the role of supervision and mentoring do not work closely with internees. This requires time and commitment in giving constructive feed back with the aim of developing student-teacher personalities as professionals. Enhancing internship program is therefore critical to improved pedagogical strategies that will promote student learning and in improving the quality of education. In this respect the college of education has the task to elevate and transform teaching so that all graduates are prepared to meet the demands of the 21st century. As the demands of our world continue to expand, learners need educators who are well prepared to meet the ever changing learning environment and expectations of various stake holders.

## Recommendation

It is significant that the college of education integrates the module on internship and action research in the regular teaching program. This will afford students humble time to internalize the process and also help in addressing pertinent issues that may be anticipated rather than doing it at the end just before students proceed for internship.

Supervisors seem to be stuck in the practice of supervising memoir or research projects that have been faced out and have not impressed the concept of action research. There is need to enhance training for both supervisors and mentors specifically on action research

Currently the exercise of supervision seem to be done in hurry as supervisors move from one school to the other and at the same time expected to fulfill their teaching obligation. There is need for supervisors to spend quality time with internees and this can be achieved by extending the supervision period

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# WORK MOTIVATION OF TEACHERS: RELATIONSHIP WITH ORGANIZATIONAL CULTURE

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## Abstract

In the modern world of competitive higher education the role of motivated teachers is undeniable. This study aims to find the importance of the organizational culture in motivating the teachers. Data was collected from 450 degree college teachers of Bangalore city. Analysis of data and the discussion is included. The results showed a positive relationship between work motivation and the organizational culture. Teachers working in organizations with high culture were found to be more motivated. Implications of the findings and limitations of the study are given.

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**Keywords:** Work motivation, organizational culture

## Introduction

The strength of an educational system largely depends upon the quality of its teachers. It is a teacher who helps to transform an individual into a person of imagination, wisdom, human love and enlightenment, and institutions into lampposts of posterity, and the country into a learning society. The National Policy on Education (1986) has rightly remarked "The status of the teacher reflects the socio-cultural ethos of a society; It is in this context that today a teacher occupies a unique and significant place in any society.

It is observed that, with the expansion of higher education over the years in terms of number of universities and colleges and the student strength, its quality and standards have fallen. This issue has engaged the attention of educationists for several years and various committees and commissions have suggested measures for improving the quality of higher education. The Radhakrishnan Commission in 1948, the Kothari Commission in 1964-66, the National Commission on Teachers in higher education, the Government of India documents like Challenges of Education,

Policy on Education (1986) and the Review Committee of the NPE (1986), known as the Acharya Ramamurthy Committee, expressed their concern over the deterioration of the standards of higher education and recommended several steps for bringing about improvement in the quality of education at this stage. Among all the factors responsible, for the deteriorating standards in higher education, the “teacher” has been identified as the key factor. His characteristics, qualifications, his attitude towards the profession, his competency, his professional skills, his capacity for leadership and motivation to work affect the quality of education. The modern society very badly needs teachers who are not only knowledgeable but also highly motivated and committed to their profession and sincere in their efforts for doing good to the society.

### **Concept of work motivation**

People can motivate themselves by seeking, finding and carrying out work, which satisfies their needs. There are two types of motivation namely intrinsic motivation and extrinsic motivation.

**Intrinsic motivation** stems from a direct relationship between the doer and the task and it is usually self-applied. These are the self-generated factors, which influence people to behave in a particular way or to move in a particular direction. These include, responsibility, freedom to act, scope to use and develop skills and abilities, interesting and challenging work and opportunities for advancement. Feelings of achievement, accomplishment and competence-derived from performing one’s job are examples of intrinsic motivators. It is related to ‘psychological’ rewards which are those that can be usually determined by the actions and behaviors of individual managers. Second, people can be motivated by the management through such methods as pay, promotion, praise etc, This can be termed as “**Extrinsic motivation**” and stems from the work environment external to the task and is usually applied by others or someone other than the person being motivated. This is what is done to or for people to motivate them. Extrinsic motivators can have an immediate and powerful effect but this will not necessarily last for long. Extrinsic motivation is related to ‘tangible’ rewards and is often determined at the organizational level and is usually outside the control of the individual managers. The intrinsic motivators, which are concerned with the quality of working life, are likely to have a deeper and long-term effect, because they are inherent in individuals and not imposed from outside.

Work is of special concern to the study of motivation. From a psychological point of view, work is an important source of identity, self-esteem and self-actualization. It provides a sense of fulfillment for an employee by clarifying one’s value to the society. However paradoxically it can also be a source of frustration, boredom and feelings of meaninglessness

that determine the characteristics of the individual and the nature of work. Individuals evaluate themselves according to what they are able to accomplish. If they see their job as hindering their potential and achievement of the same, it often becomes difficult for them to remain motivated and maintain a sense of purpose at work.

Campbell and Pritchard, (1976) defined work motivation in terms of a set of independent/dependant variable's relationships that explains direction, aptitude, and persistence of an individual's behavior holding constant effects of aptitude, skill and understanding of the task, and the constraints operating in the environment. Steers R, Porter L. (1991) defined work motivation as that which drives and sustains human behavior in working life. Pinder (1998) described work motivation as a set of internal and external forces that initiates work related behavior and determines its form, direction, intensity and duration. The noteworthy feature of this description is that motivation is defined as an energizing force-it is what induces actions in employees and second, this force has an implication for the form that is, what the employee is motivated to accomplish, direction that is how they will attempt to accomplish it, intensity, that is, how hard they will attempt to accomplish it and duration, that is, when they will stop that behavior. Work motivation is an action that stimulates an individual to take a course of action, which will result in attainment of some goal or satisfaction of certain psychological needs of the individual himself. In the present study work motivation is conceptualized in terms of 6 factors namely dependence, organizational orientation, work group relations, psychological work incentives, material incentives and job situation (Agarwal K.G 1988).

### **Concept of organizational culture**

Organizational culture is a new perspective in organizational theory. It is a radical departure from the mainstream of contemporary organizational behavior studies and at the same time a continuation and elaboration of long established traditions. The growing body of scholarly work conducted under the banner of culture research is testament both to disillusionment with standard approaches and excitement that a new and more fruitful means of understanding organizations have evolved. The view that organizations are like miniature societies with unique configurations of heroes, myths, beliefs and values has proved popular with practitioners as well as academics. Organizational culture is what the members of the organization perceive and how this perception creates a pattern of beliefs, values and expectations. It is defined as the organizational scripts derived from the personal scripts of the organization's founders or dominant leaders. It can also said to be representative of a complex pattern of beliefs and is said to encompass routine behavior, norms, dominant values, philosophy, rules and feeling or

climates. None of these components individually represents the culture of the organization. Taken together they reflect and give meaning to the concept of organizational culture.

T.J.Peters and R.H.Waterman (1982) defined it as a dominant and coherent set of shared values conveyed by such symbolic means as stories, myths, legends, slogans and fairy tales. According to J.C. Spender (1983), it is a belief system shared by an organization's members. Trice and Beyer (1984) defined it as any social system arising from a network of shared ideologies consisting of two components: substance-the networks of meaning associated with ideologies, norms, and values; and forms-the practices whereby meanings are expressed, affirmed, and communicated to members. E.H.Schein (1988) defined it as the pattern of basic assumptions that a given group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration. Hill & Jones (2001) defined organizational culture as "the specific collection of values and norms that are shared by people and groups in an organization and that control the way they interact with each other and with stakeholders outside the organization. Organizational values are beliefs and ideas about what kinds of goals members of an organization should pursue and ideas about the appropriate kinds or standards of behavior organizational members should use to achieve these goals. From organizational values develop organizational norms, guidelines or expectations that prescribe appropriate kinds of behavior by employees in particular situations and control the behavior of organizational members towards one another."

An organization's culture is like an iceberg. It has both visible and invisible elements. The observable aspects include the physical settings, language, legends and myths, heroes and heroines, ceremonies, behaviors and dress. The visible aspects are indications of underlying dimensions such as values, beliefs and feelings. The invisible aspects of organizational culture include the underlying values, assumptions, beliefs, attitudes and feelings of members as well as unwritten rules about the environment, time, space, relationships and activities. This invisible aspect is sometimes difficult to identify even though many institutions publish a value statement along with the vision and mission. Value statements offer an indication of the institution's beliefs.

Some cultures have more impact on the behavior of organizational members than others. In a **strong** culture, the beliefs, values and assumptions that make up the culture are both intense and pervasive across the organization. In other words the beliefs, values, and assumptions are strongly supported by the majority of members even cutting across any sub-cultures that might exist. Strong cultures do not necessarily result in blind

conformity. Thus, the strong culture provides great consensus concerning what the organization is about or what it stands for.

Strong organization cultures are often shaped by strong values and strong leadership. Other major factors that determine the strength of the organizational culture are sharedness and intensity. Sharedness refers to the degree to which the organizational members have the same core values. Intensity is the degree of commitment of the organizational members to the core values. The degree of sharedness is affected by orientation and rewards. In order for people to share the same cultural values, they must know what these values are. Many organizations begin this process with an orientation program. New employees are told about the organization's philosophy and method of operating. This orientation continues on the job, where, their superiors and co-workers share these values through both word of mouth and day-to-day work habits. When organizations give promotions, recognition and other forms of rewards to those who adhere to its core values, these actions help others better understand these values. Some organizations have been labeled the best to work for, because the rewards that they give to their people are exemplary and help reinforce commitment to core values. Such institutions reinforce the importance of cultural values related to the employee's family through programs such as parental leave, financial assistance, family-care choices and sick-child care.

An organization need not be big to have strong culture. If its members agree strongly about certain beliefs, values and assumptions, a small institution also can have a strong culture. Organizations with strong cultures have several potential advantages over organizations lacking such a culture. The different parts of the organization can learn from each other and coordinate their efforts. This is especially important in de-centralized team oriented organizations. Another important advantage is conflict resolution. Sharing core values can be a powerful mechanism that helps to ultimately resolve conflicts or the core values will often suggest an appropriate dispute resolution mechanism.

In **weak** cultures, on the other hand, beliefs, values and assumptions are less strongly ingrained and less widely shared across the organization. Weak cultures are thus fragmented and have less impact on organizational members. All organizations have a culture but a strong culture enhances the work motivation of teachers Edgar Schein (2003), an MIT Sloan School of Management professor, defined organizational culture as "the residue of success" within an organization. According to Schein, culture is the most difficult organizational attribute to change, outlasting organizational products, services, founders and leadership and all other physical attributes of the organization. His organizational model illuminates culture from the

standpoint of the observer, described by three cognitive levels of organizational culture.

- At the first and most cursory level of Schein's model is organizational attributes that can be seen, felt and heard by the uninitiated observer. Included are the facilities, offices, furnishings, visible awards and recognition, the way that its members dress, and how each person visibly interacts with each other and with organizational outsiders.
- The next level deals with the professed culture of an organization's members. At this level, company slogans, mission statements and other operational creeds are often expressed, and local and personal values are widely expressed within the organization. Organizational behavior at this level usually can be studied by interviewing the organization's membership and using questionnaires to gather attitudes about organizational membership.
- At the third and deepest level, the organization's tacit assumptions are found. These are the elements of culture that are unseen and not cognitively identified in everyday interactions between organizational members. Additionally, these are the elements of culture which are often taboo to discuss inside the organization. Many of these 'unspoken rules' exist without the conscious knowledge of the membership. Those with sufficient experience to understand this deepest level of organizational culture usually become acclimatized to its attributes over time, thus reinforcing the invisibility of their existence. Surveys and casual interviews with organizational members cannot draw out these attributes--rather much more in-depth means is required to first identify then understand organizational culture at this level. Notably, culture at this level is the underlying and driving element often missed by organizational behaviorists.

Using Schein's model, understanding paradoxical organizational behaviors becomes more apparent. For instance, an organization can profess highly aesthetic and moral standards at the second level of Schein's model while simultaneously displaying curiously opposing behavior at the third and deepest level of culture. Superficially, organizational rewards can imply one organizational norm but at the deepest level imply something completely different. This insight offers an understanding of the difficulty that organizational newcomers have in assimilating organizational culture and why it takes time to become acclimatized. It also explains why organizational change agents usually fail to achieve their goals: underlying tacit cultural norms are generally not understood before would-be change agents begin their actions. Merely understanding culture at the deepest level may be insufficient to institute cultural change because the dynamics of

interpersonal relationships are added to the dynamics of organizational culture while attempts are made to institute desired change.

Organizational culture has assumed considerable importance now-a-days because of its impact on employee motivation and performance. Researchers who have studied the impact of organizational culture indicate that it provides and encourages a form of stability. There is a feeling of stability as well as a sense of organizational identity provided by an organization's culture. A strong culture is therefore characterized by employees sharing core values. The more employees share and accept the core values, the stronger the culture is and the more influential it is on their behavior. Religious organization is an example for organizations that have strong influential cultures. A strong organizational culture enhances the work motivation of its employees. A strong culture begins in a feeling of one-ness among the employees. When all of them share the same core values, they help each other and work in a very cordial environment. Moreover, the employees would like to identify themselves with the organization. They work to their fullest capacities and volunteer to assume greater responsibilities. More than anything else, professionalism will prevail in such organizations and there will be sufficient freedom and autonomy in work. The employees will have job satisfaction and they will be able to combine career with good family life, satisfactorily. The environment will be tension-free and there will be good personal relationships. All these factors will enhance work motivation of the employees.

### **Objectives**

The present study was undertaken with the following major objectives:

1. To investigate the relationship between work motivation of degree college teachers and organizational culture.
2. To investigate whether differences in organizational culture would account for significant differences in work motivation of degree college teachers.

### **Method**

#### **Hypotheses**

1. There is no significant relationship between work motivation and its factors of degree college teachers and organizational culture.
2. There is no significant difference in work motivation and its factors of degree college teachers working in colleges having high and low organizational culture.
3. Levels of organizational culture do not account for significant difference in work motivation of degree college teachers.

## Tools

For the purpose of the present study, we have used two tools, as shown in Table 1, namely Work Motivation Questionnaire by K G Agarwal, adapted and standardized by Tara Sabhapathy and Organizational Culture Scale by Priya Nair and C.N. Daftuar, adapted and standardized by Tara Sabhapathy

Table 1. Showing Variables, Tools and Authors

| Sl.No | Variables              | Tools of the study  |
|-------|------------------------|---|
| 1     | Work Motivation        | Work Motivation Questionnaire by K.G.Agarwal, adapted and standardized by Dr.Tara Sabapathy.              |
| 2     | Organizational Culture | Organizational Culture Scale by Priya Nair and C.N.Daftuar adapted and standardized by Dr.Tara Sabapathy. |

## Sample

The population for the study consists of all the degree college teachers in various colleges of Bangalore city, namely 1) Government, 2) Private aided and 3) Private unaided respectively.

A sample of 450 teachers, 150 from each of the three categories of colleges were selected by stratified random sampling technique. The sample gave representation to male and female teachers as indicated in Table 2.

Table 2 Showing the distribution of sample according to type of Management and Gender

| Gender | Type of Management |       |         | Total |
|--------|--------------------|-------|---------|-------|
|        | Government         | Aided | Unaided |       |
| Male   | 71                 | 85    | 75      | 231   |
| Female | 79                 | 65    | 75      | 219   |
| Total  | 150                | 150   | 150     | 450   |

## Data analysis

From table 3 it can be seen that the obtained r values 0.330, 0.237, 0.299, 0.252, 0.209, 0.261 and 0.309 and are higher than the table value 0.115 at 0.01 level of significance. Therefore the null hypotheses are rejected and alternative hypotheses are formulated that there is a significant relationship between all the factors and total work motivation of degree college teachers and organizational culture .

Table 3 Table showing the variables, size (N), df, and coefficient of correlation 'r' and its significance at 0.05 and 0.01 levels between Work Motivation scores and its factors of degree college teachers and Organizational Culture

| <b>Variables</b><br>Work Motivation and<br>Organizational Culture | <b>N</b> | <b>df</b> | <b>r-value</b> | <b>Level of<br/>Significance</b> |
|---|----------|-----------|----------------|----------------------------------|
| Work Motivation   | 450      | 448       | 0.330          | **                               |
| Dependence  | 450      | 448       | 0.237          | **                               |
| Organizational Orientation  | 450      | 448       | 0.299          | **                               |
| Work Group Relations  | 450      | 448       | 0.252          | **                               |
| Psychological Incentives  | 450      | 448       | 0.209          | **                               |
| Material Incentives   | 450      | 448       | 0.261          | **                               |
| Job Situation   | 450      | 448       | 0.309          | **                               |

\*\*Significant at 0.01 level

From table 4 it is observed that the obtained 't' values 16.100, 9.931, 15.827, 12.347, 10.406, 9.695 and 11.263 for the total work motivation and all its factors are above the table value 2.59 at 0.01 level of significance. So the null hypotheses are rejected and alternative hypotheses are formulated. The table further revealed that teachers working in colleges with high organizational culture (M=105.636, M=20.657, M=21.649, M=15.578, M=17.745, M=17.127 and M=12.877) had higher levels of work motivation than teachers working in colleges with low organizational culture (M=87.909, M=16.824, M=17.261, M=12.630, M=15.725, M=14.581 and M=10.887).

Table 4 Table showing the 'N', Mean, SD and t values of the Work Motivation scores and its factors of degree college teachers as per differences in Organizational Culture

| <b>Sl. No</b> | <b>Variables</b>                                  | <b>N</b> | <b>Mean</b> | <b>SD</b> | <b>'t' value</b> | <b>Level of<br/>significance</b> |
|---------------|---|----------|-------------|-----------|------------------|----------------------------------|
| 1             | Work Motivation<br>High organizational<br>culture | 228      | 105.636     | 11.096    | 16.100           | **                               |
|               | Low organizational<br>culture                     | 222      | 87.909      | 12.243    |                  |                                  |
| 2             | Dependence<br>High organizational<br>culture      | 228      | 20.657      | 4.124     | 9.931            | **                               |
|               | Low organizational<br>culture                     | 222      | 16.824      | 4.061     |                  |                                  |

|   |   |     |        |       |        |    |
|---|---|-----|--------|-------|--------|----|
| 3 | Organizational Orientation<br>High organizational culture | 228 | 21.649 | 2.726 | 15.827 | ** |
|   | Low organizational culture                                | 222 | 17.261 | 3.144 |        |    |
| 4 | Work Group Relations<br>High organizational culture       | 228 | 15.578 | 2.520 | 12.347 | ** |
|   | Low organizational culture                                | 222 | 12.630 | 2.545 |        |    |
| 5 | Psychological Incentives<br>High organizational culture   | 228 | 17.745 | 1.871 | 10.406 | ** |
|   | Low organizational culture                                | 222 | 15.527 | 2.235 |        |    |
| 6 | Material Incentives<br>High organizational culture        | 228 | 17.127 | 2.273 | 9.695  | ** |
|   | Low organizational culture                                | 222 | 14.581 | 3.227 |        |    |
| 7 | Job Situation<br>High organizational culture              | 228 | 12.877 | 1.508 | 11.263 | ** |
|   | Low organizational culture                                | 222 | 10.887 | 2.186 |        |    |

\*\*Significant at 0.01 level

## Results

From the study we arrived at the following findings.

1. There was a significant positive relationship between work motivation and all its factors of degree college teachers and organizational culture. ( $r=0.33$ )

2. There was a significant difference in the work motivation and all its factors of degree college teachers working in colleges having high and low organizational culture. Teachers working in colleges having high organizational culture ( $M=105.64$ ) are more motivated than the teachers working in colleges having low organizational culture ( $M=87.91$ ).

## Discussion

Work motivation of degree college teachers was significantly and positively related to the organizational culture. It is clear from the findings of the study that a strong organizational culture is an asset since it enhances the motivation of teachers. In this context a large number of functions have been attributed to organizational culture. Hampden-Turner (1990) have suggested that the culture of an organization defines appropriate behavior, bonds and

motivation of individuals and asserts solutions where there is ambiguity. It governs the way an organization processes information, its internal relations and its values. In more specific terms the most significant functions have been said to include, conflict reduction, coordination and control, the reduction of uncertainty, enhancement of motivation and competitive advantage. Thus college principals should strengthen the culture of their organizations to keep the teachers motivated.

### **Limitations**

The study was limited to a sample of 450 degree college teachers. The total population of male and female degree college teachers at the time of data collection was 7459 working in 267 colleges of Bangalore city. As the city of Bangalore is growing fast the demand for more degree colleges and recruitment of teachers is also on the rise. Therefore the selection of a limited sample of teachers is a limitation in the present study. The sample was limited due to practical constraints such as time, effort and cost. The independent variables selected for the study have been limited to one in order to study that in depth and examine the effect of this on Work motivation of degree college teachers. Degree college teachers in rural colleges were not considered in this study.

### **Conclusion**

The study revealed that there was a significant and positive relationship between work motivation of degree college teachers and organizational culture. Organizational culture can be an important source of motivation for employees, and thus a significant influence on the efficiency and effectiveness of organizations. Most organizations make strenuous attempts to motivate their employees by making use of rewards such as bonuses and promotions and the threat of punishments in the form of unwanted transfers, demotions and salary decrements. These extrinsic factors are effective up to a point, but are far more likely to have their desired effect when employees are also motivated by intrinsic factors. Intrinsic theories of motivation counsel that employees are motivated when they find their work meaningful and enjoyable, they identify their aims and objectives with those of the organization, and they feel valued and secure. Organizational culture is obviously of great potential significance here. An appropriate, strong and cohesive culture can offer employees a focus of identification and loyalty, foster beliefs and values which encourage employees to think of themselves as high performers doing worthwhile jobs, and promulgate stories, rites and ceremonies which create feelings of belongingness.

The importance of organizational culture is now well established in organizational literature (Deal and Kennedy, 1992; Peters and Waterman,

1982; Sathe 1985; Schien, 1983, 1984, 1985). Since organizational culture involves shared expectations, values, attitudes and assumptions, it exerts influence on individual groups and organizational processes. A strong organizational culture enhances the work motivation of teachers. A strong culture begins in a feeling of one-ness among the teachers. When all of them share the same core values, they help each other and work in a very cordial environment. This implies that there is an underlying necessity for educational institutions to build an organizational culture that motivates teachers to deliver their best. In order for teachers to share the same cultural values they must know what these values are through institutional socialization. Many institutions begin this process with an orientation program. New teachers need to be told about the institution's philosophy, method of operating and provide teachers with sufficient tools to develop the required job mastery. This orientation may continue on the job where their superiors and fellow teachers share these values through word of mouth and day to day work habits. When institutions give promotions, recognition and other forms of rewards to those who adhere to its core values, it helps others better understand the organizational culture. Some organizations have been labeled the best to work for, because the rewards that they give to their employees are exemplary and help reinforce commitment to core values.

College principals should attempt to adopt decentralization policies where freedom is given to each department to work independently and in coordination with each other. Collegial conflicts should be amicably resolved by principals to hold the group together. Group cohesiveness and understanding should be encouraged in institutions. A strong organizational culture therefore enhances work motivation of teachers. They will work to their fullest capacity and volunteer to assume greater responsibilities.

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# **SCHOOL IMPROVEMENT STRATEGIES: A CASE STUDY TO UNDERSTAND TEACHER-SELF-REPORTED EXPERIENCES WITH EFFECTIVE LEADERSHIP APPROACHES USED IN PRIMARY AND SECONDARY SCHOOLS IN ZIMBABWE**

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## **Abstract**

The *purpose* of this mixed methods study was to understand and describe self-reported experiences with effective School Improvement strategies used by school heads in primary and secondary schools. Focus group interviews and surveys with parents, school heads and teachers helped to inform the research questions identified for this study. The overall *findings* reveal that schools' organizational efficacy is collectively achieved when school headmasters practice and implement instructional leadership strategies and behaviors gleaned through the following five broad professional growth-oriented themes emerging from this study: (a) using inclusive leadership strategies; (b) encouraging team-work among teachers; (c) teacher participating in collective information gathering to create a shared school vision; (d) and leadership helping to fulfill contractual agreements among teachers, students and parents; and (e) ensuring availability of instructional resources and technology. From the findings of the current study, we reached the general *conclusion* that information availability and processing at school level will always allow for increased collective participation by teachers in the school improvement (SI) agenda through the enhancement of holistic organizational learning power. Schools that learn as organizations improve fast.

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**Keywords:** Collaborative efforts; School Improvement (SI); School Improvement Strategies (SIS); Organizational learning; Organizational effectiveness; Teacher professional growth

## **Background to the Study**

This study was conducted in the Zimbabwean context where policies of education widely influence school leadership, the way teachers perform their work; and how students are taught and evaluated. The Zimbabwean Ministry of Education and Culture is a highly centralized system both in its organization and procedures although a few functions are continuously being decentralized to the Regional Education Offices. The centralized education system in Zimbabwe influences most aspects of education including school enrollment policies, curriculum evaluation standards, and the distribution of available key curriculum materials, evaluation and measurement of learning—including testing, and staffing of most schools (Nzirasanga Commission, 1999; Ministry of Education, 2012;). Some of these centralized tendencies influence ways in which leadership at school level is fostered and ultimately how it influences teaching and learning outcomes and eventually school improvement pace. After independence, Zimbabwe slowly phased out control of the British Cambridge education system and its curriculum, adopting the new Zimbabwean curriculum that is headed by the Zimbabwe Secondary Examination Council (ZIMSEC).

Currently all Zimbabwean schools follow a basic national curriculum, although they have open latitude to include aspects of the British curriculum which offers the Cambridge School Certificate subjects in addition to the current changes in technology (Ministry of Education, 2012). Most private schools offer a hybrid curriculum which allows students to fulfill both local and the Cambridge Examination systems with permission from the Zimbabwe Ministry of Education. However, private schools which operate on open enrollment platform zones perform better than public schools in many ways, because of availability of materials resources, reduced teacher pupil ratios, student selection and enrollment procedures; and the inclusion of technology in their curriculum. In general, employment and university enrolment tendencies show that private institutions graduates are better empowered by the broadened curriculum when compared to graduates from public and rural schools (Stevenson, 2001; Stronge, 2002; Ministry of Education, 2012). However, even those public schools that are known to perform outstandingly use selective methods for enrolling new students. This allows them only to enroll high performers and to use methods that help students to graduate with improved grades (Sergiovanni, 1997; Sutton, 2000; Giles & Hargreaves, 2006).

## **Conceptualizing School Improvement from a Global Perspective**

School Improvement (SI) has been conceptualized as a critical tenet indicator and strategy for the development of education and school improvement processes (Hallinger, & Hart, 2000; Silins & Mulford, 2002).

Accumulating evidence from research indicates that effective schools continue to develop first their instructional staff as a distinct means for achieving school improvement by encouraging use of newly learned instructional skills (Kruse, 2003; Madhlangobe, Johnson, & Gordon, 2008). Therefore, professional development and continuous review of teacher training curriculum are both critical to SI (Sergiovanni & Starratt, 1998; Bodrova, & Leong, 2004; Madhlangobe, et al., 2008; Glickman, Gordon and Ross-Gordon, 2010). Literature shows that, in most cases, when educationists focus on the concept of school improvement in general, their common emphasis and strategies for improving schools is placed on what students achieve in standardized tests and examinations only (Giles & Hargreaves, 2006; Madhlangobe & Gordon, 2012). Borrowing from literature, we hold the belief that SI should be viewed as a wider concept when compared to the current general emphasis given to student achievement as the only conception of developing education and achieving school improvement in Zimbabwe (Beck & Murphy, 1994; Sergiovanni, 1997; Giles & Hargreaves, 2006; Madhlangobe, 2009).

The concept of school improvement in Zimbabwe as viewed through the Better Schools program is still veiled with just the writing the school progress report card based on class progress lists, a top 10 student-scoreboard of achieved high points in standardized tests—making the whole concept of SI too narrow and unresponsive to industry and commerce expectations and needs (Ellis, & Shpilberg, 2003; Giles & Hargreaves, 2006; Schechter, 2008). If the concept of school improvement is qualified by such words as *better schools*, *outstanding schools*, *top ten students*, *top 100 schools*, *zero pass-rate*; and *best student*, to what extent do these qualifiers help to mould effective school innovation and to develop education in general? In my view, and those of abundant research findings, SI should be understood in ways that allow educators and interested communities to appropriately implement leadership foci, parenting, education policy and teaching behaviors that ensure school settings move the education achievement system and processes toward a strategic understanding of the students and teachers from a broader perspective (Calhoun, 1994; Brookfield, 1995; Stronge, 2002; Brookfield, 2005; Giles & Hargreaves, 2006; Madhlangobe, 2009). Clearly, when doing research, educationists and theorists need to refocus their attention on how to concretize the general understanding of *what to look at when writing a school report*, *student report* and *the overall school contribution to educational development* report card. Informed understanding of SI will lead to significant change of teaching-learning processes at school and classroom levels (Sergiovanni & Starratt, 1998; Dembo, & Seli, 2008). Therefore, there is need for research that aims to produce supervision models that may help schools to understand SI as a

process and context where school leadership creates committees that use data to measure effectiveness of teaching behaviors (Ellis, & Shpilberg, 2003; Silins & Mulford, 2002; Glickman et al., 2010). Available literature (Sergiovanni, 1997; Stronge, 2002; Danielian, 2009) reveals that any collected data on standards of education should be used to evaluate school effectiveness by providing continuous feedback loops that in-turn help schools to be responsive. In their broad understanding of SI through supervision, Glickman et al., (2010) see educational feedback-loop-actions as help lines that define procedures used by teachers to systematically collect, share and process information that may be used to restructure instructional approaches for school improvement purposes.

### **Purpose and Significance of Study**

The purpose of this study was to investigate how educational practitioners in schools view and comprehend effective SI strategies in a Zimbabwean context and to create a framework that may lead to a broadened focus for helping policy makers, school leaders and teachers to systematically collect relevant data for creating school profiles that will define the improvement levels of their schools.

### **Research Questions**

The following two research questions guided this study,

- How do educationists and parents as stake holders view and define school improvement from their diverse perspectives?
- In their own perspectives, how do teachers describe their experiences with successful school improvement strategies or lack of it through the diverse aspects of the schools system?

To achieve the purpose that WE set out to investigate both schools and any other external interested institutions were invited to help describe their experiences with SI *looks, sounds and feels like* in the contexts of their schools.

### **Literature Review**

According to literature, organizations that show interest in educational improvement may be viewed in terms of their relationships with the school, from their internal or external contexts of the school (Mezirow, 1981; Goddard, & Goddard, 2001). Therefore, internal institutions that participated in this study included secondary schools or communities that have vested interests in the students that graduate from the primary schools under study. In this context, secondary schools that enroll graduates of primary schools are considered external organizations in that they are involved in the evaluation of graduates from the primary school. In this

study, external sources included organizational groups outside the education system that have invested interests in Ministry of Education products for employment purposes. However, within the same Ministry of education, there are other groups that are external to their sister organization and hence they may be qualified to evaluate the quality of education provided by their sister groups below them.

If research fails to collect data from these diverse sources, that may lead to a vacuum of information that is needed to help understand appropriate approaches that have the potential to increase learning and bring about change (Noddings, 1986; Goddard, Hoy & Woolfolk, 2000; Ellis & Shpilberg, 2003). The big question is *how should education processes be designed first and then implemented to be aligned to the ever changing external environment to the schools?* Clear answers to this question will help understand what education development and school improvement should look like and how the wider world should feel the impact of education (Hallinger, & Hart, 2000; Giles & Hargreaves, 2006). All teaching-learning activities that follow the definition provided by answers to the question above may help educational leaders to ensure that students acquire knowledge, values and skills that positively impact nationally shared aspirations, belief and technical skills that define progress and indeed education quality (Dewey, 1933). Since the purpose of this study was to help develop a hypothetical model that connects school authorizes and their practices to the ideal collective sense of school effectiveness at primary and secondary schools, SI is still a new phenomenon in Zimbabwe and for this reason, in this study we place it at the centre of understanding how it may influence economic growth and viewing it as a pathway for helping Zimbabwe to emerge from the current *national economic development depression* which all institutions with a vested interest in national development need to address. For this study therefore, we wanted to understand how participants viewed and created a model of educational development through the school improvement strategies that work—all of which define quality and development of education (Heritage, & Yeagley, 2005). To ensure that the purpose is fully achieved, we had to look at the model from the context of relationships among three (3) variables that influence school improvement: leadership, parenting and instructional practice all of which promote effective teaching-learning. From this model, we hope schools in Zimbabwe will not take their eyes off the ball each time they open the doors to new student at the beginning of each school year. Next, we turn to the theoretical framework that guides our inquiry.

## Theories Guiding School Improvement

Literature from decades of research shows that scholars view SI as a way for continuously matching needs of institutions that employ graduates from the education system (Mead, 1934; SchoEn, 1987; Joyce, & Showers, 1995; Sergiovanni, & Starrat 1998; Popper, & Lipshitz, 1998; Hallinger, & Hart, 2000; Fillon, 2007). However, in this study we extend that view by embracing the understanding that SI should be viewed from the perspective of those interested in the learning outcomes of students graduating from schools as tools for national development. Therefore, when considered from this lens, SI becomes a key component for ensuring that instructional strategies achieved through effective leadership and supervision approaches meet the standards required for school and educational efficacy in general (Dewey, 1933; Silins et al., 2002; Glickman et al., 2010). In order for schools to improve, and ultimately for education to develop, schools should design strategic instructional processes that respond to the ever changing external environments—hence a need for leadership approaches and teaching styles that build their internal capacity to be able to answer to the external needs and questions (Sheppard, 1996; Fullan, 2000; Kruse, 2003). When schools move with times and provide students with skills that are parallel, but advanced in their capacity for consistently for introducing *innovations and reforms* that have inbuilt power for producing in the students, the knowledge, skills, attitudes and values that respond to external demands, then we are able to define those schools with absolute certainty as *improving institutions*. Creative educational innovations speak volumes about teaching-learning processes in addition to educational leadership and supervision. Critiques of the Better Schools Programme emphasize that most schools that join the BSP do that only as a measure for the schools to be classified *first* as better schools, and that once they are registered in the BSP, such schools view any other development issues as besides labels (SchoEn, 1987; Silins et al., 2002). Therefore, regardless of how they perform, leaders may continue to hide behind the banner of BSP although nothing is available to show the better status of growth related to the better schools class they joined. In this study, the question that seeks answers is; *what change aspects do BSPs bring to the table of continuous school improvement? When and with what evidence do those schools become best?*

Accumulating evidence shows that schools that succeed normally use strategies that involve continuous information sharing, data collection for effective decision making based on accountability and observable school reforms that distinguish them from struggling schools (Richardson, 2002; Joyce, & Showers, 1995; Goddard, et al., 2000). Recently in 2014, some Zimbabwean schools that appeared in the press with zero-pass rates were also registered under the BSP. Modern schools need leadership and

instructors who collectively continue to find strategies that help to restructure teaching approaches for purposes of achieving improved learning outcomes. The schools should use clear committees that collect, analyze and share data with all faculty members for purposes of improving the entire school. Sharing data will lead to the introduction of systematic changes that benefit faculty members and students (Bandura, 1993; Stein, Smith, & Silver, 1999; Smith, Hofer, Giles, Solomon, & Rowe, 2003; Danielian, 2009). The importance of collective use of information to improve schools is that any data collected by the schools may be in the form of numbers, stories and figures or graphs all of which will be relevant to reflect the performance of the school and at times specific performance by each member (Popper & Lipshitz, 2000). Therefore, the five (5) phases of institutional information processing may include that: (a) teachers should acquire information first, (b) teachers share collected data with the specific purposes to increase collective institutional understanding; (c) Once the data has been shared it will impact effective collective data interpretation by all members of the school; (d) when teachers have collected, shared, and interpreted information, that will lead to increased collective learning power at school level; and (e) the teachers and leadership will all have a common institutional data base that will help maintain a collective teacher focus on school goals. Below we discuss in detail the impact of each of the phases that define information processing at institutional level,

- Teachers Acquire Information. In effective schools, teachers are exposed to students' stories regarding teacher impact on their learning, they should be encouraged to experiment with diverse teaching-learning approaches, listen to sources of school self-evaluation comments, information from external organizations' success strategies, learn about new technologies and how they impact schools and observe approaches that work from experienced teachers and other experts (Ballou, & Podgursky, 1995; Fullan, 2001 & 2002; Madhlangobe, 2009; Madhlangobe & Gordon, 2012). Acquiring all these forms of information has the following forms of impact outcomes on school improvement, information

- promotes student achievement—teachers with greater information bases learn more than those by teachers with less levels of information bases
- supports and develops a talented and committed staff—through sharing ideas
- builds a solid organizational structure on which continuous school improvement will rest and continue to improve
- helps the school leader to continuously guide schools—to improvement teaching and learning

- creates and shapes the school's vision—based on tenets of all students success regardless cultural origin and race
  - develops an inclusive school climate—that is characterized by care and collaboration for purposes of the development of education
  - promotes teacher and student leadership—through a common ownership of the school vision
  - develops inclusive instructional approaches—this is based on the philosophies of school improvement through applying multicultural education, and
  - leads from behind—and allowing others to lead and to be creative while collecting data and processes to foster school improvement.
- Data sharing to increase understanding and institutional cohesiveness. In effective school organizations particularly, literature is awash with information that shows that teachers, through action research and collaboration collect and share information related to—improvement of teaching strategies, how children learn in the classrooms, and the strategies for using the power of parental involvement to school improvement ideas (Fullan, 2001; Argote, et al., 2003; Stronge, 2006). Conversely, in those schools that struggle only a few teachers are entitled to have access to the very limited selected approaches to information sharing, and that information is not used at school wide levels. Only those with access to information are allowed to shine above the other faculty members. Today, there is a wide variety of choices for methods such as internet systems, electronic text messages, face-to-face approaches, action research and hard copy circulars just to mention a few examples for information sharing media. According to Argote, et al., (2003) for those leaders who use increased levels of information sharing, they observe a positive relationship between increased information distribution in the school on one hand and improved school performance and growth of education on the other. Therefore, education leaders who foster sharing of information approaches with their faculties are considered as reform advocates, transformational educational leaders, effective communicators and they exhibit excellent public relations' skills whose focus is on school-wide effectiveness (Stronge, 2006; Madhlangobe, 2009). Effective leadership practices are shown through high levels of integrity, fairness and follow acceptable ethics (Guerra & Nelson, 2007; Madhlangobe & Gordon, 2012)
- Impact of effective school-wide data interpretation and usage.The levels and rates at which data is distributed among staff depend on the types of data and how individual teachers make sense of that data. Sometimes, data

in form of statistics require expert understanding to help others use the data. However, for the most part, the most important element is the ability to ensure that all members operate on the same page regarding any piece of data. Information related to policy issues is critical to teacher performance and meeting deadlines (Ballou, & Podgursky, 1995). Regardless of their size, in most cases, self-reported stories have proved to be helpful to educational institutions and even nations to succeed (Madhlangobe, 2009). In education, when teachers and students share stories related to their experiences with aspects related to learning improvement and school improvement, other individuals will use those experiences to navigate their own strategies to achieve improved levels of understanding of the unusual strategies that may be used to navigate teaching or learning assignment hence improved performance of their key result areas.

- *Sharing information that leads to increased school learning power.* Strategic sharing of information at faculty level has the power to enhance school social values, and helping to better the health levels of the school climate in general (Wheatley, 2002; Goddard et al., 2004; Abilock, 2006). Team power is a human relations variable used as a strategy for initiating school success through collaborative work which helps to empower all members of the organizations through acquiring new knowledge from stories “that represent organizational cultural patterns and values” (Kruse, 2003). The school records such as staff meeting notes, workshop handouts, students exercise books, log books and students school reports/records all act as a data base that may help increase the required data base—also known as *organizational memory* but in this study we refer to it as school memory (Fauske & Raybould, 2005; Ware, 2010)—including electronic databases, transaction records, and historical archives. When data is stored in a commonly shared school-wide level data base (school memory), easy data sharing will lead to increased school-wide responses to challenges which helps to improve shared knowledge and experience levels. The even distribution of knowledge—school memory leads to improved levels of communication around specific goals also known as organizational culture. Organizational culture when widely understood ensures that all member behaviors will be uniformly wired to help members have access to acceptable school expectations or standards for school improvement. When a bigger number of people access the same information they will have the potential to continuously update their individual memories with acceptable organizational culture leading to greater *school improvement* potential (Sutton, 2000; Wheatley, 2002). Similarly, the development of education will easily be achieved and viewed through reduced (a) rates of student suspension, (b) referred cases to special education, (c) achievement gaps, (d) discipline, and (e) school dropouts while at the same time increasing—(i)

school orderliness, (ii) levels of health of the school climate; (iii) teacher beliefs in efficacy, (iv) increased enrolment; (v) students test scores, (vi) discipline, (vii) participation in education (attendance) and (viii) student retention.

- *Use of Information to keep faculty and staff focused on school goals.* Past experiences are a great source for developing informed decisions and changing strategies to acquire those that work. When information is available, decisions are arrived at in a uniform approach, and the school will always move forward as a compact unit and all members will be ready to collaborate in ways that ensure movement of the whole organization to new levels (Wheatley, 2002; Kruse, 2003; Abilock, 2006). Such data is used to answer the questions—*where were we yesterday in relation o the school vision? And where are we today? Where do we go next and how do we get there?* Therefore, under such contexts, data collection and decision making is a critical tenet for school improvement purposes, especially when used as an approach for closing achievement gaps among groups and improving the school culture (Sutton, 2000; Gordon, 2004). According to Gordon, (2004) data sharing reduces conflicts and helps to understand and reduce political, social and economic gap-contexts that may impact schools in a variety of ways.

### **The Power of Team Work and School Improvement**

For any organization or nation, team power is viewed as a “group’s shared belief in its conjoint capabilities for organizing and executing the courses of action required to produce given levels of [teaching and leadership] attainments” (Bandura, 1997, p. 477). This concept of team-power may, at quick view be seem to conjecture that in successful schools all leadership decisions are made in the headmaster’s office. This is not really true, but in its veracity, the opposite is true—in all effective schools, educational leadership power is developed, computed and supported at all levels of the school including among students and parents (Ballou, & Podgursky, 1995; Madhlangobe, et al., 2008; Wallace Foundation., 2013). This is why schools in Zimbabwe use the *school prefects’ council* as a student leadership body from elementary schools levels to high schools. For example, in a study to understand effective leadership in schools, the Wallace Foundation used a musical metaphor to describe three different forms of school leadership approaches—and in the process, emphasizing team power said:

*In short, we believe leaders perform number key practices. School leaders determined to do it all themselves were “one-man bands;” those inclined to delegate responsibilities to others operated like the leader of a “jazz combo;” and those*

*who believe broadly in sharing leadership throughout the school could be thought of as “orchestral leaders,” skilled in helping large teams produce a coherent sound, while encouraging soloists to shine. The [crucial] point is that although in any school a range of leadership patterns exists – among principals, assistant principals, formal and informal teacher leaders, and parents – the principal remains the central source of leadership influence. (Wallace Foundation, 2013, p. 8)*

This citation reveals a number of characteristics related to team power in schools: (a) some leaders fear delegation of duties to others, and such leaders are considered one-man-bands who rarely succeed; (b) the *jazz-combo leaders* refers to leaders who see value in subordinates' leadership qualities and they allow some of them to lead—hence allowing their leadership principles to permeate the school-wide context through teacher leadership; and (c) the *orchestral leaders* are those whose leadership is considered highly skilled in helping large teams or school-wide teams to produce coherent outputs, and they motivate highly talented individuals to shine and influence school improvement. While school success may be viewed as a single achievement coming from inputs of various actors, the *leader is will continue to be the center piece of all outcomes and or failures.*

*Therefore, team-power may be viewed as “a belief system that includes the mutual recognition of the various agents including home, school, and community, [and that]... each unit has a valuable and distinctive role in promoting success and together—and only together—do they have the capabilities to create environments conducive for the optimal development of the student. (Henderson, et al., 1998, p. 4)*

From Henderson et al., (1998)'s views, in this study we embrace the view that teamwork is inclusive and has the power to impact collective teacher effectiveness. Therefore, through teamwork, teachers have the power to implement work actions needed to positively impact student learning outcomes through powerful instructional methods, motivation of students and other external forces; and that school management in general is the key to improved school outcomes (Goddard & Goddard, 2001).

## **Methods Used**

### **Research Design**

In this section, we describe the selection of participants, data collection instruments, data gathering and presentation procedures. Following the model recommended by Punch, (2009), throughout this study we ensured trustworthiness of qualitative data and reliability of quantitative

data through triangulation of data forms, sources, analysis procedures and presentation strategies that we triangulated throughout each stage of data collection and presentation as shown through each of the following sections.

### **Selection of Participants and Data Collection Procedures**

*Teachers and Headmasters.* This mixed methods study included a survey instrument with questions to measure teacher self-reported experiences with school improvement concepts through interviews and questionnaires. A total (43) purposely selected teachers from 7 primary schools (2 private and 5 public) participated in the whole study. Another sample of 3 purposely selected secondary schools (1 private and 2 public) schools participated in this study. The headmasters and their deputies from each of the selected schools also volunteered to participate in the study. However, at each school, all teachers including the purposely selected sample were invited to complete surveys related to their experiences with strategies used to ensure school improvement at their work stations. For the surveys, 127 fully completed surveys out of 131 surveys sent out were returned. Of the remaining only 4 included in the returned surveys were not fully completed. We discarded the incomplete surveys for participating in the study. The level of response is evidence that in general, participants were keen to provide data to inform question for this study.

*Parents and communities served by the schools.* A total of 53 parents including 24 members of the PTA communities served by the schools also completed the parallel surveys for the secondary schools and 151 volunteering parents from the primary schools completed questionnaires and the 24 PTA members from both sections responded to focus group interviews designed to provide follow-up questions related to the observed teachers and school headmasters behaviors. In addition, through completing the survey and questionnaire 42 other parents also added their views as parents, regarding how effective SI strategies helped their children to succeed.

*Education Officers.* Three education officers also volunteered to participate in this study. The education officers responded to the interview questions and the survey but like teachers and school headmasters they also provided artifacts that represented statistical evidence of how they evaluate schools for success. For all participants, the interviews were recorded and later typed into word documents for easy analysis and storage.

### **Data Analysis Procedures** **Qualitative and Quantitative Data**

For purposes of grounding my findings in the experiences of the participants, we used the interpretive theory to data interpretations by asking

the participants for the meaning that they attached to the observed and stated ideas from the data (Strauss, & Corbin, 1998) we read and combed through all the typed documents with the data from the interviews and the open ended questionnaires and coded the data for themes and categories according to the questions used in the survey question for the quantitative data (Denzin & Lincoln, 1998; Strauss & Corbin, 1998; Punch, 2010). For the quantitative data collected through the surveys and other artifacts collected, we used figures and tables to represent the findings and then presented and analyzed the data according to the emerging themes from the qualitative data and the trends from the quantitative data using each graph or table. We also cross examined the both qualitative and quantitative data outputs for similarities and relationships as a way of triangulating data analysis procedures.

## **Research Findings**

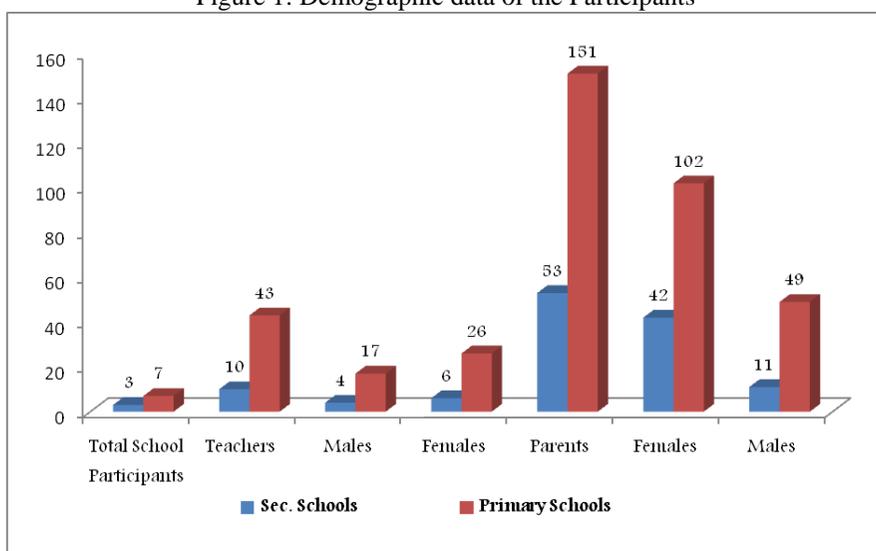
### **Defining School Improvement (SI)**

Participants defined SI in diverse ways. In focus groups with smaller samples of parents, (15), Teachers 7, and 4 headmasters they commonly defined SI as student achievement and improved appearance of the school buildings, student discipline; reduced dropout rates among students, use of multicultural teaching approaches and less bullying among students.

**Parent:** For me, genuine school improvement has many facets that involve the school head and his teachers paying special attention to and collecting information on how our children learn. Context is important here. That information should be used to guide teacher behaviors that help raise standards in the school organization. These days if you as a parent don't visit the school, your child becomes a victim of what happens there—humiliation, exclusion and bullying.

**Teacher:** In school improvement, it is important to look at it from the whole school perspective and see this whole range of factors about school that need evaluation and constant attention like creating new strategies all depending on what the school population is like, how do we perform versus other schools in sport, debates, academic work, discipline and even enrolment levels you know? As a teacher my teaching affects learning that is going on in the school, infra-structural arrangement, and to define teacher, headmaster's and parental roles for that change and innovation. Compare your position on the log of outstanding schools so that you ask questions about what needs to be done, when, how, and with which resources? It all comes down to what teachers, headmasters and parents do for their children's school...

Figure 1: Demographic data of the Participants



In this study, both male and female genders participated with my definition delimitation of the gender as males and females generally accepted by the participants. It was not easy due to cultural and political contexts to try to establish any other forms of gender outside these two “universally acceptable” forms. Of all participants, 75.5% identified themselves as females, while the rest (24.5%) classified themselves as males. Of the 7 participating schools, all of which were identified as consistently successful schools in implementing school improvement plans by their Education Regional Officials came from the urban set up but the distribution spread across socioeconomic status ranges including public schools in high, low and medium density areas included. All secondary schools participants emerged from the areas considered high socio economic status. All private schools were from the low density or higher socio-economic status zones. This finding agrees with the general view that socio economic statuses of parents and schools in general impacts school performance (Weaver, 2009; Ware, 2010). We followed-up this data with specific focus group interviews with a reduced number of participants from reduced school samples. One question that asked during the follow-up interviews was, *describe the factors that help your school succeed in meeting standards related to school improvement when compared to other schools?* Emerging themes included (a) inclusive leadership; (b) team-work among teachers; (c) collective understanding of the school vision; (d) Fulfilling contractual agreements between teachers and parents; and (e) availability of instructional resources.

## **Inclusive Leadership in the School**

The first theme that emerged was that such schools are guided by the philosophy of inclusive leadership and teaching for success. According to the participants, parents, teachers and the school headmasters all have leadership roles each group from their own perspectives for improving schools. Specific responses that revealed this theme included ideas from parents and teachers in additions to how headmasters viewed this perspective to the question.

**Parent:** This is a private school, and our headmaster always says, *it's a school of choice*—meaning if you send your child here you have to take the lead in shaping how your child should be educated including those of other parents. We share ideas with teachers and help provide teaching resources and information that teachers ask for. And the headmistress Mrs. Hove [*not her real name*] pays attention to detail... she also shares improvement ideas with us. So, change at this school is not only about teaching students but also how the school and parents make our children want to come to school. Yah... we focus most of our energies on building new ideas about our school...

**Primary School Headmistress:** In this school everyone has something to contribute and we listen to those ideas so that we don't lose out on constructive ideas that help us on how to provide solutions to problems that we come across when performing our teaching tasks. Our teachers know it, that effective teaching is about using a variety of methods as opposed one method for teaching everything and everyone. So what we achieve as a team will change our reality. It's about working together as a family, listening and helping each other to do well. The future and success of our children can only be assured if we place it in our own hands as a school—parents, leadership and teachers... I think this is what drives our school improvement success

**Deputy School Head--Secondary:** This is a high school setup and I believe our students are mature enough to help us to achieve better results. My philosophy as a deputy-head is, *listen to them, and you will pick ideas about which areas of the school need attention or improvement*. Through their behaviors and language pupils tell me how teachers are performing, what they hear from complaining parents and how they feel in the school. My job is to compile monthly reports that explain the state of the school as perceived from the minds of the students, teachers, and parents or from a

stranger's views. *Chikoro chedu vanochiona sei?*<sup>1</sup>So I'm tasked to survey the local community and request for their own opinions about how they want their school to look like and what they expect for their children. We use those ideas and suggestions, standards if you will, to make strategic changes for improvement by including those ideas in our school improvement plan...

Similar to literature reviewed for this study, the perceptions that emerged from this study show that school improvement plans are revisited in an ongoing process which encourages understanding of how school are improving and allowing direct inputs from all interested groups of people whose purposes are vested in school success (Weick, 2000). In the 7 participating schools, some of the samples used to collect data from parents, teachers and students included questions that required them to provide answers on 5-point Likert scales covering themes like satisfaction with school achievement, effectiveness of teaching approaches, frequency, quality of education offered, and value.

Figure 2: Samples of Likert Scale themes used to assess the impact of SI strategies (SIS)

| Samples of measurement instruments used to assess the impact of SI strategies used |               |                          |                |                    |                  |                |
|--|---------------|--------------------------|----------------|--------------------|------------------|----------------|
|  |               | 1                        | 2              | 3                  | 4                | 5              |
| Example of Measurement   |               |                          |                |                    |                  |                |
| •  | Satisfaction  | Very Dissatisfied        | Dissatisfied   | Neutral            | Satisfied        | Very Satisfied |
| •  | Effectiveness | Strongly Disagree        | Disagree       | Neutral            | Agree            | Strongly Agree |
| •  | Frequency     | Never                    | Rarely         | Sometimes          | Most of the Time | Always         |
| •  | Impact        | Very Poor                | Poor           | Fair               | Good             | Very Good      |
| •  | Quality       | Very Poor                | Poor           | Fair               | Good             | Very Good      |
| •  | Value         | Completely Not Important | Less Important | Somewhat Important | Very Important   | Essential      |

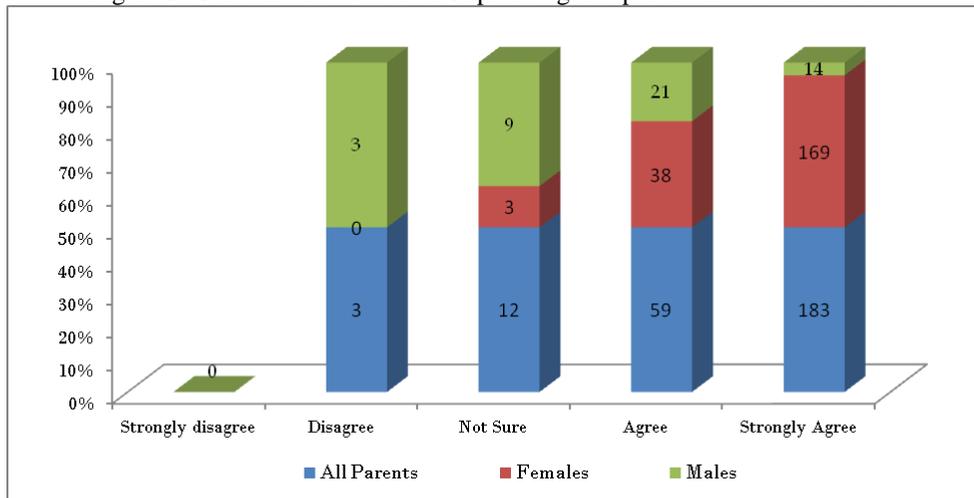
From the findings of this section, we concluded that surveys helped schools to focus on responsive strategies for achieving SI plans because school headmasters collected information that provided them with ideas that helped them to make informed decisions about improving standards. This finding is also supported by earlier theories of professional teacher development and motivation findings that support the belief that collecting

<sup>1</sup>How will they view our school?

information through action research, organizational reflections, supervision and continuous communication has influence on group development, staff needs and organizational needs (Maslow, 1954; Herzberg, 1966; Glickman, 1985; Smyth, 1997; Glickman et al., 2010). Similar to this finding, Silins, and Mulford, (2002) also discovered a relationship between increased learning power of schools as organizations; and consistent classroom supervision leading to the conclusion that teacher empowerment has the capacity for school improvement.

According to figure 3 below, in response to the follow-up questions parents confirmed that schools leadership and the teachers' daily operations are guided by clear specific school improvement plans in which they also made some input to ensure outstanding achievements in all facets of the school vision. An interesting representation by gender shows that while males are generally interested in the school improvement plans, most appear not to have handled or read with close attention some of the school improvement plans although the feminine gender shows high interest.

Figure 3: Our school uses a clear SI plan to guide parent and teacher efforts



However, we still concluded that the existence of the clear school improvement plans in successful schools may be one element that separates outstanding schools from those that struggle. In addition, it is important to ensure that both parents and school authorities operate from the same page in terms of the school vision and mission. One parent revealed,

**Female Parent in a Private School:** It's one thing to have a beautifully written school improvement plan but it's another to have a team that executes that plan in good ways. Here we work together and we know what we need to do to achieve

that plan because we share strategic information. Ungazviita sei usina information yacho?<sup>2</sup> As a team, our biggest strength here is on making choices that work for these children. I am in the committee that makes sure we evaluate each stride in order to develop confidence in the school leadership and parents together. I know the economy is bad and teachers are demoralized but we do motivate them through incentives because these are *our children and we care...*

Similar to findings from earlier studies (Hiatt-Michael, 2001; Tschannen-Moran, & Barr, 2004), parents in this study valued the use of modern technology and looking outside their own school and classrooms for lessons that can help to improve their own schools and student achievement. In the reflections it became evident that the participants also place important attention to the quality of teachers and levels of teacher motivation among those that they recruited to teach their children. In all reflections information availability shows that it helps to empower teachers:

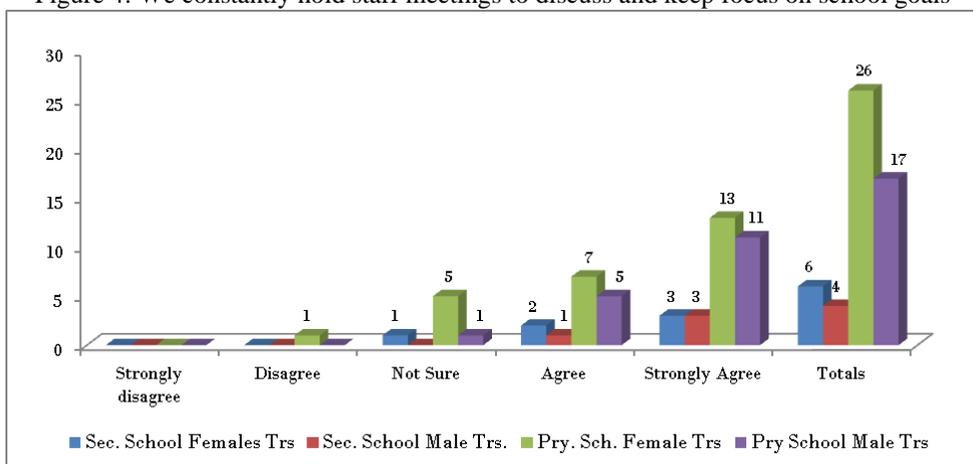
**Male Parent:** It's highly important to make sure that we share ideas on how to use any technology—including how we use lessons from problems that arose within the school. For example, were involved in the recruitment of teachers, and we monitor how they teach by listening to our children, monitoring homework and how teachers mark. You know a big tick does not teach my child anything. My child needs need details like, what did I do wrong and how do I improve on that? You know, such questions should be answered through the way the teacher marks written work so that my child is empowered...

Results shown in figure 4 below reveal that teachers generally agreed that school heads conduct staff meetings whose key focuses are meant to ensure that teachers continuously modify their teaching approaches to improve how students learn or grasp materials. Throughout their responses, teachers revealed that they find working together as a common theme that is emphasized through nonthreatening leadership approaches by headmasters in both secondary and primary schools. This finding emphasizes that staff meetings as effective strategies for SI should integrate a number of aspects that include (a) *continuous action research*; (b) *cooperative efficacy*, (c) *professional growth through peer-coaching and group study*; and (d) *critical reflections by each teacher* and all of these are strategically combined into a school-wide approaches that promote growth oriented professional conversations among teachers.

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<sup>2</sup>How can you achieve that without the necessary information?

Figure 4: We constantly hold staff meetings to discuss and keep focus on school goals



One female primary school teacher whose response summed up most participants' responses on this theme pointed challenges related to curriculum implementation but placed importance on the power of teams, information sharing and collaboration,

**Female Teacher from one Primary School:** Our school curriculum is too wide for one head to coordinate it. In our school, [primary school] we have constant meetings in which we share ideas about how we solve learning problems for our pupils. But the most important thing is how we continue to update our teaching strategies through staff development [SD] and staff meetings. Our headmaster is good at hunting for good SDs and helping us to attend external SDs and development information which brings ideas for teacher growth...

Similar to the views help by teachers on SI, the headmaster in the same school defined PD as an SI model/strategy based on encouraging constant interactions among teachers exchanging ideas, allowing others to grow professionally through an apprenticeship model that he called LPI—learn, perfect and improve. The LPI model helps SI through creating a culture of professional knowing, making small increments of SI; repetitions to increase perfection; and team work:

**Primary School Headmaster:** Here, our main strategy is for each member to *learn, perfect* and *improve* [LPI]. These small incremental changes will one day add to *experience*. Thus the whole strategy of the SI game... when success happens throughout the whole school, each of us in her own way, it becomes a *culture of success*. This way, in the majority of all

our work assignments, the success rate will continue to increase and that is how we do it.... I'm big fun of *repetitions to increase perfection*. It needs time... to help teachers securely lock their knowledge on professional abilities that bring success to our school. Always, when experience is [evenly] spread among all members of the school, it overcomes any size of a problem and we begin to see fast and big changes. Also these new teachers you were talking about earlier, we also repeatedly send the same message to them, '*if you come across a problem, look around for answers—the next teacher will always have part of the answer..., keep collecting your answers and soon you will have the solution.*' That's our strategy for school improvement...

The importance of staff developing teachers is to empower and enhance team power with ideas for meeting new and recurring challenges they meet—a clear strategy that works for increasing options or methods that work. In addition, LPI helps teachers to grow professional confidence to rise above the challenges they meet in Zimbabwean education contexts. When school headmasters use supervision strategies that motivate teachers and create a nonthreatening school climate, teachers will voluntarily seek for more information (Dantow, Park, & Wohlstetter, 2007) to ensure that they always stay above the demands of the teaching assignments that they perform.

**Sec. School Male Teacher:** One good thing about our school head is that she is not vindictive. Mrs. Zuva is a *caring leader* who knows that a happy teacher achieves bigger milestones when compared to a stressed teacher. So our supervision reports are mainly focused on motivating us to bring improvement to how we should execute our teaching assignments. Circulars are motivatory in the way they are structured, if I can use that word... and our parents are ever ready to provide materials each time we ask. If funds do not permit we improvise. Of course we try not to overload them with excessive requests...

Other responses added to these broad ideas and a closer analysis of the responses revealed that participants viewed school improvement as a result of a number of institutional strategic behaviors that help to improve teacher performance indicators, including—(a) *teacher professional growth through collaboration*; (b) *group development enhanced by effective communication channels*; (c) *fulfillment of human trust needs, human support, and continuous professional interaction satisfying human needs for*

*continuous career development* as espoused in Maslow, (1954)'s theory of motivation. For example,

- Teachers who feel challenged were encouraged to seek help from others through entering anonymous questions on the circulars regarding PDs that may be lined up for their schools, and also volunteering to attend external professional developments and copying strategies from other schools; and collecting ideas from colleagues teaching parallel groups at their schools. Generally all participating schools use the common strategy referred to as *demonstration lessons* where at local level, struggling teachers are invited by the instructional leaders to observe other teachers' lessons that may be considered by their school heads as outstanding lesson presentations for purposes of improving their own teaching approaches. This agrees with other recent findings by Madhlangobe (2009) and another by Madhlangobe and Gordon, (2012) in a study where they discovered what they described as the *collaborative walk-through* (CWT) supervision model. In CWT the head and teachers assign each other areas of observations in a particular lesson and they write strengths and weaknesses on anonymous and non-vindictive cards. Normally such CWT last about 5 minutes but the head and the teachers collect huge amounts of information that they use to help update the observed teacher's skills.

### **Growing Professional Teams and Increasing Team Power among Teachers**

Teachers as adults also exhibit personal learning needs that are linked to their career development and search for meaning and lifelong learning (Brooks, 2001). Findings revealed one self-reported strategy used to meet the career development needs among teachers and how it was achieved through team work, which showed that school improvement is achieved through success levels based on collective outputs for each school development key result area. One teacher summarized the success of her school as a result of using the team power strategy. The new information that this finding adds to the available research literature in Zimbabwe is the concept of *support roles and teachers leaders*.

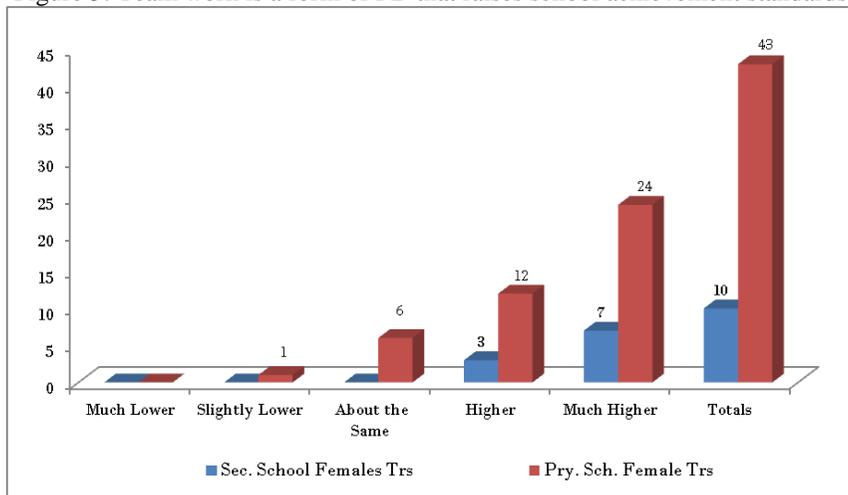
**Private School Teacher:** The benefit of team work is that we see collective growth or collective success in all key result areas on a school-wide level. This happens in quicker but efficient ways and it is not painful how we get there—it through collaborative effectiveness. But from my own view, one lesson I've learnt is that you have to be flexible in order to be able to respond to big changes that come with working

as a school unit. I've noticed is that team-work means we have to continuously recreate school standards for effectiveness; and specialization rules that work for our school to be better. Once we pass the work allocation roles that describe each class assignment, we all start to prepare for what our headmaster calls *roles for supporting other teacher-leaders*, where each teacher will specialize in doing something so we help or support that team leaders to increase goal achievement.... The Support Roles (SR) will involve us helping *specialist team leaders* to achieve their goals as we also learn about the standards she will suggest. It may not work for older teachers if they keep insisting on old standards in this new world of technology...

### Collective Understanding of the School Vision

***Team-work Fosters Professional Development.*** On a five point scale (1-Much Lower, 2-Slightly Lower, 3-About the Same, 4-Higher, and 5-Much Higher) participants commonly agreed that their exposure by leaders to the spirit of working in teams helps them to grow professionally as individuals and for them, when professional growth spreads to school-wide levels, it leads to a learning culture of the school. In her earlier findings, Kruse, (2003) described the learning culture of the school as *organizational memory* which empowers teachers for SI. Figure 5 below also shares the collective responses of the participants in relation to how teacher collaborative work raises students' learning outcomes in addition to increasing their professional learning power especially for beginning teachers.

Figure 5: Team work is a form of PD that raises school achievement standards



According to the response representation shown in figure 5, collaborative teams created by leadership helps teachers to shape significant levels of student learning and for teachers to grow professionally. Of the 53 teachers who participated in the study, 46 about (86.8%) agree that team work is another form of PD that raises school achievement standards. Only 6 believed that teamwork had not provided them with professional growth and neither does it change achievement levels of students in their classrooms. For example, one teacher who agreed with most responses from teacher pointed out that

**Secondary School Teacher Reflection:** As a beginning teacher, I learn from those who have more experience in the field. But I believe the new information that I bring from college also helps them [Senior teachers] to add to their current knowledge and it promotes deeper learning both in the children we teach and in our professional development. That's one way we use to develop the school... we complement each other I think... I also see that development among our grade 6 and 7 children working together under the trees during break, for example grade 6B students working with Grade 6A students. To me, that shows they see how I work with my colleague in 6A... but it takes a lot of time to develop that culture of learning.

Similarly, another teacher viewed team work as a source for bringing together individual efforts and adding value to how people show discipline, how they create solid relationships among all teachers to work together for outstanding achievement in co-curricular activities

**Senior Secondary School Teacher.** Maybe you have seen how all teachers stand together to support teams that are trained individually by soccer coaches, athletics and netball. We naturally band together and support the teams as they play and own the winning results, mourn together when we fail, not *when they fail*. There is no blame game at all in our school here. At assembly the headmaster speaks of collective effectiveness—*we lost like sports man, we almost got there, we will do it again in 2015 or we thank all our teachers for outstanding results*. Such comments mean something to me even for those who do not coach that team... it's a lesson for all that says please let's work together...

These two quotes reveal some interesting patterns related to how teacher participants' analyze levels that confirm achievement focus on the *school achievement levels* in contrast to individual achievement. Individual high scores regardless of where they are recorded are viewed as shared

organizational achievements levels rather than individual teacher achievements. According to participants, individuals are celebrated within a context of the school-wide developments. From both reflections, participants use words and phrases that tie school development to successful team building strategies, including: *band together; support the teams; winning results; mourn together; no blame game; collective effectiveness—we; it's a lesson for all; let's work together* and *relationships*. Consistent with literature this finding also revealed that positive relationships and higher levels of collaboration between teachers' and students' learning will always result in improved school-wide outcomes (Schechter, 2008; Madhlangobe, 2009; Madhlangobe & Gordon, 2012). The second reflection shows that school achievement indicator levels should not be limited only to classroom academic achievement, but in terms of the aggregate of the common definition of school curriculum as experienced by parents and community including—*school discipline, academic achievement, physical development, school relationships, relationships with other schools, parental, community satisfaction, school capacity for sharing and analyzing information with members of the school community, and appealing for help and ideas and information that helps both teachers and students to do better* (Madhlangobe, 2009).

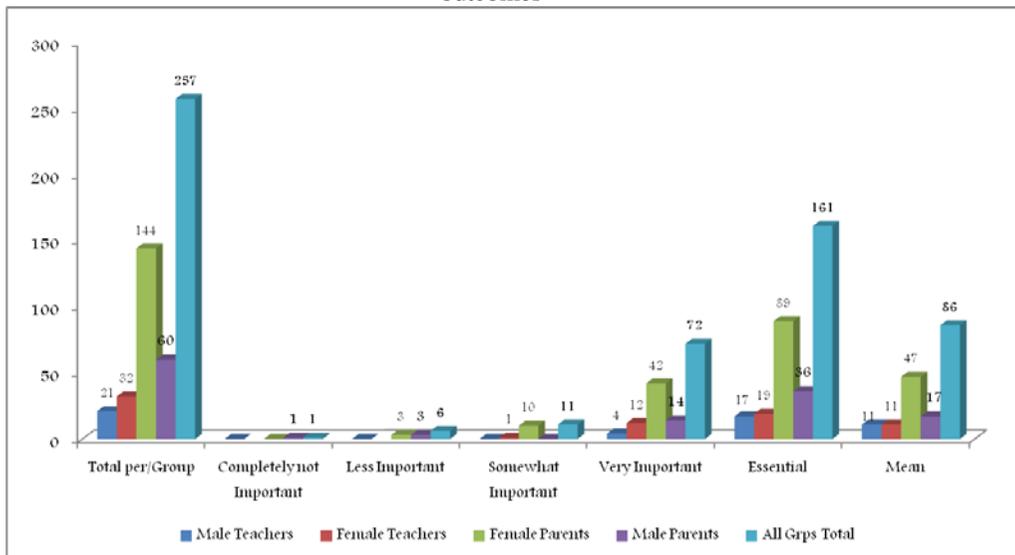
### **Fulfilling Contractual Agreements between Teachers And Parents**

Standards of school improvement depend on a number of teacher and headmaster behaviors that will ultimately influence students learning behaviors. According to the responses shown in figure 6 below, from all the participants, clearly, the feminine gender values the concept of sharing information, and fulfilling parent-teacher contractual obligations while most participants when viewed together aligned their education philosophies to effective information sharing. First, the reflection below shows that teachers who increase the learning capacity of other teachers purposefully seek other forms of information that can help increase knowledge, skills, methods and motivation of other teachers. They are aware of the positive value of continuous spreading of information on the professional culture of the school as a whole.

**Secondary School Male Teacher Participant:** If you share information that you come across from any source and its related to strategies for helping students learning outcomes to improve, that information to the next teacher is a form of PD, and to the school children it is a form of *school efficacy*... *if all teachers begin to use the information which in turn will continue to spread throughout the school and it will become a culture doing things in the school... so first we need to*

appreciate that it starts with sharing information, and yes—it is *completely essential* to share that information and it increases your chances of influencing school improvement by sharing your own ideas information. But we need good relations as an underlying rule for working like that...

Figure 6: Sharing information with parents helps improve student academic learning outcomes



On the average, the bell curve of this graph is skewed towards the options “*Essential*” and “*Very Important*” revealing the strength that parental involvement through sharing information helps improve student academic learning outcomes and improvement of other aspects of the school in general. In a follow-up focus group interview with the selected outliers whose responses fell on the left tail of the normal distribution curve, we realized that while they disagreed with the focus of the general group, they believed they had personal information that would affect their children’s lives within the school context if they share that information. According to them, some information will lead to victimization of their children.

**Parent at a Primary School:** Panezvisingaiti kungoudza wese munhu... kana mune poboto mumba, vamwe venyu ava havachengeti mashoko muchifuva. Mwana anoswera ava nezita idzva zvikuru mamistress enyu iwaya amunotutumadza... they talk too much mumashops and hair salons. Saka kuviga tumwe kurinani. Unoti regai ndiwane anondipawo zano, mangwana wonzwa wobvunwawo nevepapo hunzi, imwi dzimwe nyaya muchichenegetawo

mega kwete kupakurira wese-wese. Ndiwo mafungiro andinawo pandakapindura mubvunzo wenyu uyu...<sup>3</sup>

However, for this study we did not probe participants further to understand how gender influences are dovetailed into the school improvement plans since there were more females both among teachers, parents and among student populations. There is need for another study to compare male-to-female outstanding leadership and teacher behaviors. The data in this study fully matched the data which would have allowed me to understand directly from the participants how they viewed the power of women as a variable for influencing school improvement.

### **Availability of Instructional Resources for Improving learning Capacity Developing the Capacity of the School to Learn and Develop**

Throughout this study, another theme that stood out from the participants' self reported experiences with effective school improvement leadership practices was their view of the school faculty's ways for developing the *ability for their schools as organizations to learn and develop* through provision of instructional resources. But how do "schools learn?" Post observation and survey interview results revealed that participants experienced in their schools, professional development (PD) is used to build school-wide learning capacity because the PDs in the schools are strategically organized to empower teachers with the potential to advance school-wide learning outcomes of all students. Therefore, learning in the schools is directed at the teachers and so that they may positively impact the students' learning processes. According to the findings of this study, PDs in the schools address the following teacher development areas:

- The *professional learning of the individual teachers* in their schools—meaning that school headmasters and departmental leaders continuously collaborate to identify effective teacher-centered PDs; identify clear goals for achieving effective student learning outcomes; discover relevant ways for evaluating teaching-and-learning; collaborate in developing plans and strategies to continuously

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<sup>3</sup>Some information you do not just share with every individual... for example if you have family squabbles, some of these teachers do not know how to keep personal information private. My child will end up with a nickname derived from my problems and he becomes labeled. Especially with these female teachers whom you guys appear to uphold in good esteem. It's sometimes better to keep certain information to myself. Sometimes you share information then a few days later you hear from other people telling you, hey some information you should learn to keep to yourself. This is how I understood your question...

increase student learning outcomes; and continuously develop teacher capacity for solving *teaching* and *learning* problems

- PDs in the schools studied are designed to use the concept of *developing a school that learns as an organization philosophy*—meaning that the school staff, students, and faculty all learn something new every day and they build bases for improving teaching-and-learning outcomes. In the participating schools, teachers learn about how students learn and students learn from the curriculum their teachers impart and the knowledge created will be used in future to scaffold how teachers teach new groups of students and how new students learn
- *Building skills and dispositions* for all staff members to be in-tune with their students' learning needs
- *Building school-wide capacity for curriculum fluency*—this refers to how the school teachers and the leaders collaborate to ensure that the programs for students and faculty learning are related to each other. One school headmaster summarized this participant embraced concept,

**School Headmaster Secondary:** It's like we always want to see to it that what teachers learn in our staff development activities will also enhance their capacity to be effective teachers. On the same note, I personally believe that in future, soon after the staff development, what students learn from these empowered teachers will then impact on the set learning goals in consistent and persistent ways over a long time. So for us here at this school, those program relationships cannot be ignored by my administration we pay attention... That is how I think school headmasters should do... look at the whole scenario do to improve learning [schools]. I mean everyone should learn at the same time... you know

### **The Use of Modern Technology and Media**

Teaching-learning resources when used timely, will always impact student learning capacity in greater ways and the teachers should measure those learning outcomes using effective instruments that are reliable and valid. One teacher who agreed with most responses under this sub-theme summarized by one teacher;

**Primary School Teacher:** While my teaching is under the spotlight from my headmaster and deputy head, I expect the supervision instruments used to be informative to me so that I will use that information to learn and improve. In this school lesson observations are not done for fault-finding reasons. I

feel my head[master] always- and I mean-always... wants me to learn from what he writes down in the supervision report... this is what promotes high quality learning for me and I believe all teachers here feel the same in our school. There are issues that I struggle with but I work hard to get things right *especially with the help of other teachers*

## Discussion

From the self-reported experiences from teachers, parents and communities led by headmasters who were defined *as effective school improvement* leaders by education experts, teachers, and parents, when the effective school headmasters employ wide range of SI strategies, they focus first on teacher skills improvement and then school-wide improvement of all aspects of the school. Once the initial phase for implementing the SI strategies have been completed, higher level strategies are introduced regularly in small incremental tides. Each new incremental version is used to enhance the older versions and as a springboard for the newer strategies, leading to a school-wide SI effect. In short, exposing teachers to extensive information through PDs, collaborative information collection, information sharing and exemplary demonstration lessons promotes continuous reflection, professional growth among teachers and collective teacher efficacy as the three critical dimensions of effective strategic experiences gained from *collective instructional leadership* that leads to outstanding school improvement. These school improvement strategies used by school headmasters whose schools were defined as successful at implementing SI plans demonstrate higher levels of impact on teacher skills development. The specific areas enhanced by the school improvement strategies used by the SI leaders who took part in this study include: *workable instructional strategies, teacher and student learning outcomes, teacher-students relationships, student-students-relationships, relationships among teachers; and teacher-community relations*. Through nonthreatening supervision approaches, teachers were encouraged to be creative and to engage in professional growth oriented PDs in which the same school heads took part as participants and colleagues of the teachers.

Findings of this study therefore, add to existing research literature since they have demonstrated that the definition of school improvement should not only be limited to student academic learning achievements during national standardized tests but broadened to embrace many other aspects of the schools, all of which support and enhance the general outlook of the school. This agrees with suggestions from recent research literature that supports the theory that teacher centered supervision directly enhances

improvement of all school facets in addition to student learning outcomes (Fillon, 2007; Madhlangobe, 2009; Glickman et al., 2010).

### **Implications for Practice**

Findings of this study imply that school headmasters who use strategies that are teacher and parent supported have the potential to create school environments that help to develop effective instructional approaches that will achieve intra-teacher professional growth that will impact the professional school culture in positive ways. For example, when teachers continuously seek ways to share information about improving their teaching methods, the information that they collect will lead to their career development and school-wide innovation. Research has repeatedly confirmed that there is a positive correlation between teacher career development through supervision and student learning achievement (Ware, 2010; Glickman et al., 2010). Therefore, school headmasters who frequently create open conversations with parents, communities served by their schools, and their teachers on topics related to meeting the learning needs of the children will always receive SI feedback notes on how to improve classroom instructional strategies; and to develop caring and cooperative teaching-learning strategies (Rumberger, 2004; Noddings, 2011; Wallace Foundation. U.S. Dpt. of Education, 2013). Development of such a school climates may lead to school climates that are nonthreatening, but those that will be characterized by peer-support and professional development of teacher instructional skills.

### **Conclusions**

The evidence presented is strong enough to permit the conclusions that we outline in this section of the study. The conclusions are all based on the general observation that strategic supervision causes continuous development of teaching methods that in turn show positive effects on students' learning outcomes and teacher effectiveness in all facets of the school. Throughout the study evidence from the self-reported accounts with SI strategies (SIS) reveal that there are good grounds to believe the strategies work; and that the danger of not understanding these strategies may create a full-blown retrogression of school education standards. Even without cast-iron evidence, is it appropriate that education professionals fully dedicated to the effective education of school children, should encourage use of SI methods that work and to even encourage their continuous development regardless of *how mild their impact* as a form of school improvement and education development. Evidence from the current study allowed me to arrive at the following specific conclusions that respond to the two research questions guiding this study;

- That *context plays a key role* in fashioning out workable SI strategies that should be accessed through the following aspects of the school report card—*academic achievement; improved teaching-learning processes, improved relationships among, teachers, students and teachers; and co-curricular activities*
- Collaboration based on *sound school-wide relationships* continuously help faculty members and school administration to identify and institute effective PD programs that help to create information bases and strategies for improving the schools in all their facets. Therefore, IS depends on collaboration among the *human relationships as influential variables that mediate* in the way teachers, leaders and parents come together to impact the development models designed to improve the school using an agreed model
- PDs tied to *effective communication* are critical to the creation of information buffers that may be used to solve problems and to move schools to higher 21<sup>st</sup> Century levels of achievement than the complexities of perceived future educational problems.

### **Recommendations for Further Research**

Therefore, in relation to some unanswered aspects of the research question for this current study, future research may help to extend knowledge on this area if it focuses on *comparing how schools led by female headmistresses and those that are led by male headmasters compare in their use information to provide solutions to new problems and how the processes of the information fit the definition of SI*. Maybe more studies, using purely quantitative research designs showing a comparative Inter-Group Agreements, Means, Standard Deviations and Effect Sizes between private and public schools' SI strategies will help to refocus future studies and help extend how school authorities in those two set-ups achieve their school goals.

The findings of the current study suggest a need for more studies in which school heads and their teacher carry out action research on how students respond to certain of the teacher and leader behaviors in addition to what their perspectives would be on how to improve each of them. Further studies related to the application of the theory of caring in ECD context will also help to extend findings of this study.

### **Suggested Model for School Improvement**

When headmasters expose their teachers to school level PDs, they should use lead questions to guide their selection of the type of PD that ensures teachers benefit from participating in that PD activity: (a) *in what ways will each teacher emerge from the PD as innovative, creative and*

improved teachers? (b) What will be the specific observable impact signs on the student and teacher learning outcomes and SI on the overall? (c) How will the teacher's, knowledge, skills and individual dispositions impact their teaching methods, student learning, and their use of ministry mandated teaching-learning standards to guide teacher professional roles? (d) What institutional and community-to-school relationships should be developed to help to support effective teaching-learning processes? And (e) Which recent technologies will teachers need to learn and use in order to impact learners so that they will be able to apply new PD learned concepts to increase teacher creativity in the classrooms?

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# AN EVALUATION STUDY OF SCHOOL-BASED WORK OF INITIAL TEACHER TRAINING FOR EARLY CHILDHOOD EDUCATION IN JORDANIAN UNIVERSITIES

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## Abstract

This study was designed to investigate the participants' perceptions towards the school-based work of ITT and the partnership between training units at the universities and the partner schools. Questionnaires and interviews were implemented in this study. The views related to the school-based work of ITT were obtained from 195 participants in ITT (146 student teachers, 24 mentors, and 11 tutors).

The findings related to the school-based work of ITT showed that the observation stage was felt to be inadequate both in its length and organisation. Both student teachers and tutors expressed some reservations about the mentors' role in implementing the observation stages. The findings showed that the tutors and mentors mostly ignored the observation lessons, nor was there any organisation or plan for the observation lessons. Furthermore there is no real analysis or discussion of the observation lessons between student teachers and their mentors and tutors. The partnership between the partner schools and the universities was seen by most respondents in the study to be inadequate. Relationships and communications between the universities and partner schools are poor and there is a lack of support for partner schools from the Universities. There are no selection criteria for the partner schools other than their proximity to the universities and there is no student choice of schools. Facilities for students in school are limited and some headteachers regarded the student teachers as creating problems for the administration and facilities because of the large numbers placed with them. Many of the student teachers felt that the partner schools were not the most appropriate places for their training.

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**Keywords:** Tutors, mentors, observation lessons

## Introduction

Teacher education is of crucial concern in countries across the world and the development of teacher education and training programmes can reflect the whole of a country's development. The focus of interest varies from one country to another, but most countries have teacher education policy as a priority. It is evident that improving the quality of education in general is dependent upon the quality and relevance of teacher education. The priorities in the development of teacher education are now a global concern, but they are different in the developed and developing countries. In the industrial and developed countries the concern is the supply and quality of teachers, whereas in the developing countries the major issue is the need to upgrade teacher qualifications, particularly in the primary sector (Abu-Dalbouh, 1997; Moon, 1998).

There has been a major debate in teacher education about the link and balance between theory and practice. It is impossible to practise without theory and clearly no trainee should go into classroom without some rationale and theory about the teaching (Grenfell, 1993). Field-experiences (school-based work) are those in which the student teachers observe in classrooms or are actively engaged in the instruction and management of students. Teacher education programmes vary widely from institution to another. Most programmes abide by the premise that school-based experience can develop teaching competencies for student teachers and schoolteachers themselves (Hedrick et al, 2000). The basic structure of primary and secondary teacher education models includes three components. The first one is the academic preparation in the subjects or disciplines that the student is to teach. The second component is the theoretical foundations of professional education, such as courses in the philosophy, history, sociology and philosophy of education. The third component is the student teachers' school experience (Diamond, 1991). The student teachers' field experience is an essential component of learning to teach. Educators consider student teachers teaching practice to be an important, highly valued experience. It is a critical to the development of student teacher pedagogical skills (Dagmar, 1992). Thorogood (1993) assert that the curriculum of teacher education programmes should be planned around three major areas, general education, subject matter specialisation and professional education.

The assumption behind the school-based part of ITT is that the schools are the best place to help student teachers to develop their teaching competencies and to apply practical teaching skills (DfEE, 1993; Dunne and Bennett, 1997). The school-based work of ITT enables students to realise themselves as teachers, and it is where they expect to develop and test the practical classroom skills to which they have been introduced elsewhere in the course. Not only do trainees get the benefits of field experience but it

also gives the tutors rich opportunities to help trainees make connections with issues and ideas encountered in books, lectures and seminars. The tutors can share in the experience of day-to-day classroom practice by themselves teaching in front of, and alongside, the trainees. Moreover, for schools there is opportunity to make a significant contribution to the preparation of future members of the profession, and to benefit from trainees and tutors' presence in the schools (CATE, 1986). The Teacher Education courses and programmes benefit from the student teachers' knowledge and experience in improving their theories about schools and learning processes in general. In particular the pre-service teachers bring their practical experience about teaching and learning to their undergraduate education courses. Student teachers' personal history-based beliefs can serve as an invaluable framework into which new knowledge about teaching and learning can be integrated. Carter et al (1993) asserted that student teachers bring with them to ITT their personal experience of subject knowledge, attitudes and beliefs and various models of teaching. However these beliefs may be incompatible with the theories and ideas student teachers encounter in their education programmes (Glennon and Stevens, 1999).

Cope and Stephen (2001) in their investigation into the problems which can arise from the location of initial teacher education in two contexts (higher education and schools) revealed that the use of practising teachers (mentors) in higher education has a number of advantages, such as the presentation to students of situated and practical knowledge of teaching and the opportunity for more consistent quality assurance of professional inputs to the programme. But questions are raised about access to the craft knowledge of the teachers and the relationship between theoretical and practical components of the course. They asserted that bringing practising teachers into the higher education context could act as a basis for the development of a more effective initial teacher education and for professional development of both teachers and lecturers working on initial teacher education programmes.

The practical engagement in teaching is a vital part of teacher education as it offers opportunities to acquire practical teaching skills, work directly with students, and apply their acquired ideas, knowledge and plans to actual classroom teaching (Selmes and William, 1996; Yarmouk, 1996). The aim of school-based work in ITT is:

*“To train today’s teachers for today’s schools,  
and to prepare them for rapid change and  
development in schools” (Pomeroy, 1993, p51).*

On the other hand ITT aims to achieve a balance between academic study (the theoretical side of teacher education) and practical experience in the schools (the practical side of teacher education). It is

concerned with the needs of trainees and assumes that further professional development will be catered for through the post-experienced training, particularly in their first year of appointment in teaching (DES, 1992; Yarmouk, 1996).

Two main issues have been frequently focused on ITT: the amount of time trainees should spend in schools (school-based work of ITT) rather than in the training institutions, and the relationship between theory and practice (Beardon et al, 1995). There are two main reasons for teacher training moving into schools, first the desire to bridge the theory-practice gap, and second the recognition of teachers as professionals, capable of playing a full part in the training of their recruits and who have specialist skills and knowledge valuable to a beginning teacher (Moran and Dallat, 1995).

The period of school experience required in ITT varies from one country to another. For example, in the North America the amount and quality of time spend in school-based work increased at the end of 1980s, for example in Victoria, the minimum is 80 days of classroom teaching for all courses. The assumptions behind increasing the amount of time given for school-based work was the belief that:

*“The best way to learn to teach is to learn from outstanding teachers in real world situation...further the notion was that the teachable moment accrues when student teachers experience the complexities of teaching and are given direct feedback, which, in turn, they can test by making the suggested correction and learning what happen as a result. Another assumption is that teaching is basically an art that should be structured less by scientific principals than by institution, common sense and lessons derived from experience.”*  
(Hawley, 1990, p90).

In the Netherlands, Dutch primary teachers are prepared through a 4 year undergraduate programme and must complete 40 weeks of teaching (Moon, 1998). The reform plan for the Postgraduate Certificate in Education (PGCE) in England and Wales suggested an increase in the amount of time student teachers spend in schools should be increased from 1994 to two-thirds of the secondary Postgraduate Certificate in Education (PGCE) courses (Adey, 1997). Primary student teachers in this programme now spend at least 18 weeks in schools (EURYDICE and CEDEFOP 1995). The idea behind increasing the time of school-based practice was to integrate theory with practice so that the theoretical aspects studied are linked more directly to practical teaching experience as suggested by (Webb, 1984). According to

Circular 4/98 the minimum amount of time that will be spent on courses of ITT is 38 weeks for all full-time primary postgraduate courses and 36 weeks for all other full-time postgraduate courses (DFEE, 1998), whereas in Jordan it is 14 weeks only. It is clear that the amount of time allocated for school-based practice in England and France is given more emphasis as there are separate post-graduate training courses, whereas in the other countries it is a part of the undergraduate degree. In this respect Dunne and Bennet (1997) emphasised that increasing the proportion of time given to school based work could help student teachers to develop their teaching competencies, and to apply practical teaching skills in the schools, which are the best places for this purpose.

### **School-Based Work of ITT In Jordan**

The school-based work is the practical part of pre-service teacher training that prepares student teachers to participate in the practical activities of the partner schools. In this stage the student teachers are trained in how to prepare and write lesson plans and achievement tests and how to evaluate and analyse the curriculum and the textbooks. The student teachers visit the schools and are required to write reports about the teaching-learning process in school. During the training period at the partner schools student teachers are required to practise teaching, prepare teaching aids and plans and participate in the conferences, meetings and workshops held for student teachers in both the University and the partner schools. They also have to obey the school administrative instructions and abide with the school rules, write the reports required at the end of each training stage and produce any homework required by their tutors. Student teachers, during the school-based part of the training course at partner schools, are required to be well organised, to arrive on time, and to plan and prepare lessons effectively. They also are expected to develop good relationships with pupils and partner schools staff and to write the required reports at the end of each stage (Mu'tah, 1997; Jordanian University, 1997; AL-Sagrat, 1999).

The length of the school-based work is 14 weeks, and it consists of two main stages that are nearly the same in all the Jordanian universities:

#### **1. The Observation Stage**

Student teachers have the opportunity to observe the different activities of the school. The observation period is two weeks and it consists of two sub-stages. Stage one is General School Observation: this aims to familiarize the student teachers with the schools' activities and facilities and to observe the teaching process in general inside the classroom for one week. Stage two is Specialist Classroom Observation: student teachers are required to attend and observe a special primary class teacher for the grades 1-4. In this stage the mentors should improve the

ability of the trainee to recognize various methods, offer criticism, help them to acquire some experience from their mentors and build good relationships with their mentors. The length of this stage is one week.

## 2. Teaching Practice Stage

This stage aims to enhance the student teachers' knowledge and teaching competencies. The length of this period is 12 weeks, and it consists of two sub-stages:

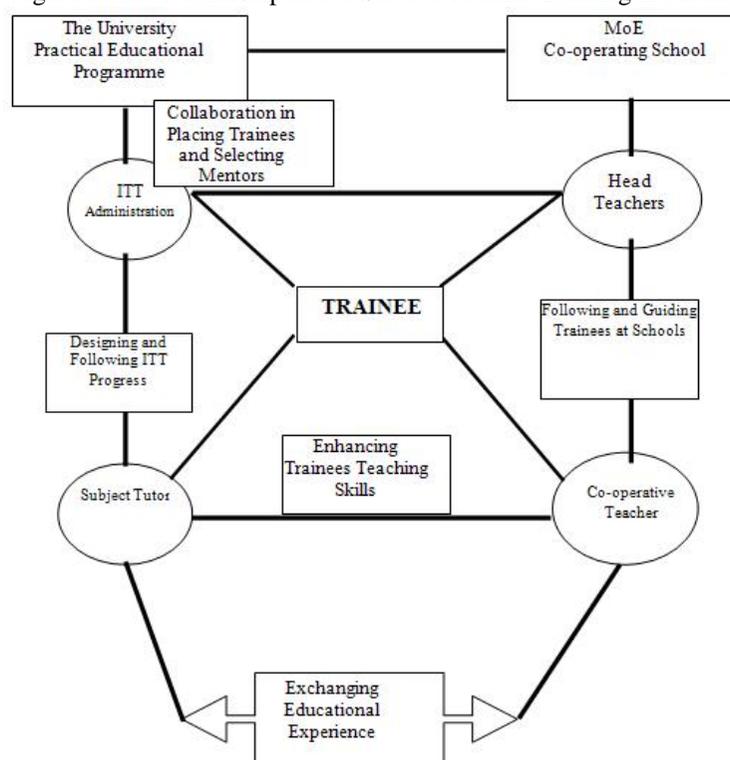
**Part-time Teaching Practice:** Student teachers have to teach part of the co-operative teachers' plan (teaching load) for two weeks.

**Full-time Teaching Practice:** Student teachers practise real teaching in the classroom for ten weeks.

## The Partnership in ITT in Jordan

Implementing the pre-service teacher training course requires the establishment of links between the co-operative schools and the universities through a partnership. The pre-service teacher training course administration specifies the responsibilities for each one of the partners in the training course: tutors, mentors and headteachers of co-operative schools. Diagrammatically the partnership and the links between participants are represented in the following Figure 2.2

Figure 1: The Partnership in Pre-Service Teacher Training in Jordan



From Figure 1 we can see that the supervision of student teachers is shared between the university and the co-operating schools. There are different participants (in the partner schools and the university) responsible for guiding and supporting the student teachers during the training course. The participants in the partner schools are tutors, mentors, and headteachers. Each one of them has specific duties in the school-based work in pre-service teacher training courses. The following sections describe their responsibilities.

Field-teaching experience in ITT has been a concern of many writers and a variety of issues of school-based work of ITT can be seen. The partnership between schools and training institutions is one of the major issues investigated. Cope and Stephen (2001) in their study attempted to discover the problems that can arise from the location of initial teacher education in two contexts, namely higher education and schools. Williams and Soars (2000) discussed the role of higher education (HE) in the training of secondary teachers in England. The study uses the views of HE tutors, school-based mentors (that is, teachers with responsibility for monitoring, training and supporting student teachers) and student teachers about the sharing of responsibility for various aspects of the initial training of the student teacher. It revealed that the use of practising teachers in higher education has a number of advantages, such as the presentation to students of situated and practical knowledge of teaching and the opportunity for more consistent quality assurance of professional inputs to the programme. But questions are raised about access to the craft knowledge of the teachers and the relationship between theoretical and practical components of the course.

Other studies were interested in the participants' views and attitudes in ITT and the ways in which they influence student teachers' professional development. Merrett and Wheldall (1993) explored the teachers' opinions about the contribution of their initial training in preparing them for the problems that they had to face in their classroom. Zaghal (1990) assessed the effectiveness of practical training approach to the educational technology course, the use and production of teaching aids in the development of knowledge and practical experience competencies of student and the impact of this training course on developing positive attitudes towards the use and production of teaching aids. Duesterberg (1998) focused on answering questions about the culture and cultural identity which student teachers use in elementary classrooms. Duesterberg showed how culture can be used in the classroom to frame and limit children, and how the classroom might be a space in which culture and cultural identity can be explored, challenged, and recreated. AL-Sagarat (1999) and Diab (1999) explored the student teachers' attitudes towards ITT. The findings of the above studies were consistent

about the positive attitudes towards the school-based work of ITT and its impact in developing the trainees' teaching competencies.

The student teachers' problems were studied by Beach and Pearson (1998) who examined changes in pre-service teachers' perceived types of conflicts and tensions, as well as reasons and strategies for coping with those conflicts and tensions during their year-long clinical experiences and in their first year of teaching. McNally et al (1997) looked at the nature of the support student teachers received from the partner schools in making the transition from student to teacher. They found that the mentors perceived support as a concept of nurturing to support as a professional action as part of ensuring the development of appropriate competencies.

The previous studies were concerned with the perceptions and attitudes of the participants towards the school-based work of ITT and the initial training in general. There was more emphasis on exploring the impact of ITT on the student teachers' attitudes. However, the findings of the previous studies revealed that the field experience contributed most to the positive improvement of student teachers' attitudes, and the findings showed that the students teachers have positive attitudes towards the field experience, their tutors and mentors.

This study endeavours to investigate the effectiveness of the primary ITT in the state Jordanian universities. This study will highlight in particular the participants' perceptions towards their training courses. More specifically this study aims to answer the following research questions:

1. How do the trainees, tutors and mentors perceive the school-based work of ITT?
2. In what ways can the school-based work of ITT be developed to meet the primary teachers' professional needs as perceived by trainees?
3. What are the areas of co-operation between the universities and the schools in the ITT?
4. How do the tutors mentors, and headteachers perceive the partnership between the partner schools and universities?
5. In what ways can a partnership between the partner schools and universities be developed, which is effective for students, tutors, mentors and headteachers?

### **The Research Methodology**

This study analyses the perceptions and practices of the participants who were involved in the primary pre-service in the state Jordanian Universities. The subjects in the study were drawn from the student teacher population at the Jordanian State Universities, all the Primary Education Tutors at all the Universities, mentors in partner schools who agreed to take

part in the study, and a random sample from the headteachers of partner schools. The researcher distributed 178 questionnaires for all of the student teachers, and 146 were returned, a response rate of 80%, (12 % Male and 88% Female). Interviews also were implemented in this study with a random sample of headteachers of co-operating primary schools consisting of fourteen subjects who collaborated with the Jordanian Universities. Twenty-four primary co-operating teachers (mentors) and eleven tutors

### **The Findings of the Study**

The findings from the questionnaires and interviews of this study were divided into three parts as follows:

#### **The findings related to the Observation Stage**

This stage aims to offer opportunities for student teachers to become familiar with the school environment and with the different activities of the school (Yarmouk, 1996). The observation period is of two weeks duration and comprises two sub-stages: general school observation and specialist classroom observation.

In the general school observation the student primary teachers observe all the primary classes for grades from one to ten for one week. They watch and observe the teaching process in general inside the classroom. Student teachers are also expected to observe the daily workings of the school as the start of the school day (7.30 a.m.) until the end of the school day (2 p.m.). This stage aims to make the student teachers familiar with the schools' activities and facilities e.g.: sport yards, library, and laboratory (Yarmouk, 1996).

The specialist classroom observation aims to acquaint the student teachers with a variety of teaching methods and skills and to analyze what is happening inside the classroom during a lesson. The student teachers are required to attend and observe the teachers while they are teaching for one week. During this week the students are given the opportunity to discuss with their mentors any issues related to the teaching practice and to acquire some experience of their mentors' practice and develop a good relationship with them (AL-Sagrat, 1999). In this stage student teachers are required to attend and observe primary class teachers for the first three grades (6-9 years). The student teacher completes his or her training under this teacher's supervision until the end of the training course.

To explore the participants' views of the observation stage the researcher asked student teacher (through the questionnaire), tutors and mentors (through interviews) to state their opinion about the value of lessons observed by student teachers. Beginning with the questionnaire findings the Table 1 shows the outcomes of the questionnaire related to the student

teachers' responses about the quality and variety of training lessons and observation in partner schools.

Table 1: Student Teachers' Responses Related to the Observation Stage

| Item  | Agree |     | Disagree |     |
|---|-------|-----|----------|-----|
|   | F     | %   | F        | %   |
| The variety of lessons I spent on school observation was adequate               | 76    | 52% | 70       | 48% |
| The variety of lessons I spent on specialist classroom observation was adequate | 61    | 42% | 85       | 58% |

F: Frequencies of the sample. % The percentages of the frequencies.

The lessons spent in observation during the field experience at partner schools were not seen to be sufficient for the student teachers. It can be seen from the findings of the questionnaire shown in Table 1 that half (48%) of student teachers were dissatisfied with the variety of lessons spent in school observation. Fifty-eight per cent of student teachers were dissatisfied with the lessons spent on specialist classroom observation. Specialist observation is more demanding and more pointed as it is interesting to note that they were less satisfied with this than the general observation. To get further understanding of the trainees' responses and the actual situations of the school-based work these questions were transferred to the interviews in addition to the open-ended questions in the questionnaire. The findings of the interviews related to the observation lessons spent on school observation confirmed the questionnaire outcomes. The interviews showed that more than half of the tutors (6 of 11) and half of mentors (14 of 24) were dissatisfied with the school observation phase. Not only the duration of 'one week' of school general observation seen as insufficient for the participants, but also the way it was implemented. Many of the trainees reported in the open-ended questions that they did not in fact do the general school observation, because their mentors did not take the training instructions seriously. This phase was left out by some in favor of the more specialist observation; yet the latter was more unsatisfactory. Some student teachers indicated that their mentors and tutors ignored both the observation phases, general and specialist. A trainee reported that:

*“My mentor sent me to teaching practice from the beginning of school-based work, without doing the observation stage”*

This trainee was typical in indicating that her mentor ignored the general observation for the school and the specialist classroom observation. She did not observe her mentor on the school's activities in the first two weeks of school-based work of ITT. Fifteen student teachers reported that

one of the main weaknesses of the school-based work was the lack of observation lessons; they were never asked to assess critically in schools in terms of teachers' performance, pupils aspects or the general ethos in school and the way in which it is demonstrated.

The interview findings showed that there was a contradiction between mentors' and tutors' views about the specialist classroom observation. The majority of mentors (15 of 24) claimed that the variety of lessons spent by student teachers in the specialist classroom observation stage was adequate and that the student teachers were given the opportunity to observe their mentors before they moved to the teaching practice stage. One of the mentors commented:

*"The student teachers had good opportunity to observe their mentors, and to gain some of their experiences in teaching"*

However, it is expected that the mentors would say that, because they are responsible for organising the observation lessons. The majority of tutors supported the student teachers' responses about the specialist observation stage. Eight of eleven tutors claimed that the variety of lessons observed by student teachers during their placement was inadequate. It is surprising that some of the tutors (4 of 11) also reported that the classroom observation stage was totally ignored by mentors and tutors. One of the tutors said that:

*"The observation stages for both the school and the classroom should be planned and conducted by the mentors in co-operation with tutors, but unfortunately it is mostly ignored by both of them and the tutors do not follow the mentors implementations of the observation"*

This comment explains and supports the student teachers respondents who were dissatisfied with the time spent on the observation stages. This tutor summarised the two main issues related to the observation stage, the lack of organisation and planning for the observation lessons and the lack of mentors and tutors committed to the implementation of the training plans. There is a lack of structure and direction to the observation, as if the students were to absorb all that they see without the critical analysis that should be central. Many of the mentors shared the view about a lack of thorough briefing and expressed their reservations about the universities' planning and critical engagement in general. One of the mentors commented on the organisation of the observation stages in a way which is typical. She said:

*"There is not any real written plan or organisation from the University about the observation stages and the activities that the*

*student teachers should observe during the observation stages”*

This mentor indicated that the student teachers spend two weeks observing without any plan or guidance from their tutors or mentors. This might be attributed to the fact that there are no instructions from the University to show the mentors how to organise and analyse observation lessons for the student teachers.

The planning for the observation phases as well the teaching practice phase are supposed to be a shared responsibility between mentors and tutors in co-operation with the headteachers. Mentors have to:

*“Develop a written realistic plan about what and how they are going to proceed in their work with the students. This plan should be discussed with the headteacher, the University supervisor”*  
(Yarmouk University, 1996, p 5)

Hagger et al (1995) supported this view and emphasised that in order to ensure that student teachers make effective use of their school-placement the mentors should plan carefully even before the student teachers starts practice teaching, write a realistic plane for the observation lessons by mentors with collaboration with the tutors and should be realistic in their expectations of their student teachers. Some mentors complained about the lack of meetings and communication between them and tutors before or during the observation period. Five mentors emphasised that they had only known they would be mentors when the student teachers arrived, so it was too late for them to plan for the observation lessons. One of the mentors said that:

*“I was informed that I had been selected by the headteacher as a mentor when the student teachers arrived, and the headteacher introduced her to me in the classroom, and she said that this trainee will be your mentee for the whole school term, and it was the first time for me to be a mentor”*

This response emphasises the lack of communications and meeting between the training staff in schools and universities, and it was one of the main weaknesses reported by mentors and headteachers (see Section 2 The Partnership). This mentors' view was supported by the student teachers' responses in the open-ended questions. The findings of the open-ended questions showed that the tutors do not themselves observe or guide student teachers during their observation stage. Some student teachers reported that the tutors mostly ignored the observation stages and send them to the partner schools without any plans for the activities that they should observe. The

student teachers reported that the supervisory visits start after the first week and some student teachers might receive the first visit from their tutors at the end of second week or in the third week of school based work at partner schools. One trainee reported that:

*“The first supervision visit was too late and it came after the observation stages, so we did not discuss the observations with any one”*

This example indicates that this student teacher did not benefit from the observation stage although this is one of the main strategies used in teacher training courses. McInyre et al (1994) suggested that tutors must realise that school based practice is regarded as a subject, and as such, it requires a specific way of teaching which is agreed on and carried out by all. The mentors and trainees need a tutor who can support them and induce change where necessary. The question still remains. Why did the tutors and mentors ignore the observation stage? Some tutors explained that because they have a large load of trainees, they could not manage to visit all trainees who were distributed in different schools within one week. One of the tutors commented:

*“I have 36 trainees and they are distributed in 14 schools, in addition to teaching some courses. It is impossible to cover all of them within one week”*

What is assumed from this response of course is any indication that the observation stage could be prepared for. There are all kinds of matters that take place in school and classroom that are worthy of critical discussions as well as observation, but this does not appear to enter tutors' minds. This attempts to justify why tutors did not follow the trainees during the observation stage. It is a contention that the greater importance attached to this stage is that the students are seen to be carrying out their obligations, rather than any thought being given to what they are actually learning. It reduces the role of the tutor to the instrumental conforming of carrying out visits, rather than engaging in high quality educational dialogues. And what about the mentors? Did they also ignore observation lessons because they were not really participating effectively in ITT? It could be because they have no clear idea about the training plan, or because they were not encouraged to watch the trainees or critically analyse their performance, or it may be due to the fact that the mentors were not capable of analyzing and interpreting the activities observed. It was interesting that four mentors indicated that cutting down the observation phase was preferred, often by the mentees themselves. One of the mentors said:

*“My mentee asked me from the second day to practise teaching, and I agreed to encourage him”*

Some mentors indicated that observation should be continuous process across the whole training period. They did not place any distinction on the first weeks of the observation. One of the mentors explained why some mentors cut down the observation stage. She said that:

*“My mentee continues her observation lessons during the partial teaching practice and the full-time teaching practice. We do not cut down the observation lessons, but we compound them with the teaching practice phase”*

This mentor indicated that she did not ignore the observation phase, but she says it was part of the whole school experience. Whereas both of the student teachers and tutors were of the view that the mentors were not serious in implementing the observation stage, they suggested that the mentors must still teach during the observation stage, thus enabling student teachers to watch them and learn from their experience. A personal example of the observation procedures can be given to illustrate this further. I was in conversation with one of student teachers about his mentor and the feedback after the observation lessons. The student teacher indicated that the mentors avoided these discussions and sometimes they do not accept the student teachers' questions about their presentations. He said:

*“My mentor did not accept the discussions after the observation lessons, when I asked her about some issues related to her presentation. I try to link it with my background at the university, she told me it is very difficult to join the teaching with the theory”*

This suggests that student teachers often do not benefit from their observation and the mentors often do not give their student teachers the chance to discuss with them their comments about what has been observed. Mentors want student teachers to copy them and their teaching strategies. Student teachers also raised another theme related to mentors. The majority felt that the mentors did not encourage them to link their theory to teaching practice. This might be attributed to the fact that the mentors do not have the theoretical knowledge of the student teachers and do not know how to link theory to practice. The mentors try to convince the student teachers that their theoretical knowledge cannot be applied inside the classroom. This may be caused by the mentors' lack of knowledge about conducting and analysing observation lessons. Rae (1997) indicated that the observer must be trained and prepared for the observation so they know exactly what is required from the observation. This task is a university responsibility which has the authority in ITT and the expertise to train the mentors. The next chapter will explore these questions related to the mentors, but the indications are here

already that there is a lack of real thought to the nature and purpose of observation which reflects both in the lack of critical scrutiny of actual teaching and the lack of thought given to the significance of the theoretical underpinning of the early stages of ITT.

Furthermore some student teachers emphasized in the open-ended question that one of the weaknesses of the school-based work was that the trainees spent the whole period of the observation and teaching practice with one mentor. They suggested that implementing the classroom observation stage in different classes would give the student teachers a broader experience in teaching-learning processes. The student teachers do not have the opportunity to vary their experience with different teachers and classes. One trainee reported that:

*“The training should be in different classes that gives us the opportunity to watch more experienced teachers and to experience and gain more information about the syllabus and textbooks of primary stages”*

The model that the students received was like the old fashioned notion of following the action and example of a particular role-model, accepting and initiating all that was seen. This is a far cry from the ability to compare and contrast, let alone the expertise that would arise from sharing pedagogical ideas. One of the tutors suggested discussing the observation lesson before and after with both student teachers and mentors. He stated that:

*“There should be a discussion before and after the observation lessons, and selecting specific teaching skills to show student teachers how to deal with it”*

This tutor suggested using a competence approach to mentoring which emphasised selecting specific skills for each lesson. This suggestion could be implemented with the co-operation of both tutors and mentors in organising the observation. Another tutor suggested that:

*“Selecting some of the good mentors during the observation period, and distributing the student teachers in small groups to spend the observation lessons with them”*

It is easier for tutors to attend the observation lessons with student teachers in small groups and the tutors could choose the nearest schools for the universities. This would remove the necessity of tutors visiting each student teacher and give student teachers the opportunity to observe different mentors and have deeper feedback about the observation lessons.

One of the tutor's suggestions emphasised the importance of varying the teaching experience for student teachers by moving student teachers during the school-based work period. She said:

*“Our student teachers spend all of their school-based work with the same mentors and we do not select mentors, therefore some student teachers might be lucky by training with good mentors but the majority do not have this chance, so we should swap them to give them equal opportunities in training”*

This suggestion could be implemented with student teachers in the same school, and would give student teachers more opportunities to observe and train with different mentors and in different classes.

Overall, the findings of the questionnaire and interviews concerning observation showed that the number and the quality of the specialist observation lessons was perceived as inadequate for the participants, particularly the student teachers. A major weakness of the observation stage was that there is no organisation or analysis of the observed lessons, and some student teachers do not even do the observation lessons.

### **The Findings Related to the Teaching Practice**

Teaching practice is the main stage of school-based work. Bourk (2001) maintains that practice teaching is the single most powerful intervention in a teacher's professional preparation. In this stage the student teachers practise real teaching inside the classroom. It aims to enhance the student teachers' professional knowledge and teaching competence, and to give them the opportunity to try their own ways and knowledge in teaching in the reality of the classroom.

The following sections show the participants' perceptions of the teaching practice stage and the length of the school-based work. Table 2 shows the student teachers' responses about the training lessons they spent on teaching practice at partner schools.

Table 2: Student Teachers' Responses Related to Teaching Practice

| Item   | Agree |     | Disagree |     |
|--|-------|-----|----------|-----|
|  | F     | %   | F        | %   |
| The variety of lessons I taught during training was adequate | 67    | 46% | 79       | 54% |

F: Frequencies of the sample. % The percentages of the frequencies.

The findings of the questionnaire in Table 2 show that more than half (54%) of the student teachers were dissatisfied with the variety of lessons

they taught on teaching practice inside the classroom. But the question raised from these responses is whether the sense of inadequacy came because of the insufficient number of lessons they taught or the lack quality surrounding these experiences? The results of the interviews revealed different explanations for the student teachers' responses surrounding their experiences in teaching practice.

The outcomes of the interviews show that the majority of tutors and mentors (9 of 11 and 17 of 24) were happy with the length of the teaching practice stage. The remainder of mentors and tutors who were happy with the length of school-based work shared the same opinion that the length of the teaching practice phase (12 weeks) in comparison with the observation (2 weeks) phase is more adequate. It gives student teachers the opportunity to vary their teaching sessions as well giving them the opportunity to practice different lessons.

Nine of tutors and mentors who disagreed with the existing length and quality of the school experience expressed some reservations about the training curriculum and indicated that the organisation of the training lessons during the school-based work in general and the teaching practice in particular was inadequate. One of the tutors explained that because the number of training lessons per week is between 12-15 lessons and the real load for the primary teachers is between 24-28 lessons per week, within this number the student teachers cannot practise teaching all subjects. This view was supported by some of the mentors who indicated that the current length of school-based work did not enable student teachers to teach all the subjects for the first four grades in the primary stage. Some mentors claimed that student teachers need to train in all primary subjects, but because of the period of time spent in school and the way in which the school based work is organised this cannot be achieved in many cases. One of the mentors argued that:

*“The student teachers during the current period do not practise teaching for all subjects; only the Arabic language and mathematics, and when they are teachers they will be required to teach all subjects”*

This mentor indicated that student teachers are not trained to teach all subjects. Most train in the Arabic language and mathematics or science. The student teachers choose Arabic Language and mathematics because they are the main subjects in the primary stage. Those subjects have more lessons per week in the students weekly lesson plan. Arabic has 9 lessons (32%) and mathematics 5 lessons (17%) per week in study plan for the primary stage (see Table: 2.1). These subjects are mostly taught in the morning and this

encourages student teachers to include them in their training plan. One of tutors argued that:

*“I did not consider our student teachers spend enough time in practice teaching. Some subjects they do not know about them and how they can teach them”*

Four of 11 tutors suggested that the length of the school-based work should be increased to between 6-8 months. One of the tutors said that:

*“The training period should be increased to one year (the fourth Year of BA). The observation stages (the general school observation stage and the specialist classroom observation) and part-time practice teaching should be in the first term (2-3 days per a week), and the second term for the last stage (full-time teaching practice)”*

The implementation of this suggestion would be difficult with the current number of credit hours allowed for the school-based work of ITT in the undergraduate degree (See Table: 2-4). Another obstacle is that the observation lessons in schools demand that the student teachers are freed from theoretical modules. It is impossible to increase the length of the school-based work of ITT to one year without increasing the number of credit hours for ITT, on diminishing the amount of time devoted to the theoretical input, something the Universities do not seem inclined to do.

Mentors and tutors who disagreed with the current length of school-based work suggested extending the current training period and increasing the time of school-based work. One of the tutors said:

*“ Extending the training period to six months at least; two months for observation and part-time teaching practice, and four months for the full-time teaching practice”*

The tutors and mentors argued that the student teachers could not reach an acceptable level of competence in the time available. One mentor said:

*“I suggested extending the training period to the last year of BA in order to give student teachers opportunity to get more experience in the primary syllabus and teaching skills”*

The interviewees' responses indicated that the student teachers did not fully complete their training by the end of school year. One of the tutors reported that the student teachers do not spend the whole training term in schools and he said:

*“If we take in account that the student teachers leave the partner schools before the end of school year in order to finish their final exams at the university, so that the real period of training course is less than one semester”*

This comment indicated that the student teachers do not attend for the full term at partner schools. There are therefore many activities in schools which student teachers miss. However, this finding is not so surprising in itself as those student teachers were not freed from their training. One of the tutors said:

*“ It is difficult for student teachers to manage and cope with the school as well as the university at the same time”*

This problem was reported as one of the major problems that faced trainees during their placement at schools by all of the participants. This is borne out in some of the suggestions for increasing school-based work of ITT in the undergraduate students' plan. One of the mentors recommended that:

*“Teaching experience at partner schools should be given more time in the student teachers' educational plan, and extended to a six month full-time training course”*

A few tutors (4 of 11) indicated that the current length of school-based work of ITT is adequate, but the way in which the universities use this time to train and deliver the school-based work is inadequate. Mentors and tutors are required to have plans about their work with student teachers and they should collaborate in writing these plans. The Universities emphasised that in the mentors and tutors duties.

The training plans should show the procedures and methods which the mentors and tutors will use during the school-based work and specify the main activities that student teachers should undertake in the school-based work. The findings of the interviews indicated that both the mentors and tutors who are responsible for school-based work and training student teachers do not have any plans for the observation and teaching practice stage. One of the tutors said:

*“Mentors and tutors should approve a written plan about their working with student teachers, but some tutors met the mentors after the training term started and their meeting should have been at the beginning of school-based work”*

Another tutor blamed the mentors who do not follow the training plan, and he said:

*“I think the current period of training course is adequate, but it needs the mentors to follow the training instructions”*

## **Conclusion**

Those tutors who believe that the current period is adequate point out that the mentors do not have a real commitment to the training procedures. Even if they were, in themselves theoretically valuable they are not put into practice.

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# PEER INTERACTIONS AND POSITIVE STUDENT-LECTURER RELATIONSHIP AS A TOOL FOR IMPROVING THE TEACHING AND LEARNING OF COLLEGE ALGEBRA. A CASE STUDY AT USIU

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## Abstract

This paper sets out to interrogate the role played by peer interactions in the teaching and learning of College Algebra in a classroom setting. It also explores the impact of positive student-lecturer relationship on teaching and learning of College Algebra at the university level and the general improvement of student performance. The instrument of data collection herein comes from observations made from the classroom teaching, interviews with students and from questionnaires administered to students who willfully and voluntarily filled them in. The finding indicates that indeed students' classroom participation during College Algebra lessons is influenced by the kind of feedback they get from their colleagues. This peer interaction is very crucial in their learning as they are more active when they get positive feedback and are withdrawn when their colleagues' response is negative. It was also established that the lecturer-student relationship during College Algebra classroom lessons can create either a positive or negative impact on the students learning process and hence his/her overall performance in College Algebra examinations. Further research in this direction can play a major role in resolving some of the challenges facing the teaching and learning of mathematics in general and College Algebra in particular.

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**Keywords:** Mathematics, College Algebra, Peer interaction, Lecturer-Student relationship, challenges, teaching, learning and performance.

## Introduction

The importance of mathematics is recognized worldwide as an essential discipline that needs to be enhanced in education to equip students

with skills necessary for higher education, career aspiration and personal fulfillment [4.1]. There exists a link between mathematics and other sciences such as chemistry and **Salau (2000)** concludes that a student who performs well in mathematics is more likely to have high scores in other examinations [4.7]. Apart from understanding mathematics per se, mathematics is necessary in our daily life as it is a social skill. We apply it in our economy and medicine to mention but a few [4.3].

Since College Algebra is a branch of mathematics, it follows that it is important for students to understand it and pass it [4.1]. College Algebra is called the gatekeeper subject in 21<sup>st</sup> century. It is applied by professionals of all shades be they electricians, criminologists, architects, journalists, computer scientists, biologists or doctors to mention some of them once said **Robert Moses the founder of the Algebra Project** which advocates for mathematics literacy in US public schools. Anything involving computers and networking uses College Algebra. Poor background in Algebra leads to poor performance in College Algebra which ends up making a degree course to take longer and more costly as remedial classes must be undertaken. College Algebra is a prerequisite for all College-bound students and for most jobs. It has almost become a rite of passage. It is a tool of modern life. College Algebra makes students develop abstract reasoning skills necessary in life. It is more than a set of rules and procedures for solving mathematical problems. It is a way of thinking as it facilitates a deeper understanding of the world around us. It describes how virtually all everything in our environment works.

On passing the Placement Test a student joins **MTH1109** College Algebra class. Those who fail join **MTH 1105** Algebra in Practical Context class which is more of remedial class. In **USIU** College Algebra is part of general education that is studied by all students and is normally undertaken for one semester. Despite the importance of mathematics in our lives, many studies have established that students are faced with numerous challenges in learning it. These challenges may be grouped as follows: student-related, classroom-related and school- related [4.2].

### **Objectives and importance of the research**

The purpose of this study is to explore the impact of positive student-lecturer relationship on the teaching and learning of College Algebra at the university level and to interrogate the role played by peer interactions in the teaching and learning of College Algebra in a classroom setting. The intent of the study was to ascertain if the best teacher characteristics fostered good classroom positive peer interactions and favourable student-lecturer relationships.

This research is significant as it provides useful information for mathematics teachers on how to promote conducive classroom learning environment that fosters positive teacher-student relationship and facilitates peer interactions that improve students' performance in mathematics.

As stated earlier in the **Introduction Part**, College Algebra is an essential tool in many fields including natural science, engineering, medicine and social sciences. College Algebra as any other branch of mathematics plays a major role in the socio-economic as well as scientific development at both personal and societal levels. It is the only subject that is applied in every sphere of our lives. **Peter Braunfeld of the University of Illinois** often tells his students, "Our civilization would collapse without mathematics", and he is right.

Studies on the performance of students in mathematics have continuously shown that mathematics is problematic at both the learning and teaching stages. In **Mrinal, Majidul [4.4; 2013]** study the following scenarios were established:

Table1: Responses to Mathematics as difficult subject

| How do students find Mathematics | Response in percentage |
|----------------------------------|------------------------|
| Difficult to learn               | 52%                    |
| Average to learn                 | 27%                    |
| Not difficult to learn           | 21%                    |

Table2: Table of student's abilities in Mathematics

| Ability   | Percentage of Students |
|-----------|------------------------|
| Poor      | 50%                    |
| Average   | 30%                    |
| Brilliant | 20%                    |

**Okello [4.5; 2010]** in her paper about the challenges in the learning and teaching of College Algebra at USIU assessed the students' performance and found the following:

Table3: Students' performance in College Algebra at USIU

| No of Students | Percentage of Students who passed at Fall 2007 | Percentage of Students on borderline to failure at Fall 2007 | Percentage of Students who failed at Fall 2007 |
|----------------|--|--|--|
| 56             | 23%  | 66%  | 11%  |

From the above findings in **Tables No.1 to No. 3** it is evident that there are fundamental challenges in the learning and teaching of College algebra and in broad sense mathematics at university level. Studies have identified the following amongst others to be the main challenges:

- Poor mathematical foundation of students [ **Okello 4.5; 2010**]
- Wrong attitude towards mathematics by students [**Okello 4.5; 2010; Mrinal, Majidul 4.4; 2013 and Victoria 4.8; 2010**]. There is a sense of fear and failure regarding mathematics amongst most students.
- Lack of appropriate technological tools in the learning and teaching of mathematics. Traditional methods are no longer adequate and relevant in the modern environment [**Okello 4.5;2010, Mrinal and Majidul ,4.4 ; 2013**]
- Lack of Teaching Preparation and Support to students and lack of adequate student practices in learning mathematics.[ **Mrinal , Majidul 4.4; 2013 and Lazarus , Role ,Jackson , Paul 4.3; 2012 and Okello 4.5 ;2010**]
- Poor student-teacher relationships. [**Julia E.B. 4.2; 2013 and Wilkins J. 4.9;2006**]. Positive student-teacher relations make learning mathematics easier.
- Lack of peer interactions in classroom lessons[**Olive 4.6; 2004 and Ampadu 4.1;2011**].  
Human interactions are key factors in facilitating the learning process in general and mathematics in particular.

A more detailed discussion on these challenges can be found under **Part IV** of this paper.

### Literature review

**4.1 Ampadu, E (2011);** “Does Peer Influence Affect Students’ Participation in Mathematics?” In this study, Ampadu confirmed that students are generally enthusiastic and willing to participate in the teaching-learning of mathematics and that improves their performance.

**4.2 Julia, E.B (April 12, 2013);** “Teacher-student relationships and student achievements in grade six and seven mathematics”: A dissertation presented in partial fulfillment of the requirements for the degree of Doctor of Education-Liberty University April 12, 2013. Her research found out that positive student-teacher relationship enhanced the classroom environment and made learning of mathematics easier.

**4.3 Lazarus N.M; Role E, Jackson K.T, Paul K. (2012 March);** “Evaluation of teacher factors associated with mathematics performance in primary schools in Kenya”: Published in International Journal of Scientific Research in Education (IJSRE) March 2012, Vol(1), 47-62, ISSN 117-3259. In this study, the authors conclude that the effectiveness of mathematics teachers should be enhanced in the area relating to teaching strategies, such as creation of an effective climate of learning and inclusion of inquiry

learning style. Explicit understanding of mathematics is necessary for teaching it.

**4.4 Mrinal S., Majidul A;** “A study on the difficulty of teaching and learning mathematics in undergraduate level with special reference to Guwahati City.”

This paper is a research study on the difficult areas that are encountered during the learning and the teaching of mathematics. The broad objective of the study is to investigate the problems of teaching and learning mathematics at the under-graduate level in colleges of Guwahati, Assam.

**4.5 Okello N.P (2010);** “Learning and teaching College Algebra: Challenges and opportunities-A case study at USIU”: The Journal of Language, Technology and Entrepreneurship in Africa, Vol.2.No.1.2010, ISSN 1998-1279.

Her study yielded various factors that affect the performance of students in College Algebra and highlighted that the pedagogy of teaching College Algebra was one of these factors.

**4.6 Olive, C (2004);** “Facilitating Peer interactions in learning mathematics: Teachers’ practical knowledge”. University of Calgary. Proceedings of the 28<sup>th</sup> conference of the International Group for the psychology of mathematics education, 2004 Vol.2 pp. 191-198.

**Olive** promotes the position that learning takes place in a social setting and emphasizes human interactions as a key factor to facilitate learning.

**4.7 Salau, M (2000, September);** “Options in sustaining mathematics as the language of science and technology in the 21<sup>st</sup> century.” Paper presented at the annual conference of Mathematics Association of Nigeria (MAN).

**Salau** points out that there exists a link between mathematics and other science subjects. This implies that a student who performs well in mathematics is most likely to perform well in overall subjects.

**4.8 Victoria, N (2010 January 18<sup>th</sup> );** “The challenges of learning and teaching mathematics. The guardian.com, Monday 18 January 2010 18.18 GMT.

**Victoria** states that students’ lack of confidence in mathematics is one of their undoing which can only be sorted out by a confident mathematics teacher who has been adequately trained and empowered. The study adds on that understanding mathematics builds confidence and confidence builds understanding.

**4.9 Wilkins, J (2006, August 21);**An examination of student teacher behaviours that contribute to good student-teacher relationships in large US urban high schools.

“Good student-teacher relationships”. Buffalo, New York: New York State University.

Wilkins asserts that teachers’ helpful behaviour is supportive in that the teacher interacts positively with the student.

**5.0** Despite the importance of mathematics in our lives, many studies have established that students are faced with numerous challenges in learning mathematics. These challenges may be grouped as follows:

Student-related, classroom-related and school-related’ [4.2]

**5.1 Student-related challenges include:-**

- Student’s ability
- Motivation
- Effort
- Attitude

**Self-confidence**-students who lack confidence in mathematics perform poorly in examination as confidence builds understanding [4.8].

**5.2 Classroom-related challenges include:-**

- Instructional practices
- Assessment procedures
- Teachers’ actions and interactions [4.5].

**5.3 School-related challenges include:-**

- Teaching and learning materials
- Staff
- Other resources necessary for effective teaching and learning mathematics [4.8].

In this paper, we shall dwell more on both the student-teacher and peer interactions factors which when applied reduce the challenges students encounter when learning mathematics.

To understand the student-teacher factor, it is important to appreciate the existence of the following characteristics: the helpful teacher, the understanding teacher, the admonishing teacher, the dissatisfied teacher and finally the freedom teacher [4.2].

The characteristics of those various kinds of teachers as expounded by Julia 2013 [4.2] are as follows:

**5.4 Helpful teacher characteristics**

- Assists
- Shows interest
- Joins students
- Behaves friendly or in a considerate manner
- Inspires confidence and trust in students

### **5.5 Leadership teacher characteristics**

The teacher who:-

- Notices what is happening
- Leads
- Organizes
- Gives orders
- Sets tasks
- Determines procedures
- Structures classroom situation
- Explains and hold intention

### **5.6 Uncertain teacher characteristics**

- Keeps low profile
- Apologizes often
- Waits to see how things go
- Admits one is in the wrong
- Sets tasks

### **5.7 Understanding teacher characteristics**

- Listens with interest
- Emphasizes
- Shows confidence and understanding
- Accepts apologies
- Looks for ways to settle differences
- Is patient
- Is open to students

### **5.8 Admonishing teacher characteristics**

- Gets angry
- Takes students to tasks
- Expresses irritation
- Forbids students to act
- Corrects students
- Punishes students

### **5.9 Dissatisfied teacher characteristics**

- Waits for silence
- Considers pros and cons
- Keeps quiet
- Shows dissatisfaction
- Looks gloomy
- Questions
- Criticizes

### **5.10 Freedom teacher characteristics**

- Gives opportunity to independence of working
- Waits for class to blow off steam
- Gives freedom to students
- Gives responsibility to students

**6.0** Studies undertaken in several large urban schools in USA and other studies established that there are specific teacher behaviours that contribute to good student-teacher relationships [4.2; 4.5; 4.9]. These behaviours are as outlined below:-

**6.1 Demonstrating care and concern:** Examples of such behaviours are such as making an effort to know the students, talking to students out of classroom, being available to listen to students' problems.

**6.2 Offering help:** Examples of this behaviour are such as offering extra help in class, being available before and after class, helping students with problems.

**6.3 Providing academic help:** This involves providing academic support by explaining concepts not understood by students, helping students study for examinations, giving students positive feedback on their tests and exercises.

**6.4 Being Supportive:** Such behaviour includes the teacher interacting in a positive manner with students, exhibiting patience with students, listening to them, being humorous, being friendly, and supporting students with their problems.

**6.5 Being respectful and fair:** This behaviour is demonstrated by a teacher allowing students to make classroom decisions, respecting students' opinions, eliciting students' opinions, speaking respectfully to students.

**6.6 Demonstrating a positive interaction:** This shows that the teacher has a positive relationship with the students. The student feels that the relationship with the teacher is beneficial. Teachers should be able to include some of their personal experiences into the lessons.

**6.7 Considering students' feelings:** It makes students respond positively to the teacher and this makes learning conducive. The teacher should value the differences of the students.

As discussed earlier, these teacher behaviours are addressed by certain teachers who display some specific characteristics. This implies that teachers must strive to have these required characteristics. If they lack them then they need training.

Now that we have exposed what is required of the teacher, we need to discuss the role that is displayed by the students' peer interactions in learning mathematics. This paper focuses on understanding both the peer interactions in learning College Algebra and the role played by positive teacher-student relations in minimizing the challenges encountered by the student during this

learning process [4.4; 4.5; 4.6 4.9]. Peer interactions are considered to be classroom based during which students talk to each other to learn mathematics. The mathematics teacher should adapt to such learning environment and strive to consistently provide opportunities for students to engage in these interactions.

Four themes characterize the teacher's role in providing such opportunities:-

- **Conditions to support the social perspective of mathematics education:**

The teacher has to appreciate that learning comes through talk and discussion. Mathematics learning occurs when the students (learners) understand and explain the concept which has been presented in their own words and they can teach it to someone else.

- **Students' behaviours from peer interactions**

The teacher is supposed to understand that through peer interactions, students acquire from each other the following behaviours:

- Compare experiences thus getting information from each other.
- Share ideas which allow them to collaborate and expand their thinking through sharing each other's view point to refine their own.
- Articulate mathematics through mathematics language.
- Pose questions to each other which generate debates that are healthy to clear understanding of mathematical concepts.
- Get motivated and build confidence as they lend support to each other.
- Gain autonomy which makes them less dependent on the teacher.
- Test their own understanding as they test each other's thoughts, ideas thus helping them formulate their own mathematical perceptions.

- **Learning activities that support peer interactions**

Through the following activities/experiences the teacher can accord students with opportunities to engage in peer interactions:

**Inquiry of the problem solving- process** which is achieved by teacher allowing students to work in groups when solving a given problem.

**Inquiry of a new concept** during which the students are allowed to explore a situation in small groups before the teacher provides any explanation.

**Whole class presentation** in which the teacher allows students to interact during their presentations.

- **Teacher's behaviours that support peer interaction**

**Listens and observes:** Search a behavior provides the teacher with a feedback from students. He/She can know how and when to intervene in the students' learning process.

**Questions and answers:** The teacher uses questions to assess the students' understanding of new concepts. When students are unable to proceed, the teacher gives answers.

**Supporting students' thinking:** The teacher gives the students the freedom to think and reason out answers with his/her help.

**Promoting good peer interactions:** The teacher facilitates a cooperative learning process by encouraging students to form groups according to their choice and to solve mathematical problems in groups with each member of the group allowed to participate. Weak students get assistance from the mathematically stronger students in any given group. When all students are stuck with any given problem, the teacher assists them.

### **Methodology and instrumentation**

A non-experimental questionnaire **QT1** was designed to carry out a survey amongst unsampled and unbiased one hundred and thirty College Algebra students at USIU to seek their responses to the following key areas of this study:

- Students' mathematical background and their attitude towards mathematics
- Teacher – student interaction during College Algebra classroom lessons.

Under **Part VII** there are sample questions in the questionnaire QT1 that indicate the following:

1. The College Algebra students' opinions about their lecturer to establish in which category he/she falls amongst the following characteristics: helpful, leadership, uncertain, understanding, admonishing, dissatisfied and freedom [**Question 2**]

**Hypothesis:** Positive answers to this question shall indicate that the lecturer predominantly displays the following characteristics: helpful, leadership, understanding and freedom which are normally preferred by students.

2. Lecturer – Student relationship paradigm [**question 9**].

**Hypothesis:** positive answer to this question shall indicate good interpersonal relationship between the lecturer and the student.

3. Students attitude towards mathematics in general [**Questions 1, 6, 14**].

**Hypothesis:** Negative answers to these questions shall confirm the common student related challenges in the learning of mathematics namely: students' ability and attitude among others.

4. Peer interaction [**Questions 9,11,15**]

**Hypothesis:** Positive answers to these questions shall show that the lecturer facilitates peer interaction [Question 9] and that students gain from these interactions [**Questions 11, 15**].

### 5. Students' mathematical background [**Question 3**]

**Hypothesis:** Students with a good mathematical background finds it easier to learn mathematics at university level and tend to perform better in their mathematics examinations.

### **Participants**

The questionnaire **QT1** was administered to one hundred and thirty **(130)** College Algebra two classes **MTH1109** College Algebra and **MTH 1105** Algebra in Practical Context the latter being treated like remedial class for students who did not pass Placement Test in Mathematics normally taken by all students irrespective of their specialties before they join **USIU**. In **USIU** College Algebra is part of general education that is studied by all students and is normally undertaken for one semester. These students are of varied mathematical backgrounds, races and are international in their mix as they come from all over the world.

The questionnaire contained pre-designed questions formulated by the College Algebra Lecturer undertaking this study to seek findings on the following key issues of concern: **the role played by peer interactions and the impact of positive lecturer-student relationship on the teaching of College Algebra at the university level.**

### **Questionnaire (Qt1)**

**Usiu**

### **Questionnaires (Qt1) - March 2014**

Do not write your name for the responses are confidential and anonymous. This is NOT a test.

Your Lecturer shall not use your answer to affect your grade.

Your answers to the questionnaire are to assist the lecturer improve his/her teaching methodology.

Choose either A or B or C

1. Do you like mathematics?  
A Yes  
B No  
C Not Sure
2. Do you like your mathematics Lecturer?  
A Yes  
B No  
C Not Sure

- 3 Did you pass your school level mathematics?  
A Yes  
B No  
C Cannot Remember
4. Did you like your mathematics teacher at school?  
A Yes  
B No  
C Not Sure
5. How did you perform in your Mathematics Placement Examination?  
A. Excellent  
B Good  
C Average
6. How did you perform in your Mathematics Placement Examination?  
A. Excellent  
B Good  
C Average
7. Do you always do your mathematics homework?  
A Yes  
B No  
C Sometimes
- 8 Do you find Mathematics to be hard?  
A Yes  
B No  
C Not Sure
- 9 Do you find Mathematics to be hard?  
A Yes  
B No  
C Not Sure
- 10 When you registered for mathematics class, how did you decide on which lecturer to choose?  
A. To pass and to learn  
B. To pass but not necessarily to learn  
C. By convenience of the lesson time
- 11 Do you think peer (or group) learning is helpful?  
A Yes  
B No  
C Not Sure
12. Should all students do the same mathematics whether they are in 1105 or 1109 classes?  
A Yes  
B No  
C Undecided

- 13 Do you like learning at USIU?  
 A Yes  
 B No  
 C Not Sure
- 14 Is it necessary to learn mathematics?  
 A Yes  
 B No  
 C Sometimes
- 15 Does peer teaching help you to understand mathematics?  
 A Yes  
 B No  
 C Not Sure

### Data analysis table

The data collected through answers to the questions contained in the Questionnaire (QT1) administered to **130** students of College Algebra at USIU has been analyzed as below:

Table no. 4: data analysis table with questions from QT1

| Questions   | Yes responses (Excellent) | No Responses (Good) | Not sure responses (Average) | Yes responses as percentage of the Total | No responses as percentage to the Total | Not sure responses as percentage to the Total |
|---|---------------------------|---------------------|------------------------------|--|---|---|
| <b>Question 1</b><br>Do you like Mathematics ?                        | 76                        | 38                  | 16                           | 58.5%                                    | 29.2%                                   | 12.3%   |
| <b>Question 2</b><br>Do you like your Mathematics Lecturer?           | 96                        | 14                  | 20                           | 73.8%                                    | 10.8%                                   | 15.4%   |
| <b>Question 3</b><br>Did you pass your school level Mathematics       | 88                        | 35                  | 7                            | 67.7%                                    | 26.9%                                   | 5.4%  |
| <b>Question 4</b><br>Did you like your Mathematics Teacher at School? | 88                        | 31                  | 11                           | 67.7%                                    | 23.8%                                   | 8.5%  |
| <b>Question 5</b>   | 12                        | 29                  | 89                           | 9.2%                                     | 22.3%                                   | 68.5%   |

|  |     |    |    |       |       |       |
|--|-----|----|----|-------|-------|-------|
| How did you perform in your Mathematics placement Exams?   |     |    |    |       |       |       |
| <b>Question 6</b><br>Do you believe Mathematics is hard?   | 39  | 72 | 19 | 30%   | 55.4% | 14.6% |
| <b>Question 7</b><br>Do you usually do your Mathematics Homework?  | 62  | 17 | 51 | 47.7% | 13.1% | 39.2% |
| <b>Question 8</b><br>Do you find Mathematics to be hard?   | 67  | 46 | 17 | 51.5% | 35.4% | 13.1% |
| <b>Question 9</b><br>Do you ask questions during Mathematics lesson whenever you do not understand what is being taught? | 43  | 25 | 62 | 33.1% | 19.2% | 47.7% |
| <b>Question 10</b><br>When you registered for Mathematics class, how did you decide on which lecturer to choose          | 71  | 10 | 49 | 54.6% | 7.7%  | 37.7% |
| <b>Question 11</b><br>Do you think peer (group) learning is helpful?   | 106 | 13 | 11 | 81.5% | 10    | 8.5%  |

|   |     |    |    |            |       |            |
|---|-----|----|----|------------|-------|------------|
| <b>Question 12</b><br>Should all students do the same Mathematics whether they are in MTH 1105 or MTH 1109? | 38  | 69 | 23 | 29.2%      | 53.1% | 17.7%      |
| <b>Question 13</b><br>Do you like learning at USIU?   | 115 | 3  | 12 | 88.5%      | 2.3%  | 9.2%       |
| <b>Question 14</b><br>Is it necessary to learn Mathematics?   | 89  | 20 | 21 | Appr.68.5% | 15.4% | Appr.16.2% |
| <b>Question 15</b><br>Does peer teaching help you to understand Mathematics?                                | 96  | 14 | 20 | 73.8%      | 11%   | 15.4%      |

### Analysis of the findings of questionnaire (qt1)

1. Questions **No 1,6,14** were aimed at establishing the students' attitude towards mathematics in general. **Question no 1** was more specific as it sort to know whether the students like mathematics. **58.5%** of the students gave an affirmative answer to this question implying that they liked mathematics. But when asked in **question no 6** whether they believed mathematics is hard, **55.4%** answered to the negative meaning that they have a negative attitude towards mathematics.

**Question no 14** enquired whether the students felt that it is necessary to learn mathematics to which **68.5%** answered in the affirmative confirming that they appreciate the importance of mathematics in their lives.

We can therefore conclude that these students have a positive attitude towards College Algebra despite the fact that learning mathematics is challenging [4.4, 4.5].

2. **73.8%** of the students gave a positive answer to **question no 2** which sort to know whether they like mathematics lecturer. This result confirmed that their lecturer had those attributes that were appealing to them. Various studies have confirmed that such attributes(characteristics) are mainly being helpful , showing good

leadership, demonstrating an understanding of the students' freedom to freely express themselves [4.2, 4.3, 4.6, 4.9].

3. Positive response of **67.7%** to **question no 3** confirmed that the mathematical background of students play a role in their learning of College Algebra at the university level [4.5].
4. Positive response of **67.7%** to question no 4 indicated that positive teacher student relationship is important in the learning of mathematics.
5. Uncertainty in the response (**68.5%**) to **question no 5** was an indication that the majority of students performed poorly in Mathematics Placement Examination which contradicts their responses to **question no.3** to which **67.7%** of the students confirmed that they passed their mathematics at the school level. These results point a finger to the standard or relevance of the school curriculum to the standard required at the entrance to the university.
6. **30%** of the students in answering **question no 6** believed that mathematics is hard. This is a demonstration of negative attitude towards mathematics. It was observed in the studies [4.5, 4.4, and 4.8] that students tend to have a sense of fear of mathematics which eventually leads them to finding the learning of mathematics challenging.
7. **47.7%** of students gave affirmative answer to **question no 7**. This percentage is low and indicated that students did not do adequate practice in mathematics which may be the reason for their observation confirming the findings in the following studies [4.4, 4.3, and 4.5].
8. **51.1%** of the students in response to **question no8** confirmed that they find mathematics hard which leads to the conclusion that learning mathematics is challenging to students [tables no 1 and 2 in 4.4 and table 3 in 4.5].
9. **Questions no 9, 11, 15** aimed at establishing the role played by peer interaction in the learning of mathematics. This is one of the core research issues in the present study. **Question 9** in another sense was tailored to establish whether or not the lecturer facilitated peer interaction during the mathematics lesson. **47.7%** of the students who were not sure could be interpreted to have made a statement of strictness from the part of the lecturer which hindered their full disclosure or participation.
10. Students' positive response of **54.6%** to **question no 10** indicated that students had the liberty to choose their lecturer and most preferred the lecturer that they perceived to be more friendly. This is

another confirmation that student- teacher relationship plays a role both in the teaching and learning of mathematics [4.2, 4.9].

11. **Question no 11** was more specific in asking whether or not the students thought peer (group) learning is helpful in learning process of mathematics. **81.5%** answered in affirmative which unequivocally confirmed that peer interaction plays a positive role in the learning of mathematics (**College Algebra**).
12. Negative response of **53.2%** to **question no 12** showed that students appreciate the fact that they do not have equal abilities in learning mathematics. This observation is also confirmed in **Table 2 [4.4]**.
13. The overwhelming positive response of **88.5%** to **question 13** and **73.8%** to **question no 2** indicated that College or school-related factors have a role in the teaching and learning of mathematics [4.2, 4.3, 4.6].
14. **Question no 15** still sorts to confirm whether or not peer teaching helps students to understand mathematics. **73.8%** gave a positive answer to this question. This result further confirmed that teachers who encourage peer interaction make the learning of mathematics easier. The answers to **questions 9, 11, 15** confirm that a mathematics lecturer should facilitate peer interactions as these interactions are helpful in the learning of College Algebra.

### **Discussion of the findings: Making sense of the results**

The study set out to interrogate the role played by peer interactions in learning College Algebra in a classroom setting and to explore the impact of positive student- lecturer relationship on the learning and teaching of College Algebra and whether or not that improves the student's performance.

Just as **Ampadu [4.1; 2011]** in his research titled "Does Peer Influence Affect Students Participation in Mathematics?" confirmed that students are convinced that peer interactions are helpful and play a positive role in their learning of College Algebra. This study also arrived at the same conclusion.

**Julia E. Britt [4.2; 2013]** found out that positive student – learning relationships enhanced the classroom environment and made learning pleasurable which positively impacted on students overall success / achievements in College Algebra. This study also confirmed that good interpersonal relationship between the lecturer and the students facilitates peer interactions that are gainful to the students.

### **Recommendations**

The pedagogy focus in the teaching of College Algebra should incorporate among others the reinforcement of the teacher's practical

knowledge through continuous professional development (training) as it plays a role in the facilitation of peer interaction [**Olive, 4.5; 2004 1**] and [**Lazarus, Role, Jackson, Paul, 4.3; 2001**].

### **Further research**

Strategies for promoting teacher – students’ relationships during the mathematics lesson in a classroom environment.

How to improve the mathematics teacher’s practical knowledge so as he / she can better facilitate peer interaction in the classroom lesson.

To establish the characteristics of the teacher – student relationships in a classroom setting that foster improved student’s performance in mathematics.

# **EMPOWERMENT, JOB INSECURITY AND QUALITY OF JOB PERFORMANCE OF FACULTY MEMBERS: AN EMPIRICAL ANALYSIS**

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## **Abstract**

People are the most valuable assets of educational institutions. Exploring best practices for managing human resources in universities has become a challenge for university quality enhancement and competitiveness in order to attract and retain students. Enhancing students' experience became a priority by providing them the best education and learning experience and by redirecting ways of managing their Human Resources toward more empowerment and efficiency. The objective of this paper is to shed the light on the impact of Human resources practices on student's experience and to assess the results of common managerial practices in the Lebanese Private Higher education Sector. This article examines the relationship between quality of job performances in a university and academic human resources management (HRM) practices mainly: Faculty empowerment and job insecurity. The study has been conducted using secondary data from the database of one of the largest private universities in Lebanon from a sample of 136 faculty members. Data gathered are related to academic and administrative responsibilities, assessment and feedback results from students and senior peers (deans). While the cross section results of the t-test show that empowerment of Faculty members and job security can play a positive in promoting quality in job performance and teaching and learning.

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**Keywords:** Academic Human Resources, Faculty empowerment, Job insecurity

## Introduction

As a response to competition, a business model of organizing universities has become more common in recent years in Lebanon. The business model includes “greater managerial power, structural reorganization, marketing and business generation, moves towards performance-related pay and a rationalization and computerizing of administrative structures” (Parker and Jary, 1995:320). Many academic institutions have adopted organizational forms, technologies, management instruments, and values that are commonly found in the private business sector (Deem, 1988). This wave of reforms, which has swept through universities and other public organizations in Europe, has been known as *managerialism* (Trow, 1994; Hood, 1995; Pollit and Bouckaert, 2004). As *managerialism* is thought to result in higher efficiency, transparency, and effectiveness, it is thought to positively affect the quality of job performances. Others, however, argue that “managerial” characteristics in universities impede employees, especially academic human resources, from achieving a higher quality of job performance (e.g., Trow, 1994, Henkel and Kogan, 1996; Ylijoki, 2003; Bryson, 2004). In addition, human resources adapt their activities to “the simplifying tendencies of the quantification of outputs” (Trow, 1994, 41), which may lead to lower-level of organizational commitment and performance. Thus, the university becomes for some scholars a less attractive employer for academic human resources (Smeenk, Telken, Eisinga and Doorewaard, 2008).

The impact of these new managerial practices in academic human resources management on job performance has not been sufficiently evaluated. With the recent focus on accreditation, Lebanese private universities changed their managerial practices toward *managerialism*. The impact of this change has not been studied in Lebanon, where the main experts and academic debates are concerned with the development of a national legal framework for quality assurance. For these two reasons, this article examines two aspects of *managerialism* empowerment and job insecurity and investigates the empirical relationship with quality of job performance.

## Academic Human Resources Empowerment

This concept of empowerment in management has been developed and advanced by several researchers (Chebat & Kollias, 2000; Conger, 1989; Conger & Kanungo, 1988; Hartline & Ferrel, 1996; Hui, 1994; Spreitzer, 1995; Spreitzer, 1996; Thomas & Velthouse, 1990). It was shown that empowered employees have greater authority and responsibility for their work than they would in more traditionally designed organizations (Conger & Kanungo, 1988). Empowerment is thought to unleash employee potential,

enhance their motivation, allow them to be more adaptive and receptive to their environment, and minimize bureaucratic hurdles that slow responsiveness (Forrester, 2000; Spreitzer, 1995; Spreitzer, 1996).

Previous research demonstrated that empowerment drives organizational effectiveness, and practitioners and researchers alike believe it warrants further inquiry (Kanter, 1989; Spreitzer, 1995; Spreitzer, 1996; Thomas & Velthouse, 1990). One approach roots empowerment in the organizational context and defines it as “a practice, or set of practices involving the delegation of responsibility down the hierarchy so as to give employees increased decision-making authority in respect to the execution of their primary work tasks” (Leach, Wall, & Jackson, 2003, p. 28).

In the recent context of Lebanese private universities, empowerment is related to an increase in managerial responsibilities. With limited financial and human resources, Faculty members in Lebanese private universities are asked to take part of committees' activities and share some managerial responsibilities related to events management, communication, international affairs, etc. These additional responsibilities are rewarded through an additional compensation offered to the Faculty member. The impact of Faculty empowerment on quality of job performance will be examined in the empirical part of this study.

Based on the above literature review we address the following hypothesis:

*Hypothesis 1: Empowering university academic human resources positively affects the quality of job performance.*

### **Job insecurity**

In a highly competitive environment with more than 50 private higher education institutions in Lebanon, universities tend to retain efficient academic human resources able to handle academic and managerial responsibilities. In the absence of legal framework for Faculty members operating in private institutions and a law for quality assurance, universities are counting a lot on part-timers who experience more job insecurity. According to scholars, job insecurity is an employee's perception that his or her job is uncertain and may come to an end sooner than expected. From what has been theorized and inferred, it is understandable that job insecurity is highly threatening to employees given the prospect of losing the positive material, social, and psychological benefits associated with employment (De Witte, 1999). The notion that job insecurity may produce negative effects among individuals is well established. Research in job insecurity across firms, industries, and countries has provided consistent evidence that job insecurity is associated with negative employee attitudes, behaviours, and

health (see meta-analytic evidence, Sverke, Hellgren, & Naswall, 2002). For example, performance effects include reduced effort (Brockner, Grover, Reed, & DeWitt, 1992), poor safety compliance by employees (Probst & Brubaker, 2001), reduced organizational citizenship behaviour (Feather & Rauter, 2004; King, 2000; Wong, Wong, Ngo, & Lui, 2005), and increased deviant behaviour (Lim, 1996). Despite this growth of evidence in literature, no research has linked individual-level effects to organizational-level effects even though it is intuitive that employee outcomes should be associated with organizational performance.

This logical connection is not surprising considering that it goes back to an earlier proposition of job insecurity theory (Greenhalgh, 1983, p. 433). This theory predicts that employee behaviour and attitude will decline as job insecurity increases. Specifically, employees will be less productive, resist change, and leave. These intermediate outcomes are hypothesized to affect organizational performance. Importantly, this nexus of effects also predicts a reciprocal effect. Employees who stay infer, on the basis of on-going organizational decline, that their own jobs are less secure. Research shows that non tenured employees behave less effectively than their tenured counterparts, but it is still unclear whether this behaviour is detrimental to institutional performance (Reisel, Chia, Maloles and Slocum, 2007). There is no evidence whether job insecurity has a positive or negative impact on job performance in Higher education institution in Lebanon.

Based on the above literature review we address the following hypothesis:

*Hypothesis 2: Job insecurity negatively affects the quality of job performance.*

### **Quality of Job Performance**

The Quality of faculty job performance concerning academic resources is usually obtained through two sources of feedback: students and peers. Student feedback is mainly used to measure the quality of teaching whereas peers' feedback is used to measure overall job performance mainly academic and managerial.

Feedback from students was acknowledged by Chism (1999) as being an integral aspect of effective teacher evaluations. The extent to which student feedback is used in the assessment of job performance was acknowledged by Cashin (1999) when he made reference to a US Department of Education survey (1991) of over 40,000 department chairs. The analysis revealed that 97% of the chairs used "student evaluations" to assess job performance. He adroitly acknowledged, however, that "there is almost universal agreement that data from a variety of sources, not just

student ratings, are required to accurately evaluate teaching”. Centra (1993) underscores further this point. He contends that “student evaluations represent only one source of information: student opinion”. Feedback from deans mainly from peers or chairpersons who are the direct supervisors of instructors within the faculties is also a necessary instrument in evaluations. It assesses the quality of the educational skills, research achievements, administrative activities, punctuality, availability and attitude of faculty members. Accordingly, we can realize that the assessment by students cannot cover all these points deeply observed by the deans all over the year.

### Methodology and measurement

In order to assess the relationship between the empowerment of the Academic Human Resources and the quality of job performance, we used secondary data from the HR database of one of the largest private universities in Lebanon. The selected sample consists of data from 136 faculty members. Only one university is considered in the sample since it is difficult to access these types of confidential informations from other universities.

Quality of job performance is measured through the feedback questionnaire collected from students at the end of every semester. The questionnaire consists of 15 questions, on a 1 to 4 scale, to assess four concepts in each course (see appendix 1):

- organization of teaching
- educational skills
- learning evaluation
- general assessment

Cronbach alpha was conducted on the four dimensions of the questionnaire to see whether these dimensions can be considered a measurement of a one concept Job Performance. As per the below Table 1, the Cronbach alpha result is superior to 0.95 which indicates a strong internal validity for the measurement of job performance.

Table 1 - Reliability analysis for student’s feedback questionnaire

#### Case Processing Summary

|       |                       | N   | %     |
|-------|-----------------------|-----|-------|
| Cases | Valid                 | 113 | 41.2  |
|       | Excluded <sup>a</sup> | 161 | 58.8  |
|       | Total                 | 274 | 100.0 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .957             | 4          |

The second level of measurement of quality of job performance is the assessment done by deans based on a peer review process. The faculty deans were asked to complete questionnaires for each instructor in their faculties. The questionnaire consists of 22 items that evaluate four areas on a 1 to 4 scale (see appendix 2):

- quality of educational skills
- research achievements
- administrative activities
- punctuality, availability and attitude

We excluded research from the job performance measurement since our main focus is teaching and learning and service provided to the university community. And this validated with a weak alpha de Cronbach obtained for the four dimensions when research is included. As per table 2, the results of Cronbach alpha for the three remaining dimensions of the questionnaire is encouraging equal to 0.79. This supposes that the three dimensions can be considered as a measurement of one concept in our case job performance as perceived by senior peers.

Table 2 - Reliability analysis for peers' evaluation

**Case Processing Summary**

|       |                       | N   | %     |
|-------|-----------------------|-----|-------|
| Cases | Valid                 | 105 | 99.1  |
|       | Excluded <sup>a</sup> | 1   | .9    |
|       | Total                 | 106 | 100.0 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .790             | 3          |

The degree of academic human resources empowerment is measured indirectly by the additional academic or managerial responsibilities such as dean; head of department; course coordinator; director of a unit, etc. According to this criterion academic human resources in the sample were divided into two categories with or without additional managerial mission and responsibilities. The degree of job insecurity is measured by two

variables: full time or part time status through contract duration that can be one year for newly appointed faculty, or three years and above for tenured faculty. T-test is than conducted to check whether there is a significant difference in job performance related to empowerment and job insecurity.

### Results: Empowerment vs. Job performance

We used the T-test to assess the relationship between empowerment and job performance, comparing the job performance of faculty with and without managerial mission and responsibilities. Results in below tables 3 and 4 show that there is no significant difference in student perception of quality of job performance between faculty with managerial responsibilities and faculty without managerial mission and responsibilities.

Table 3 - Group statistics for the peers and students evaluation with and without managerial mission

| Group Statistics |         |    |         |                |                 |
|------------------|---------|----|---------|----------------|-----------------|
|                  | mission | N  | Mean    | Std. Deviation | Std. Error Mean |
| Deans            | With    | 58 | 92.8093 | 8.41686        | 1.10519         |
|                  | Without | 45 | 88.3721 | 9.63378        | 1.43612         |
| Students         | With    | 77 | 89.7662 | 8.06963        | .91962          |
|                  | Without | 52 | 88.4635 | 9.36487        | 1.29867         |

Table 4 – Independent Samples Test of the peers and students evaluation with and without managerial mission

| Independent Samples Test |   |       |                              |       |                 |                 |                       |   |        |         |
|--------------------------|---|-------|------------------------------|-------|-----------------|-----------------|-----------------------|---|--------|---------|
|                          | Levene's Test for Equality of Variances |       | t-test for Equality of Means |       |                 |                 |                       |   |        |         |
|                          | F                                       | Sig.  | t                            | df    | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |        |         |
|                          |   |       |                              |       |                 |                 |                       | Lower                                     | Upper  |         |
| Deans                    | Equal variances assumed                 | 1.754 | .188                         | 2.491 | 101             | .014            | 4.43712               | 1.78140                                   | .90330 | 7.97093 |
|                          | Equal variances not assumed             |       |                              | 2.449 | 87.782          | .016            | 4.43712               | 1.81215                                   | .83573 | 8.03850 |

|          |                             |       |      |      |        |      |         |         |          |         |
|----------|-----------------------------|-------|------|------|--------|------|---------|---------|----------|---------|
| students | Equal variances assumed     | 1.012 | .316 | .843 | 127    | .401 | 1.30277 | 1.54601 | -1.75650 | 4.36205 |
|          | Equal variances not assumed |       |      | .819 | 98.372 | .415 | 1.30277 | 1.59131 | -1.85497 | 4.46052 |

This suggests that additional responsibilities have no negative impact on the quality of teaching and learning as perceived by students. As for the deans perception of faculty performance it shows a significant difference with a positive relationship between added responsibilities and job performance. It can be assumed that empowerment is positively linked to quality of job performance as perceived by peers only. This can be explained by the potential higher commitment that empowered faculty members may have compared to less empowered ones with additional managerial responsibilities. Our results give a partial support to the Hypothesis 1 assuming a positive relationship between empowerment and quality of job performance. The results are compatible with the conclusions of Trow 1994a, Henkel and Kogan, 1996, Ylijoki, 2003 and Bryson, 2004). The positive attributes of empowerment as supported by management theories (Forrester, 2000; Spreitzer, 1995; Spreitzer, 1996) seems to be supported by evidence on academic human resources. Higher education institutions can benefit from the advantages of empowerment without negative effect on teaching and learning quality.

### **Results: Job insecurity vs. Job performance**

Job insecurity is assumed according to hypothesis 2 to be negatively linked to quality of job performance. The T-test results obtained from students' feedback support this argument. The quality of job performance for full time faculty is higher according to students' perception (see below tables 5 and 6). On the other side no significant differences in job performance can be observed from senior peers (deans) feedback. Results support hypothesis 2 especially when it comes to the students' perception of the quality of job performance. The students' perception of the quality of job performance is significantly higher for faculty with long term contracts. This is a significant support for the managerial theory that job insecurity is associated with negative employees' attitudes and behaviours. Job insecurity may limit the faculty investment in teaching and learning quality since his or her focus can be invested in his or her main professional activities.

Table 5 - Group statistics for the peers and students evaluation according to their contract type

| Group Statistics |           |    |         |                |                 |
|------------------|-----------|----|---------|----------------|-----------------|
| Contract         |           | N  | Mean    | Std. Deviation | Std. Error Mean |
| Deans            | Part-Time | 24 | 90.7242 | 10.08039       | 2.05765         |
|                  | Full-Time | 79 | 90.9152 | 8.97490        | 1.00975         |
| students         | Part-Time | 33 | 80.8030 | 23.25922       | 4.04891         |
|                  | Full-Time | 99 | 89.3495 | 11.82520       | 1.18848         |

Table 6 - Independent Samples Test of the peers and students evaluation according to their contract type

|          |                             | Levene's Test for Equality of Variances |      | t-test for Equality of Means |        |                 |                 |                       |   |         |
|----------|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------|-----------------------|---|---------|
|          |                             | F                                       | Sig. | t                            | df     | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |         |
|          |                             |   |      |                              |        |                 |                 |                       | Lower                                     | Upper   |
| Deans    | Equal variances assumed     | .001                                    | .979 | -.089                        | 101    | .929            | -.19100         | 2.15323               | -4.46244                                  | 4.08043 |
|          | Equal variances not assumed |   |      | -.083                        | 34.816 | .934            | -.19100         | 2.29206               | -4.84501                                  | 4.46300 |
| students | Equal variances assumed     | 9.613                                   | .002 | -2.753                       | 130    | .007            | -8.54646        | 3.10478               | 14.68890                                  | 2.40403 |
|          | Equal variances not assumed |   |      | -2.025                       | 37.661 | .050            | -8.54646        | 4.21973               | 17.09140                                  | -.00153 |

## Conclusion

Perhaps the most striking insight that can be drawn from this research concerns shedding the light on the impact of some aspects of *managerialism*, that is combined with new orientation of managerial practices in Higher Education Institutions, and quality of job performance of academic human resources. According to the obtained findings, theories supporting the

positive relationship between employees' empowerment and quality of job performance seem to be also suitable for academic human resources management. We can easily confirm from results obtained in this study, that giving managerial responsibilities to academic human resources does not influence negatively the quality of teaching and learning as perceived by students on the opposite side it suggest a positive impact as observed by senior peers. This will also mean that additional compensation may influence academic human resources motivation and the quality of job performance. HEI can therefore be encouraged to take advantage of empowering academic human resources opposing to some traditional thoughts that faculty members should be only dedicated to teaching and research.

The results also show that Job security influences positively the quality of job performance (teaching and learning) as perceived by students. Higher Education Institutions are recommended to promote job security for their Faculty to promote more organisational commitment to teaching and learning. Faculty empowerment combined with job security may have positive impact on job performance.

In the future, further research can provide additional contribution to the understanding of the determinants of quality of job performance of academic human resources and support of teaching and learning quality through managerial actions. This area of research provides additional understanding of the managerial theory and the managerial practices in Higher Education Institutions. We invite also researchers that could have access to universities internal human resources data to combine their efforts in multiplying results that can explain better the relationship between Human Resources practices and Job performance.

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### **Appendix 1: Criteria for Evaluation of Teaching by Students**

1. Organization of teaching
  - In general, the course plan has been respected
  - The teacher is available to answer any questions
  - The time scheduled for this course has been respected
  - The educational methods are well adapted
2. Educational skills
  - The course is well structured
  - The course is clear
  - The teacher knows how to maintain a favourable environment for the course
  - The teacher shows interest in his course
  - The teacher masters his course
  - The teaching of this course is stimulating
3. Learning evaluation
  - The exam questions are clear
  - The correction criteria are clear
  - The comments made help students progress
4. General assessment
  - I am satisfied with this course
  - I recommend this teacher to others

#### *Rating scale:*

- 5=Total agreement;
- 4=More or less agreement;
- 2= More or less disagreement;
- 1= Total disagreement;
- N/A=Not applicable.

## **Appendix 2: Criteria for Evaluation of Teaching by Peers**

1. Quality of educational skills
  - Awareness of discipline and academic rules
  - Awareness of pedagogical methods
  - Relevant student's evaluation methods
  - Teaching language skills
  - Respect of syllabus
  - Achievement of the course objectives
  - Students satisfaction
2. Research achievements
  - Number of publications
  - Participation to research activities
  - Quality of conducted researches
3. Administrative activities
  - Awareness of university rules and procedures
  - Respect of university rules and procedures
  - Participation to activities
  - Office attendance
  - Meetings attendance
4. Punctuality, availability and attitude
  - Punctuality
  - Availability
  - Attitude towards students
  - Attitude towards administrative staff
  - Attitude towards colleagues
  - Team spirit
  - University belonging spirit

### *Rating scale:*

4=Very satisfactory;

3=Satisfactory;

2=Unsatisfactory;

1= Very unsatisfactory; /A=Not applicable.

# HYPOTHESIS *VERSUS* HYPERTHESIS

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## Abstract

A hypothesis is a proposed explanation for a phenomenon. For a hypothesis to be a scientific hypothesis, it needs to be tested using scientific method(s). Scientists generally base scientific hypotheses on previous observations that cannot be explained otherwise. A scientific hypothesis is a proposed explanation of a phenomenon, until it is rigorously tested. In contrast, a scientific theory has undergone extensive testing and accepted to be the accurate explanation behind an observation. Here, the use of term ‘hyperthesis’ is introduced that highlights missing link between a scientific hypothesis and a scientific theory. It is believed that this term will be valuable in describing research that does not fit the scientific norm.

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**Keywords:** Scientific theory, hypothesis, hyperthesis

## Introduction

Scientific explanations come at different levels, whether tackling a specific problem, or hypothesis by a single scientist, or by a community of scientists coming to agree on broad ideas over hundreds of individual experiments and studies resulting in a scientific theory. A hypothesis can be right or wrong, but a theory is supposed to be true based upon the scientific method. So, when a hypothesis has been verified to be true, it becomes a scientific theory. But is there anything in between? The precise definition of a hypothesis is either a suggested explanation for an observable phenomenon, or a reasoned prediction of a possible causal correlation among multiple phenomena. In contrast, a theory is a tested, well-substantiated, unifying explanation for a set of verified, proven hypotheses. A theory is always backed by evidence; a hypothesis is only a suggested possible outcome, and is testable and falsifiable. This manuscript highlights missing link between hypothesis and scientific theory and propose the idea of introducing “hyperthesis”. It is believed that this term will be valuable in describing research that does not fit the scientific norm.

**A scientific hypothesis** is a proposed explanation of a phenomenon which still has to be rigorously tested. In contrast, a scientific theory has undergone extensive testing and is generally accepted to be the accurate explanation behind an observation (wisegeek, 2012). A working hypothesis is a provisionally accepted hypothesis proposed for further research (Hilborn and Mangel 1997).

The English word hypothesis comes from the Ancient Greek (hupthesis) meaning “to put under” or “to suppose”. (Hilborn and Mangel 1997). Hypothesis can also be considered as “educated guess” (**Gregory and Myles, 1994**), because it provides a suggested solution based on the evidence. Experimenters may test and reject several hypotheses before solving the problem.

A scientific theory has undergone extensive experimental testing and widely agreed to be the accurate explanation of an observation. The scientific theory must take into account study power and bias, the number of other studies on the same question, sample size in the context of greater number and lesser preselecting of tested relationships, flexibility in designs, definitions, outcomes, and analytical models (Ioannidis, 2005).

Often scientists undertake research which does not fit either criteria and can only be described in between a hypothesis-led study and a scientific theory? Most of research that falls short of becoming a theory out of a hypothesis is the one that has unidentified dimensions or proven to be erroneous due to new discoveries on aspects of the problem that were not addressed in the past. A meta-analysis of scientific literature in countless peer-reviewed journals has persuaded us to propose the term “hyperthesis”. The term can be used to present a factual concept, the observational basis of which has been analyzed in multiple dimensions that proves its persistent occurrence before experimental testing. It differs from hypothesis in that, it doesn't not focuses on the proposed assumptive theory but rather critically explores all dimensions of the conjecture itself, that then subsequently leads to its testing. Biomedical sciences is not the only discipline in which hypothesis-based researches have observed a drawback in timeline, but almost all scientific fields have come across the demerits of partially analyzed observational root downfalls, shortly after they were thought to be the most exciting research contribution of its time.

So how does it differ from an observation? An observation refers commonly to what's being seen and noted. But the use of a single human sense as the basis of research while ignoring other senses appears to be gullible. Newton could have thought of the Gravity, even if that apple would have fell over his shoulder, with him being blind by birth. The point is that the experience on which the research improvising is based should be multi-dimensional, and testing should go side by side as the “hyperthesis” evolves

into a fact rather than a finding. The irony of the issue is that many factual and carefully sorted and scrutinized research at present have to begin their scientific work with the term “hypothesis”, which in fact is “hyperthesis” that likely withstand experimental testing. Instead of findings tested extensively experimentally as described in a scientific theory, hyperthesis can be used to describe factual observation with all possible dimensions explored, ahead of making its way to becoming the scientific theory in a comparatively shorter duration. Vaccination for prevention of diseases, antibiotics to fight bacterial infections, gene knockout for prevention of onset of familial disease are few example of hyperthesis-based research that over a period of time would become a scientific theory. In contrast, the role of saturated and unsaturated fatty acids in atherosclerosis, matter and anti-matter application in physics, laboratory animal based research in Alzheimer’s disease, WMD in Iraq, role of cannabinoids in psychotic disorders, egg yolk eating demerits and merits, are few examples of hypothesis-based research.

### **Conclusion**

The term “hyperthesis” is proposed as a missing link between hypothesis and scientific theory. It is believed that this term will be valuable in describing research that does not fit the scientific norm.

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# **IMPACT OF INNOVATIVE LEARNING ENVIRONMENT BASED ON RESEARCH ACTIVITIES ON SECONDARY SCHOOL STUDENTS' ATTITUDE TOWARDS RESEARCH AND THEIR SELF-EFFICACY**

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## **Abstract**

Advanced and free learning environment coupled with the creative learning activities is assumed to be a motivational variable. In the present study, we applied an innovative learning strategy involving students in order to achieve positive impact on their attitude towards science, desire to learn science and future career choices. The study experiment was focused on enhancing the research skills of the students; apply knowledge for solving real world problems, positively changing the students' attitude towards science, raising students' self-efficacy and enhance positivism toward science related subjects. This research assumes that if the attitude and perception of post-secondary students is changed and made positive about science, then they might choose to study related science subjects for-example, mathematics, engineering and science at university level studies. Therefore, it will also impact students' career choices after university studies and they might enter scientific careers. Our study focused on evaluating various changes in the attitude, desire and self-efficacy of participating students when traditional instruction is replaced through the innovative learning environment. A total of 120 students participated in our experiment where researchers assisted students to experience hands on different research activities. Pre and posttest were used to evaluate the change in students' attitude and desire towards science, knowledge and self-efficacy. The study results have shown that significant changes in the performance of students' for-example, student noticed positive attitude towards their own research

abilities, desire to learn science, self-efficacy, learning and career choices. However, results did not show any differences based on gender as such.

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**Keywords:** Career choice, desire to learn, innovative learning environment, self-efficacy, student attitude

## **Introduction**

The emergence of developmental projects coupled with the globalization of the labour market has led to the emergence of newer economic sectors. Such newly emerging economic sectors have different requirements in terms of the workforce. Since these new sectors, demand workforce having skillset which is interdisciplinary in nature and also include technical subspecialities. Considering the occurrence of these changes, in Arab region especially Gulf states have recognized the importance of knowledge-based economy. This is quite evident by the active planning initiatives undertaken by Gulf nations for making transition to the knowledge-based economy.

However, at present the gulf countries are facing the shortage of skilled labour force. Furthermore, this problem is aggravated due to shortcomings in their present educational setup. The most remarkable challenge is the existence of the mismatch between the labour market requirements and the educational outcomes. The present educational sector is proving to be incapable in adapting itself with the developments occurring in the labour market leading to the failure in producing the specialized workforce and scientific professionals that are much needed by the industry.

First and foremost, the major problem faced by the economy and labour market of the Arab region is the continuous decline in the number of educational outcomes of the micro scientific disciplines. Secondly as mentioned previously, the Arab educational curricula is proving to be insufficient in providing students with the skills matching the developments occurring in the existing labour market (as indicated by the Arab knowledge report 2010/2011). Such a situation is significantly contributing towards hindering the economic development of the Arab countries. In this regard, the Arab knowledge report (2010/2011) suggests education policy makers to take important and necessary steps for changing the existing educational curricula in terms of content and methodologies. It stresses on having an educational curricula that has a professionally orientation. The new educational curricula should provide upscale and sophisticated knowledge that corelates with the requirements of the constantly changing trends of labour market. Additionally, the provided knowledge should be applicable

beyond the boundaries of national economy meeting the demands of the global labour market<sup>4</sup>.

Trend in International Mathematics and Science Study (TIMSS ) results revealed that on average the grade 8 students in the Arab region attain significantly lower scores than their counterparts in the United States (Michael et al. 2011). However in context to Arab region, TIMSS results also reflect that female students are better in science than males (Timms201: 167). On the other hand, results from United States presents an opposite view where males are better than females in science. On the general note, it can be concluded that Arabic young generation is less likely to major in disciplines related to mathematics and science when they reach higher education.

The present study has been conducted on the students in the Qatar University. The aim of the study was to test and explore the capabilities of a non-traditional learning strategy in improving the learning performance of the students. Furthermore, applicability of this learning strategy will also be tested with regards to fostering the sense of self-efficacy and generating positive attitude among students towards science. The purpose of this study is to explore, test and evaluate the impact of practicing innovative learning environment with students on their attitude towards science and possible career choices. In this study experiment, a non-traditional learning strategy was practiced with students who were exposed in new ways of learning and closely worked with researchers on different assigned problems.

### **Theoretical background**

#### **“Self-Efficacy”**

The sense of self efficacy reflects one’s belief or confidence of experience success. The substantial body of research has recognised the positive perceptions in context to self-efficacy as one of the major determinants while making career choices. Albert Bandura (1977) explained the learning process in the terms of the causal conditions affecting it from the individual perspective. In this regard, he discussed the effects of the educational curriculum on the development of the psychological and cognitive aspects of the students. From the viewpoint of social cognitive theory, Bandura (Bandura, 1977:191-215) also pointed out the factors causing behavioral changes as the sense of self-efficacy can be acquired through the means of the education. Furthermore, the explanations of the

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4- The statistics which included in the Arab Knowledge Report 2010/2011, preparing future generation for the knowledge society, showed high unemployment rate among Arab youth, these facts showed also by, Arab Human Development Reports 2002 -2012 which indicated that there is still a high rate of the Illiteracy between the young generation beside inability to provide the required investment to advance the economies of the Arab countries.

learning process stress that the perceived self-efficacy reflects individual's attitudes, abilities and cognitive skills (Bandura, 1977:191-215). Over the period of three decades beginning in 1977, Bandura developed a cognitive theory that explains the different social and individual factors effecting the human choices and their ability to judge things. The proposed cognitive theory also uses the concept of self-efficacy as the main factor that enhances individual's perceptions about their abilities and their chances of success. Furthermore, Bandura (xx) states that the perceived self-efficacy is reflected in the human behaviour which contributes in scrutinizing the available options and determining the ultimate career choices. Personal self-efficacy can be derived from four principal sources of information: (i) performance accomplishments, (ii) vicarious experience, (iii) verbal persuasion and (iv) physiological states (Bandura, A. 1977:pp. 191-215).

Self-efficacy beliefs influence motivational and self-regulatory processes in several ways. In other words, they influence the choices people make and the courses of action they pursue. Most people engage in tasks in which they feel competent and confident and avoid those in which they do not (Frank Pajares,1997:1-49). For example, in certain situations students might find that spending of skillful efforts might not be sufficient for bringing the desired outcomes. In such cases, students may possess necessary skills and high self-efficacy required for achieving the desired outcomes, but they may not progress forward because of lack of necessary incentives (Ibid).

According to Bandura, self-efficacy stands for the judgment of one's capability to accomplish a certain task. Furthermore, Bandura also argues that self-beliefs of self-efficacy play a key role in the self-regulation of motivation. Additionally, people who are motivated themselves can guide their own actions based on their own beliefs about what they can do and their own thoughtfulness (Bandura, A.1994:71-81).

A strong sense of academic efficacy can directly enhance the individual's perceptions of self-efficacy regarding future career choices. Additionally, academic aspirations and scholastic achievements also play a mediating role for the enhancement of self-efficacy perceptions. Self-appraisal of the occupational efficacy is important factor for generating willingness to engage in the careers requiring high-level cognitive skills. In this regard, perceptions regarding social and self-regulatory efficacy operate as the supplementary personal resources influencing the dimension of self-appraisal in context to occupational self-efficacy. Therefore, social boldness and efficacy required for curbing transgressiveness are insufficient for ensuring occupational attainments (Bandura A, Barbaranelli C, Caprara GV, Pastorelli C .2001: 191). So from this viewpoint, it can be seen that self-efficacy can be influenced by social context and other factors that allow changing of human behaviour. Such factors can include daily experiences

embedded in some social environment, education, teachers, equipment and training. Additionally, the theory of Pandora opened up opportunities for examining the role of cultural factors in this regard. According to sociological perspective, the cultural factors can be formulated by social context and individual's beliefs and attitudes

### **“Negative attitude towards Science”**

Upon reviewing the important published literature on the subject over the past 20 years, it was found that the presence of different factors within the classroom environment and educational activities that affect students' attitude and interest towards studying science subjects (Jonathan Osborne, Shirley Simon & Sue Collins, 2003). Additionally, these studies have argued that the continuous decline in students' numbers choosing to study science at their point of choice requires scientific examination. Furthermore, this scientific examination should be focussed on examination of various factors that influence the students' attitude towards studying science and related subject. Previous research has found that student attitude towards studying science is affected due to number of reasons including gender, age, curriculum, teachers, cultural and demographics related variables (Ibid).

One of the most common problem faced by the student community is their negative attitude towards science discipline in general. The traces regarding the existence of this negative attitude towards science was identified long back on 1971 when McNarry et al. conducted a study on the secondary school students in United States while examining the factors affecting their choices of education and career. The study grounded the presence of negative attitude within social context of the students (L. R. McNarry, S. O'Farrell, 1971: pp. 1060-1061 ). Additionally, McNarry et al. (1971) recommended putting additional efforts towards changing the existing attitude of the students by positively enhancing the awareness towards science at the societal level.

The empirical studies conducted in the last few decades reveal that the importance of the internal factors such as personal determinants of the academic achievement and success has also grabbed the attention of scholars. A recent empirical study emphasizes that the students' perceptions about their teachers' goals and peer's goal orientation has a strong influence on their academic achievement and career choices. Dana Vedder-Weiss et al. (2012) stated that school culture also has a significant impact on the students' motivation in addition to teachers and classroom environment. The empirical study conducted on 13,985 students of 15 years of age from 431 schools across Canada examined effects of (i) students' motivations regarding learning science, (ii) beliefs towards science and (iii) instructional practices specific to science on their achievements in science as a discipline

(Areepattamannil, S., Freeman, J. G., & Klinger, D. A, 2011). The study results revealed the existence of only 8% variance regarding science achievements between the schools. On the other hand, 92% of variance was found among the students within the schools. Additionally, the study also revealed that instructional practices involving hands-on sessions, motivational beliefs such as self-efficacy and self-concept aspects such as enjoyment in learning science has substantial positive predictive impact on the science achievement. On the contrary, it was also found that general interest in science has negative predictive effect on science achievement when compared to other contextual variables.

### **“Status Attainment”**

The studies on status attainment suggest that the teenage aspirations are subject to frequent changes. Diverse theoretical and empirical traditions view aspirations as having a trajectory of their own irrespective of theme being considered such as “over ambition”, “cooling out”, the process of “contest mobility” or the need for “vocational realism” (*Jerry A. Jacobs, David Karen and Katherine McClelland: 610*). This conclusion has also been emphasized by the recent studies which indicate that the differential childhood socialization may be less important than actual experiences at school and work for the formulating student’s aspirations and career choices (*Ibid*). In this regard, Osborne et al. (2003) also indicate that the students’ attitudes are influenced by deferent factors such as: gender, teachers, curricula, and other socio-cultural variables. Furthermore, the literature also points out the importance of gender and quality of teaching in the formulation of students’ attitudes. From the perspective of quality of teaching, we argue that there is a great need of research aimed at investigating and highlighting those aspects of teaching science that makes the discipline of science engaging for the pupils. The available research on human motivations also provides useful pointers regarding the kinds of classroom activities and environment that can enhance the students’ interest in studying science (*Ibid*). Moreover, there are variety of factors that have a great influence on students’ decisions regarding career and their attitudes towards science (.E. Myburgh, 2005: 46). For example, family or advice given by their parents, relatives, friends and school teachers. Additionally, the undertaken teaching and learning strategies along with the equipment used during the process also impact the students’ attitude (*Eylem YILDIZ, Ercan AKPINAR, Bülent AYDOĞDU1, Ömer ERGİN,2006,2-18*).

The previous studies reveal that for both men and women instrumental attributes have a considerably stronger positive relationship with career decision-making and self-efficacy than other independent variables. Furthermore, there is a significant impact of interaction between

internality and instrumentality on career decision-making. However, the existing studies on cross-culture, mixed-cultural populations (Myburgh, 2005) in addition to the ones dealing with Arab population (Abdalla, 1988, 1991; Gaad, 2004) <sup>4</sup> face some deficiencies. They fail to address the results and implications of the interactions between: (i) internality with self-esteem and (ii) instrumentality with self-esteem in context to Arab socio-politics. This effect has been shown to be especially strong in females (McDonald & Jessell, 1992) <sup>5</sup>, and even more so for women in Arabic cultures (Abdalla, 1991) <sup>6</sup>.

Based on the above theoretical discussions it can be concluded that students' attitudes and self-efficacy are the major factors determining their career choices. Therefore, their attitudes towards science and career choices have a strong influence on their decisions to study certain disciplines and undertake specializations in some areas such as micro ones.

### **Educational Structure, Economy and Labour Market in Qatar**

The secondary education plays a crucial role in the educational system of all societies. The main reason could be its structure as it bridges the gap between the primary and higher education. Furthermore, its importance can also be understood from the perspective of the age-group of the students it caters. It plays a significant role in shaping the human beings during the teenager years which are most tender years of life due to its placement between the childhood and adulthood. Furthermore, secondary school is an important phase for preparing young people for making decisions regarding their future career choices. In this regard, World Bank report (2005) indicated that the investment in the secondary education has highest economic returns not only for the individuals but also for the society. However, it can only have a significant positive impact if it is capable of guiding the students in developing the skills related to analytical and systematic problem solving and thinking.

At present the Qatar society is undergoing economic transition. It is making a transition to knowledge-based economy with the ultimate of goal of building a strong industrial sector by 2030. This is an ambitious vision that would need substantial financial investment and technology. Additionally, it also requires human and social capital coupled with the stimulating cultural context. Qatar has made some progress in this regard but still needs considerable efforts for overcoming these challenges and achieving the desired targets.

Currently Qatar is experiencing financial boom due to the high oil prices and its rapidly growing share in exporting gas. However at the same time, it experiences problems owing to its small population. In order to overcome the problem of small workforce Qatar opened its doors to foreign

labor, which resulted in flooding of migrant workers from different countries. As a result of these conditions, the natives of Qatar acquired a minority position in their own country. According to the Labor Survey Statistics Authority (2011) the Qatari population represents only 6% of the total workforce where majority of the employers work in the government sector (Ibid: Tables: 19, 66). As per Ibid (Ibid: Tables: 19, 66) the Qatari workforce represents about 32% of the total economic force of Qatar where 66% are males and 34% are the females. Furthermore, 60% of the national labor force is employed in clerical occupations while only 19% of them are in education and technical occupations. At the same time, statistics also indicate that 46.7% of women workforce in the government sector is also engaged in the clerical.

The concentration of the national workforce in the public sector and in the clerical positions reflects the outcomes of the educational setup of the past decades. Moreover, from the last 15 years secondary and tertiary education is witnessing decline in the number of students studying mathematics and science (ee: Ziad Said, 2011, figure 1 in the appendix). Considering the aforementioned situational facts, it can be assumed that Qatari society is facing a tough challenge in preparing the generations for achieving the national goals. For example, inefficiency of the mainstream educational setup to adapt the existing curriculum to resolve following problems: (i) the problem of student dropout especially the male counterparts from the secondary and higher education, (ii) motivating the students to innovate, (iii) generating interest among students towards scientific disciplines and (iv) producing professionals meeting the requirements of future labor market. In addition to deficiencies in the educational setup, the parenting styles and various socio-cultural values also complicate the educational process.

The increased efforts are being made for diversifying the education sector. For example, Qatari government is making efforts to initiatives for overcoming the challenges by allocating more resources and investments for the human development projects. Especially, for developing the education system and the research sector for preparing present Qatari citizens and the future generations for meeting the demands of the labor market in terms of the knowledge and skills. In this regard, the educational policy reforms have also been introduced in 2003 under the name "Education for New Era". It has brought about some slight progress in the patterns of student enrolment in different disciplines. However, educational reforms have not been quite successful in bring significant changes in the education in terms of quality. Furthermore, several important initiatives have also been undertaken for encouraging the scientific research in Qatar under Qatar Foundation in the form of provision of Qatar National Fund and the Oases of Science and

Technology. In contrast to educational domain, research initiatives have begun to play important role for supporting different sectors such as: industry, health, environment, energy and computing. However, despite taking all the afore-mentioned initiatives they are still proving to insufficient in bringing considerable changes in the overall picture.

The main problem started when the students began to get motivated towards the disciplines that qualified them for getting sure jobs. Several factors played an active role in formulating students' orientation from the perspective of career choices. The most prominent factor can be their perceptions regarding lack of sense of competence for studying disciplines such as science, mathematics, engineering and technology. Cultural values also played significant role in alienating them from certain professions. Additionally, gender related occupational preferences also performed its role. For example, Qatari culture and their traditions proved to be detrimental for the women's career in general.

In 2004 a survey was run on a sample of 400 Qatari male falling in the age group of 15-19 and 20-24 years (Kaltham Al-Ghanim.2004). The main aim of the study was to investigate the career choices of the young people. On the overall note, the study results reveal negative attitude towards working in the industry sector and getting engaged in professional, technical or handicraft related occupations. At the same time, the findings of the study indicated the Qatari youth's fondness of working in the supervision kind of jobs. Furthermore, the study established a positive correlation between such attitudes of Qatari people with the different socio-cultural factors such as: level of the parent's education, work environment requiring them to wear blue uniforms while working in afore-mentioned professions which contradicted their traditional dress (Thub) and head-dresss (Gatra and Egal).

As mentioned previously, Qatar society also experiences the presence of a strong correlation between the gender and the career choices made by the people. The value system and attitude of the social institutions plays a prominent role in formulating people's preferences towards career choices. It is worth mentioning that they have strong influences on the women's career choices as compared to the male counterpart. In fact, the societal and cultural values are finely embedded in their lifestyle. Qatari society is dominated by patriarchal values, which has determined a list of favored occupation for women. Hence, despite their performance in comparison to men the cultural restrictions start exerting their influence on women right from the stage of making choices regarding their education. In this regard, the study conducted by Kaltham Al-Ghanim (2007) reflects people's opinion that women's abilities are not suitable for certain job types. As there is no specific gender segregation regarding job profiles, family cultural background proves to be

the biggest hurdle for women while making their choices of the preferred careers.

Additionally, some of the cultural values strongly inhibit or have barred women's entry into certain disciplines such as engineering. The extent of their influence can be imagined from the fact that the University of Qatar did not open registration for women at all for few years. Sulaiman et al. (2010) in a study at Qatar University revealed that the recruitment of the women was the major issues rather than their retention regarding entering into the engineering disciplines. The study findings contract the existing notion regarding in ability of women to participate in certain job types as it shows a gap hole at the educational and societal level rather than their lack of abilities for such disciplines. However, the situation began to change slowly as the society and its value system became more open as a result of the economic developments. This was reflected by the increase in the number of women enrollment in the disciplines that were earlier restricted for them. However, still there are certain families in the society who are still stuck with the old value system.

One of the unpublished study conducted by Ras Gas and Dolphin Energy at the Qatar University in 2009 on over 1000 young Qatari people revealed the lack of self-efficacy is the primary factor formulating their orientation towards educational and career choices. It emphasized that the lack of self-efficacy was restricting for studying certain disciplines such as science, mathematics and engineering. In this context, Yousif et al. (2009) found that the aforementioned disciplines led students to make careers in energy and industry sector. Therefore, revealing that the gaps in the educational setup were the leading to the problems in the labor market.

The prevalent socio-cultural factors also impact students' choices of academic disciplines. For example, they showed that the students' have favorable attitude towards literary disciplines while they are in general reluctant towards studying scientific disciplines such as – mathematics, physics and material sciences in addition to specializations like mechanical and chemical industrial engineering. However, the socio-cultural factors exert a stronger influence on women's career choices than men. This becomes evident from the previously mentioned fact that they come into action during the early stages when women's make their educational choices that ultimately define their career choices. At the same time, Labor Force Statistics (Statistics Authority. Labor force statistics 2011) indicate that the females comprise of the majority of the student registrations (77%) for higher education especially at Qatar University. Considering the fact that the majority of the students in the higher education are females couples with the societal perceptions that consider women to be unfit for certain job types creates a challenging situation in the existing labor market. Moreover, the

statistics also reveals that only one third of the females are active in the labor market (Statistics Authority. Labor force statistics 2011).

Qatar is experiencing the decline and shortage of the number of students and labor force having STEM knowledge and skills. Such a situation is pressurizing the existing Qatar economy to make a transition to the knowledge-based economy. Considering the gravity of the prevalent situation Qatar government has set to national vision to transform Qatar's economy to a knowledge-based economy by 2030. For achieving the set goal, the educational system needs enhancement from the perspective of educational methodologies and learning strategies. The new educational system should be capable of attracting or engaging students to study disciplines that will help them in attaining knowledge and skillset required for matching the needs of the changing labor market. Thus, the renewed educational system can contribute towards supporting the national economy.

### **Research Methodology**

Our research methodology has been influenced from a popular believe that innovative and advanced learning environment will increase the learning performance and improve the attitude of secondary school students towards science subjects. Furthermore, it will also impact their career choice ahead in the future. These arguments haven been based (William Carbonaro,2005:27-49) study which emphasized that innovative learning environment motivates students to put more effort and expand their performance when they face challenges. Furthermore, innovative learning environment inculcates desire to learn and ability to achieve. Due to this reason, our research is aimed at identifying various new learning possibilities offered by the adoption of innovative and advanced learning environment within the secondary schools. Furthermore, advanced learning environment is based on active learning strategy.

***Study Planning and Design:*** This study was organized at the Center of Advanced Martial located in Qatar University during the academic year 2011/2012. The learning Muddle that applied in the experiment based on a set of interconnected information in materials science provided as a research problem to the students. Within the timeframe of two weeks the study participants conducted the research and laboratory experiments for discovering and identifying the critical variables. Additionally, it enabled them to search practical and innovative solutions for making amendments in the material or changing it to other forms under the supervision of senior researchers. The engagement in the laboratory activities enabled students to learn from different perspectives. For example, it empowered them to become self-educated (independent), gave them hands-on experience of

working in teams for verifying their findings and presenting their findings in the form of scientific reports.

The conducted experimental setup tested the applicability of a learning strategy that involved indulging in research activities in advanced learning environment (**CAM-QU laboratories**). The tested learning strategy aimed at enhancing the learning abilities of the students in addition to changing their general attitude towards science. The research based on testing of the learning strategy used following factors as intermediate variables:

**Innovative environment (CAM-QU laboratories):** This involves transferring a high school student to a non-traditional learning environment. Such a setup will provide students' with the opportunity to think, practice and conduct experiments in advanced scientific labs. Additionally, in the process they will get to interact with the advanced scientific equipment that will provide them exposure to new kinds of research experience.

**Active learning strategies such as Problem-solving method:** The experiment setup involved the program "I am a Researcher" in which the students are required to solve a given scientific problem. The decision regarding the including the afore-mentioned program was based on the assumption that hands-on experience in resolving research problems can enhance students' motivations to search and investigate the solutions. The educator acted as moderator during this experiment where his/her job was to provide students with some scientific problem, guiding them in using lab equipments followed by observing their progress while ensuring their security at the same time.

**Co-operative learning method:** During this part of the experimentation the students were asked to work in small groups. Such a setup will enable students to learn working in teams by cooperating with other team members. Apart from developing their sense of teamwork, it will also allow them to understand the benefits of working in teams. For example, learning from the experience of working with others. The teamwork required the students to device solutions and drawing conclusions after they have performed their investigation on the given research problem.

Our research team assumed that if students' participation in an open advanced learning environment under the supervision of a senior researcher would expand their knowledge base. As mentioned previously, during the whole process they will perform various roles, while solving a given research problem such as: active learner, problem solver, self-learner and collaborator while working in teams. The performance of all these activities assumed to bring a positive change in the students' attitude towards science and

research. Such a constructive change in the students' attitude will help in developing their sense of self-efficacy and provoking their interest towards studying science in long term. The overall aim of the research experiment is to emphasize the importance of non-traditional teaching methods for enhancing the student learning and improving their knowledge and attitude towards science

The experimentation setup employed the usage of a pre-posttest instrument to avoid any bias in the study results. For example, for ensuring that the experiment results is free from the affects of the additional variable. The pre-posttest instrument was a suitable test design for measuring the learning outcomes of the experiment especially students' learning performance, their attitude towards science and their sense of self-efficacy. The pre-test instrument was tested with the students in school two days before the initiation of the actual educational experiment. On the other hand, post-test instrument was involved after the termination of educational experiment when students returned to their school.

***Study Validity Measures:*** In order to ensure that study experiment produces valid and reliable results, researchers have taken into account several factors that might impact the study results. This includes various factors that might effects the response of individuals when they get tested for-example age, gender, type of school they study (Omar Al Shaibani, 1971, pp. 183-184). Therefore, we collected all kinds of demographics information from the participating students namely age, educational level (secondary in case of all students), grade (all participants were from Grade 12), academic background of the participants (all participants came from same types of schools with similar learning environment) and finally cultural background (all participating students belong to same nationality, community and even speak same language)

***Study Participants:***In this study experiment a total of 120 high school students comprises of 51 males and 69 females participated. This sample was randomly selected from 1000 students participated from 23 school who participated in Al-Birag learning program called "I' m researcher experiment" during 2011/2012 academic year. These randomly selected 120 students were subjected to an educational experience for over 2 weeks in CAM lap located at Qatar University. The participating 120-student sample was divided into 4 groups where each group was further divided into 6 sub-groups having 5 students in each of the sub-groups

***Reliability and Validity Considerations:*** As reliability and validity of the used scale or parameter of testing participants is important for producing

reliable results and generalizing the findings of the study. Therefore, we tested the validity of the second part of the questionnaire survey, which assessed the student's attitudes towards science and their self-efficacy. We used the coefficient of Cronbach's Alpha as a parameter for examining the internal consistency of questionnaire items. The value of the consistency parameter is between 0 and 1 but our questionnaire showed a consistency value of 0.80 which is 80%. This high value of Cronbach's Alpha shows that measures will give same results even if it is applied to a different sample.

### **Study Results**

The study questionnaire consisted of two sections where the first section was focused on accessing the students' ability to gain the knowledge and whether their score meet our expectations. The second part of the questionnaire was based on accessing students' attitude towards research; sense of competence; self-efficacy and their desire to work in groups i.e. team work. The second part of the questionnaire involves five points Likert scale comprises of scales namely strongly agree, agree, neutral, disagree and strongly disagree. The findings of our study have shown that there is a significant improvement of the educational attainment while the student's attitude became positive after the completion of the research. The results are explained below in detail:

***Students' learning performance (Knowledge):*** This assessment is based on the average of correct answers given by the students. We used four point ranking scale namely under score, average score, gained score and excellent score for assessing the results obtained from students. In the testing, we designed as pre-test and post-test so as to examine the differences in the learning performance of the participating students. In order words, pretest and posttest were tools for evaluating acquiring of knowledge by the students. Based on this examination, all the students were divided into four groups and Table 2 shows the students' learning achievement based on gender.

The comparison between the results obtained from the pretest and posttest clearly showed that there has been improvement in the students' knowledge about the science. Additionally the results have also shown that males achieved better results compared to females in terms of gaining scientific knowledge. For-example, mean of the correct answers given by males were 3.22 in contrast to females which was only 2.88 (See Table 1).

[Table 1: Students learning achievement based in gender]

| Gender   |        |    | Statistic      | Std. Error |
|----------|--------|----|----------------|------------|
| Pretest  | FEMALE | 51 | Mean           | 2.57       |
|          |        |    | Std. Deviation | 1.269      |
|          | MALE   | 69 | Mean           | 2.70       |
|          |        |    | Std. Deviation | 1.154      |
| Gender   |        |    | Statistic      | Std. Error |
| Posttest | FEMALE | 51 | Mean           | 2.82       |
|          |        |    | Std. Deviation | 1.072      |
|          | MALE   | 69 | Mean           | 3.22       |
|          |        |    | Std. Deviation | 1.247      |

On comparing the students' learning performance among four different groups, it was found that first and fourth group students achieved the score as per our expectations. Therefore, group 1 and group 4 students showed remarkable improvement by scoring excellent scores which was 48%. The group 2 score can be evaluated as 27% as excellent while a significant population i.e. 50% of them underscored. Similarly in group 3, about 19% secured as excellent while significant number i.e. 47% scored as "average".

The comparison between the averages of the all four groups was testing through the analysis of variance test (see Table 4). This test has clearly shown that there is a indication for the axes of the three where the values of the significance of the axes in the order are 0.004 and 0.005 and 0.000 which is smaller than the value of the significance test 0.05, so we reject the null hypothesis and accept the alternative hypothesis (ie, there are differences between the averages of students answers according to the group.

**Student's attitude towards Science:**The questionnaire examining students attitude towards science, self-efficacy and desire to learn have been organized as follows: Group 1: I (Attitude towards science), Group 2: (Self-efficacy) and Group 3: (desire to learn). These three groups are explained as follows: Group 1 examines the students' desire to participate in various science related learning activities, students' participation in the laboratory work, knowledge discovery and attitude towards searching new knowledge. Group 2 examined sense of confidence among students to acquire new research skills and abilities to invest new knowledge and information. Group 3 examines if the student experienced fun while participating in the experiment and do they feel interested while carrying out various activities in the laboratories

[Table 2: Correlation analysis]

| Correlation analysis      | Mean | Std. Deviation | N   |
|---------------------------|------|----------------|-----|
| Attitudes towards science | 4.32 | 0.647          | 120 |
| Self-efficacy             | 4.19 | 0.738          | 120 |
| Desire to learn           | 3.65 | 0.684          | 120 |

As we see above there was a noticeable improvement in the 3 axes. Attitudes towards science and Self-efficacy achieved better results.

We noticed from the data that the relationship between the 3 axes direct correlation (positive correlation) and statistically significant is very high (less than or equal to 0.001) and find that the axes (Attitudes towards science) and (Self-efficacy) have a strong positive correlation relationship (.759), but the axes (self-efficacy) and (desire in learning) the correlation was weak (0.481).(See Table 3).

[Table 3: Correlation analysis]

|                              |                     | Participation<br>in the lab | Participation<br>in the<br>program | Desire to<br>participate |
|------------------------------|---------------------|-----------------------------|------------------------------------|--------------------------|
| Attitudes towards<br>science | Pearson Correlation | 1                           | 0.759 **                           | 0.481 **                 |
|                              | Sig. (2-tailed)     |                             | 0.000                              | 0.000                    |
|                              | N                   | 120                         | 120                                | 120                      |
| Self-efficacy                | Pearson Correlation | 0.759 **                    | 1                                  | 0.423                    |
|                              | Sig. (2-tailed)     | 0.000                       |                                    | 0.000                    |
|                              | N                   | 120                         | 120                                | 120                      |
| Desire to learn              | Pearson Correlation | 0.481 **                    | 0.423                              | 1                        |
|                              | Sig. (2-tailed)     | 0.000                       | 0.000                              |                          |
|                              | N                   | 120                         | 120                                | 120                      |

\*\* Correlation is significant at the 0.01 level (2-tailed)

**Chi-square test of independence:** Null hypothesis: the group does not depend on the gender (gender and the group are independent). The alternative hypothesis: Group depends on the gender (no relationship between the group and gender). Chi-square value equal to 3.25 degree of freedom of 3 and less value to the significance level is 0.355. Since the significance level is 0.355 greater than the significance level testing 0.005. Therefore, we accepted the null hypothesis (the group does not depend on the gender).

**Student's desire to Learn:**The results have clearly shown an improvement in the students' attitudes towards learning. The results based on the differences between pre-test and post-test has shown that percentage of the students' who agreed as "strongly agree" increased from 43% to 52%. Interestingly, percentages of the students settled with "agree" declined from 48% to 37%/. Students those agreed as "neutral" increased from 9% to 11% but still 1% students mentioned, "Strongly disagree"

**Students' Self-efficacy:** The finding shows an improvement in the students' self-efficacy therefore; students became confident about their research skills. It was found that the percentage of students who agreed as "strongly agree" increased from 22% to 26% and the percentage settled with "agree" increased from 38% to 42%. Interestingly, students who agreed as "neutral" decreased from 27% to 23% and 10% of the students still opted as "disagree" while none answered as "strongly disagree".

### **Conclusion**

As the conclusion of this present study, it was found that advanced learning environment resulted in the improvement of the students' ability to acquire and retain new knowledge. Furthermore, study also concluded that advanced learning environment had direct positive impact on students' attitude towards research and students gained positive attitude towards work as well. After engaging in the advanced learning environment and related research activities, secondary school students have shown desire to learn and improve their self-efficacy and self-confidence. This shows that regular engagement of students with the advanced learning environment would certainly motivate student towards learning, participating and showing interest about science. In terms of performance of our experiment, study results have clearly shown that this experiment was successful in improving the knowledge of the high school students and their attitudes towards scientific research. Furthermore, experiment was successful in enabling students to acquire new research skills and at the same time increasing the self-efficacy among students. The results showed that the learning based on research activities enhance students' ability for learning.

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# THE IMPLICATIONS OF IDEALISM AS AN EDUCATIONAL PHILOSOPHY IN JORDAN AS PERCEIVED BY ELEMENTARY TEACHERS

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## **Abstract**

The purpose of this study was to identify the educational philosophical implications of idealism as an educational theory throughout the Jordanian public schools from elementary teachers' perspectives. The researchers used a questionnaire consisted of thirty two statements as a quantitative method to collect data as one of the techniques and descriptive due to its appropriateness for this study. The study sample consisted of (103) elementary teachers randomly selected from Irbid district schools of whom (47) males, and (57) females The study findings showed that the Jordanian elementary teachers rated the implementing of the idealistic educational views throughout schools were unenthusiastic (somewhat negative) with a mean of (2.13). The content domain occupied the first rank with a mean of (2.3), while the teacher domain ranked last with a mean of (1.9).

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**Keywords:** Idealism, Elementary Teachers, Implications, Educational Philosophy, Jordan

## **Introduction**

The idealistic philosophy of Socrates (469-399 BC) and Plato (427-347 BC) has had many social implications, mainly on the idea of the model state government as well as education (Brickhouse, and Nicholas, 2000). A need to offer an appropriate social milieu would be mandatory provided that the State wishes the fine natural prospective of its teens is apprehended and ideal to their fullest potential. In other words, the State must introduce an outstanding social and educational structure which is capable of fostering children's growth (Butler, 1966).

As the oldest philosophical movement known to mankind, Idealism is a system that stresses the greatest importance of mind, soul, or spirit indicating that its central belief emphasizes the 'human spirit' as the most fundamental constituent in the person's life. The world is analyzed as in essence 'nonmaterial' in its definitive scenery (Benson, 2000). As an educational philosophy, on the other hand, Idealism views learning as just recollection; meaning, people collect what would prove that their souls had existed somewhere before entering the human shape. Therefore, it is very possible that the soul is immortal or everlasting (Eternal in other words). Furthermore, knowledge is remembering, not discovering something new plus the true knowledge does not reveal from experience. At the same time, experience might fool man by not giving him the ultimate truth. Still, reality is not based on experience, it is however found in the world of ideas. Experience, on the other hand, is instituted in the world of senses (Lewis, 1999).

In the world of senses, inhabitants can never see truth because they are limited to their bodies which are in the way of enabling them to see the complete reality. Wise people must not, however, rid themselves of their bodies by neglecting or by committing suicide. On the contrary, they must provide their bodies with their basic needs in terms of foods, which would be obstructions from enabling people in general and wise people in particular from focusing on the usage of the mind (Lewis, 1999). Consequently, human beings can see the truth, reason, and recollect through the mind not the body provided that their bodily needs are satisfied (Klemke, Kline, & Hollinger, 1986).

In other words, human beings must possess a healthy body by not neglecting it and at the same time not giving it a great attention, which would help to liberate the mind so it can function at its ultimate and fullest potential. Philosophers who seek truth in this life are suited to become at an ultimate stage after death because their focus in this world is on their souls or minds whose purpose is to return back to God and the world of perfection (Stewart, 1972). Socrates (469 B.C.-399 B.C.), who is considered the founder of Idealism, felt that it is necessary to have insights into questions that really mattered, such as: What is the purpose of life? What are the values by which man should live? How does man perfect his character? (Brickhouse & Smith, 1994).

For Socrates, the dialogue was an essential source of knowledge and reason was the only proper guide to the most crucial problem of human existence, that is; the question of good and evil. He believed that rational inquiry was a priceless tool that allowed one to test opinions, weigh the merit of ideas, and alters beliefs on the basis of knowledge and affirmed that the acquisition of knowledge was a creative act (Klemke, Kline, & Hollinger,

1986). In addition, dialogue implied that reason was meant to be used in relations between human beings, who could learn from each other, help each other, teach each other and improve each other (Pery, Chase, Jacob, Von Laue, 1989). The notion of opposites is a feature that Socrates focused on as a way of knowledge and reason conveying to his students as to how human individuals come to know things and knowledge is powerful (Hugh, 2000).

Knowledge and deeds have a long history whose roots go back to ancient thinkers, Socrates/Plato along with Aristotle (Huffman, 2009). The origins of experience and of reason were created by the two eminent scholars; they celebrated experience with solely realistic apprehension. Knowledge subsisted in support of its own sake liberated from sensible orientation and created its foundation as well as element in a solely immaterial intelligence. Ancient thinkers were provoked to philosophize by mounting failure of their conventional civilization and values to adjust life led to a smooth resistance of experience along with reason. Modern thinkers, nevertheless, measured experience as wholesome cognition and recognized it with a passive reaction of secluded "sensations" (Nails, 2009; Klemke, Kline, & Hollinger, 1986).

Socrates illuminates that "when a thing becomes bigger, it must have been smaller before it became bigger and if it becomes smaller, it must be bigger first and becomes smaller afterwards" (Plato's *Phaedo*, 70C-72E). This is an additional argument which proves that the 'soul is immortal' and it exists in the metaphysical world since people along with living creatures come from the deceased. He adds:

*When the man dies the visible part of him, the body-which lies in the visible world, and which we call the corps, for which it is proper to dissolve and disappear-does not suffer any of this at once but instead remains a good long time, and if a man dies with his body in a nice condition and age, a very long time...But the soul, the "unseen" part of us, which goes to another place noble and pure and unseen like itself, a God, where if God will, my soul must go very soon.....here we have nothing but a soul loving wisdom rightly, and in reality practicing death-do not you think this would be a practice of death (Plato's *Phaedo*, 70C-72E).*

Furthermore, all souls of living things as well as people are evenly good and do not have evilness seeing that they are souls or spirits (mental states), not anything else. They have the aptitude to rule man, particularly provided that they are prudent and wise souls. As the souls are immortal, they require our care, concern, and attention not only for the earthy life but for the hereafter also (Lycan, 1996).

The educational method of idealism is of a holistic nature in which self-realization and character growth is vigorously supported. The idealist feels that with the growth of a fine moral character as well as personal reflection, wisdom is gained according to Maheshwari & Bansal. They state:

*The holistic approach is supported instead of a specialized concentration on a specific targeted area. By combining experiences gained through critical thinking and dealing with broader topics, the idealist creates an environment in which a learner can rationalize information across curriculum. Idealism as a philosophy had its greatest impact during the nineteenth century. Its influence in today's world is less important than it has been in the past. Idealism is the conclusion that the universe is expression of intelligence and will, that the enduring substance of the world is the nature of the mind, that the material is explained by the mental (Maheshwari & Bansal, 2010, 1).*

Educational philosophy could refer to a complete and steady set of beliefs regarding the teaching/learning process. Its primary function is assisting instructors to be acquainted with the need to reflect visibly on what they are liable for. Particularly, the purpose is to perceive what they are doing in the improved framework of private and collective progress (Ozmon & Craver, 1981). Accordingly, it is merely to aid educators reflect upon what they are responsible for. Consequently, they could be capable of witnessing the relations between the diverse essentials in the teaching/learning process such as learners, study programs, school management, and learning objectives, which is able to confer a helpful foundation to assist them, think unmistakably concerning educational matters (Ozmon & Craver, 1981; Conti, 2007).

Since not all ideas of each philosophy are harmonious and congruent with children or adult learning values, there will never be a right or wrong philosophy upon which any educational system rely. The reason is that all five major philosophies in addition to slender ones are generated by human beings.

According to Conti (2007), there is no accurate or inaccurate philosophy because every one basically stands for a various belief system regarding the learning method nature. For example in the West, five fundamental educational philosophies (Idealism, Realism, Pragmatism, Existentialism, and Reconstructionism) have been tolerated from time to time. As instructors, educational philosophy would most likely support everything accomplished in the teaching/learning business because Philosophy is based on theories with reference to the meaning of learning

and observation on mankind nature, intention of education, curriculum nature, teachers/learners' roles, and instructional process nature.

### **The Study Problem and Question**

Due to the fact that study problems sources could be derived from major research and academic interests of the researcher or researchers, the problem of this study has been amplified as a result of several motives. Such motives are; casual observation, deductions from theory, related literature, current social and political issues, practical situations, and personal insights and experiences of the researcher. The initial step for being a qualified instructor would be to know why one thinks and works the way he or she does in the learning environment. Although a philosophy signifies what educators believe about the teaching-learning deal, not all tenants of each philosophy are harmonious with children/adult learning values. Thus, the educator's duty as a professional practitioner could be to discover one's own philosophy and upon this detection, critically emulate as how to build this learning environment events consistent with established principles related to children/adult learning.

As academic trainers, guides, or educators involved in the teaching/learning business, a business of changing lives, educational philosophy may play a vital role in strengthening and supporting all that need to be accomplished. Philosophy is based on postulation pertaining to meaning of learning, the nature of mankind views, the aim of education, the curriculum nature, teachers and the learners' roles and instructional process nature. As has already been mentioned, there is no true or false philosophy because each one stands for a particular convectional system regarding the teaching/learning process. For example, throughout the Western World there have been several philosophical thoughts which have been tolerated from time to time. Such philosophies are Idealism, Realism, Pragmatism, Existentialism, and Reconstructionism. Even though those philosophies differ in terms of their principles as well as teachings, they may complement each other. Idealism as the oldest one has been and still one the major philosophies from which educators in general take into account.

Therefore, the problem of this study stems from both implementing the idealistic philosophical method in Jordanian schools which have limited research and the vagueness of the determination of any educational philosophy over time. Yet no study has probed to identify the educational philosophical implications of idealism as an educational theory throughout the Jordanian public schools from elementary teachers' perspectives. Consequently, this study aims to respond to the following primary question: What are the elementary teachers' perspectives towards the implications of Idealism as an educational philosophy in Jordan?

### **The Study Significance**

The value of this study could be obtained from the possibility of building bridges between the thoughts of Idealism and Jordanian elementary teachers. It might aid Jordanian educators better understand how much this idealistic philosophy is implemented in Jordan. It may also serve as a grounded theory for them to establish and or realize the need for a clear educational philosophy within the Jordanian educational system. On the other hand, this paper might draw Jordanian teachers' curiosity to learn more about the principles of this philosophy.

### **Review of Literature**

The purpose of this section is to provide a survey of relevant literature as it relates to the topic of concern. A great deal of literature worldwide has been written about Idealism in general and Idealism as an educational philosophy in particular. Nevertheless, there is no exclusive work as such that has been reported in the literature to the best of the authors knowledge that presented the implementation of Idealism as an educational philosophy in Jordanian public schools from Jordanian teachers' perspectives. An extensive literature along with research studies would be found in the western world. Therefore, for the purpose of this study, a review of previous research studies conducted in the West and only some studies conducted in the Middle Eastern region appeared to be appropriate. To start with, the researchers suppose that it is adequate to commence this part by means of present it in several parts as the influence of Idealism as educational philosophy in general and its influence on education in particular. In addition, a concise look at the educational system in Jordan would be incorporated.

Since educational philosophy could be defined as the application of philosophical thoughts to educational problems, several philosophers were concerned about education because they viewed it as a fundamental element of life that it is complicated to reflect. Thus, an analysis of one's educational philosophy can be framed in the context of the major philosophies. In Western thought, these major philosophies are Idealism, Realism, Pragmatism, Existentialism, and Reconstructionism (Ozmon & Craver, 1981). The permanent and everlasting importance of Plato's educational philosophy is broadly prosperous and harmonious in current education. His contemplations and meditations take numerous forms due to much useful modifications (Klemke, Kline, & Hollinger, 1986).

In conclusion, Idealism embraces that *ideas* are the solitary correct and proper truth. This school of philosophy searches for realizing true knowledge instead of generating information. The intentions of idealism are to seek for reality and further the quality growth of pupils. The teacher's role

is to guide, direct, and lecture or addresses young learners, moderate subject matters, and emulates proper behavior (Klemke, Kline, & Hollinger, 1986). The idealistic educational process is 'holistic' that looks for amplifying critical thinkers, and introducing expansive notions instead of precise abilities. This educational philosophy is a content-centered method with a profound stress on looking for general truths as well as standards, with a significant in addition to a clear role of instructors.

Idealism is the school of educational philosophy that focuses on reasoning and how human beings bring knowledge up from within. The world stays alive exclusively in the common sense of people and that definitive reality depends on a stability of ideas. Idealism searches for establishing a perfect certainty throughout logic. Persons are born with enormous knowledge which could be earned by the ability to ask questions that guide students to superior knowledge (Wilson, 2007). Accordingly, every student is similarly competent of pounding internal foundations of knowledge as well as wisdom. An idealist teacher, for example, searches for the role of facilitator, guide, direct, and lead learners in the direction of truth (Klemke, Kline, & Hollinger, 1986). In this way, learners can look for truth by themselves, thinking liberally with teacher's cautious supervision. As a facilitator, the teacher will not play the role of complete authority, rather as a moderate guide and a role model before his/her students (Crook, 1998).

Socrates' ideas concerning the soul and immortality could be summarized as one subject due to the connections he explained about them both. The soul is immortal and invisible whereas the body dies and separates from the soul or the mind when the person dies (Klemke, Kline, & Hollinger, 1986). The existence at birth, the soul, however, had never been dead and does not die when we enter the other world, the world of ideas, and the real world where truth is instituted and brought into being. A lover of truth and wisdom wishes to die but does not commit suicide since it is not legitimate and who is not responsible for giving and taking lives (Benson, 2000).

Idealism could be separated into different schools, although for the purposes of this study, both researchers are comfortable and content to identify simply the Idealists common assumptions. Even though Idealists differ exceedingly on numerous details, they harmonize on the fact that human soul or mind is the principal aspect in life and the universe is basically nonmaterial in its ideal nature as well (Baker & Morris, 1996).

Idealists believe that all knowledge is independent of sense experience. The act of knowing takes place within the mind. The mind is active and contains innate capacities for organizing and synthesizing the data derived through sensations. Man can know intuitively; that is to say, he can apprehend immediately some truth without utilizing any of his senses. Man can also know truth through the acts of reason by which an individual

examines the logical consistency of his ideas. Some Idealists believe that all knowledge is a matter of recall. Plato was one who held this notion. He based this conclusion upon the assumption that the spirit of man is eternal. Whatever he knows is already contained within his spirit. Objective Idealists, such as Plato, think that ideas are essences, which have an independent existence (Wilson, 2007). Subjective Idealists, such as George Berkeley, reason that man is able to know only what he perceives. His only knowledge is of his mental states. Existence depends upon mind. Every stimulus received by the mind is derived ultimately from God. God is the Infinite Spirit (Benson, 2000).

Idealists generally root all values either in a personal God or in a personal spiritual force of nature. They all agree that values are eternal. Theistic Idealists assert that eternal values exist in God. Good and evil, beauty and ugliness are known to the extent that the idea of good and the idea of beauty are consistent with the absolute good and the absolute beauty found in God. Pantheistic Idealists identify God with nature. Values are absolute and unchanging because they are a part of the determined order of nature (Crook, 1998). The purpose of education is to contribute to the development of the mind and self of the learner. The education-imparting institute should emphasize intellectual activities, moral judgments, aesthetic judgments, self-realization, individual freedom, individual responsibility, and self-control in order to achieve this development (Wilson, 2007; Wilson, 2007; Elias, & Merriam, 1980).

The curriculum is based upon the idea or assumption of the spiritual nature of man. This idea in turn leads to an idea of the nature of the larger units of family, community, state, earth; the universe, and infinity. In preserving the subject matter content, which is essential for the development of the individual mind, the curriculum must include those subjects essential for the realization of mental and moral development. These subjects provide one with culture, and they should be mandated for all pupils. Moreover, the subject matter should be kept constant for all (Crook, 1998; Wilson, 2007; Elias, & Merriam, 1980).

The classroom structure and atmosphere should provide the learners with opportunities to think, and to apply the criteria of moral evaluation to concrete within the context of the subjects. The teaching methods must encourage the acquisition of facts, as well as skill in reflecting on these facts. It is not sufficient to teach pupils how to think (Elias, & Merriam, 1980). It is very important that what pupils think about be factual; otherwise, they will simply compound their ignorance. Teaching methods should encourage learners to enlarge their horizons; stimulate reflective thinking; encourage personal moral choices; provide skills in logical thinking; provide opportunities to apply knowledge to moral and social problems; stimulate

interest in the subject content; and encourage learners to accept the values of human civilization (McNeil, 1983; Wilson, 2007).

Educational philosophy reinforces everything instructors execute in the teaching-learning business. Philosophy is based upon theories concerning the meaning of learning as well as inspections regarding the natural world of mankind (Elias, & Merriam, 1980). That is; the aim of education, the disposition of the curriculum, the teacher's role, the learner's role, and the nature of the educational process. Indeed, there is neither accurate nor inaccurate philosophy as each basically symbolizes a unique conviction scheme regarding the learning process situation (McNeil, 1983; Noonan, 1957).

Idealistic viewpoints are found in subjects such as fine arts, classic humanities, theology, philosophy, history and literature. These subjects emphasize intellectual processes and acuity of the mind. They form a major part of liberal arts curricula, which dwell on cultural concerns above those of a utilitarian nature (McNeil, 1983). The implication in education holds that students will tend to choose classes that appeal to their intellects. Taken to an extreme, an idealist will not be attracted to sign up for a particular major course just to find a job to earn a living or be interested in any ambitious undertaking to acquire wealth and power (Wilson, 2007).

In idealism, the aim of education is to discover and develop each individual's abilities and full moral excellence in order to better serve society. The curricular emphasis is subject matter of mind: literature, history, philosophy, and religion. Teaching methods focus on handling ideas through lecture, discussion, and Socratic dialogue which is a technique of teaching employing questioning to aid students realize and elucidate knowledge (McNeil, 1983). Introspection, intuition, insight, and whole-part logic are used to bring to consciousness the forms or concepts which are latent in the mind. Character is developed through imitating examples and heroes (Baker & Morris, 1996).

An Idealist finds reality in the unknown world through ideas in his mind; a realist finds reality in the known world through his senses. You can reach a better understanding of idealism by contrasting idealism with realism. The implication in education holds that students will tend to choose classes that appeal to their intellects. Taken to an extreme, an idealist will not be attracted to sign up for a particular major course just to find a job to earn a living or be interested in any ambitious undertaking to acquire wealth and power (Noonan, 1957).

Idealism has had great influence in education. Study in the arts reveal a bit of ultimate reality and promotes the quality of life as no other area can. It draws attention to truths that do not change; through religious study, idealism can bring a meaning to existence on Earth that remains permanent.

It addresses the reality of intangible things that are experienced but cannot be seen, such as, love, trust, hope and faith. Even though they may not be equally represented, both idealistic and realistic philosophies are generally recognized in school curricula (Noonan, 1957).

Idealism stresses mental functionality instead of the world's objectivity. In the philosophy of mind, idealism is the opposite of materialism, or the belief that reality is solely based on the material world. Idealism puts more emphasis on consciousness and ideas; therefore, one key aspect of idealism is the will, or "mind over matter." There are consequently many different advantages of idealism (Wilson, 2007).

### **Methodology**

This section of the research paper presents the study sample, instrument, content validity of the study questionnaire as well as its reliability, and then the study findings will be presented throughout the final part of this section.

#### **Study Sample and Instrument:**

The study sample consisted of (103) elementary teachers randomly selected from Irbid district schools of whom (47) males, and (57) females. The quantitative component was employed to strengthen this study by collecting data from a large number of individuals responding to a multiple number of questions within a relatively short period of time. According to Neuman (2000), survey questionnaires are valuable as response rates are usually high for a target population who is well educated and has an interest in the research topic.

The quantitative method was useful in this study, as the researchers were competent to draw together extensive information from the study sample, in addition to relationships between variables. This approach helped in generating broad information on Jordanian elementary school teachers who articulated a somewhat moderate degree to the extent of their belief that "Idealism" is implemented in Jordan. To insure the study instrument soundness and consistency, the researchers intentionally measured both its validity and reliability.

### **Instrument Validity and Reliability**

The questionnaire was reviewed by a panel of several experts who are faculty members within the college of education at the Yarmouk University in order to determine face of validity. Their feedback was taken into account, and changes as well as suggestions recommended by the validation panel of experts have been incorporated into the study instrument. The quantitative approach was integrated in this study in order to support this style to aid the researchers to gain knowledge of the characteristics of large number of

individuals challenging a multiple number of issues within a moderately short phase. The quantitative component presented data from a cluster of people to portray some features as well as qualities of larger group. Demographic information that includes teachers' specialty type, teaching experience, and gender of the respondents that were also added to the questionnaire items.

The researchers estimated the internal consistency of the instrument in order to examine whether the items are correlated with each other and whether they all measure the same thing. The internal reliability of the instrument was found to be 0.80 in this study. That helped to underwrite and present the study findings which will be obtainable in the next part.

### The Study Findings

This part analyzes the data obtained from (103) questionnaires completed by Jordanian elementary school teachers randomly selected from Irbid school district. The study sample consisted of teachers at different levels of experience, area of specialization, and gender representing the independent variables. The dependent variable, on the other hand, was the study questionnaire, which contained (32) statements to which the study individuals responded. To respond to the study primary question, means and standard deviation for every item in the questionnaire according to the main domains of the questionnaire were obtained as shown in the following tables. To begin with, table 1 shows the findings of items according to the **aims of education**. These items have been ranked first according to the means as shown in table (1).

Table.1 Means and Standard Divisions of Teachers' Responses according to the educational aims

| Item N | Items  | Rank | Mean   | Std. Deviation |
|--------|--|------|--------|----------------|
| Q2     | 2.The mind/soul is the primary source for human understanding                            | 1    | 2.25   | .967           |
| Q3     | 3.Ideals form the ultimate goal in education and life                                    | 2    | 2.14   | 1.085          |
| Q1     | 1. The mind/soul is the most important human organ that school curriculum must focus on. | 3    | 2.10   | .891           |
|        | Q all  |      | 2.1618 | .74369         |

The findings in the above table show that the item "The mind/soul is the primary source for human understanding" gained the first rank, whereas the item "The mind/soul is the most important human organ that school curriculum must focus on." was rated by teachers in the last rank.

With regard to the learner the following table 2 shows the means and standard deviations of the elementary teachers' responses.

Table.2 Means and Standard Divisions of Teachers' Responses about the learner in Idealism

| Items  | Rank | Mean  | Std. Deviation |
|--|------|-------|----------------|
| Q 32. School uses punishment in order to adjust students' behavior.  | 1    | 2.79  | 1.499          |
| Q 5. Organizing the child's ability and improving his/her intelligence could be accomplished through liberal arts and reading.                     | 2    | 2.60  | 1.060          |
| Q 20.the school views the relationship between the student and the teacher official  | 3    | 2.40  | 1.382          |
| Q 6. Senses are no less important than mind in terms of understanding.   | 4    | 2.17  | .981           |
| Q 19.All students study the same courses within the school   | 5    | 1.90  | .934           |
| Q 21.The school is concerned to teach students methods as to respect spiritual values and individual values through studying the local environment | 6    | 1.86  | .875           |
| Q 17. School motivates learners to become cooperative, obedient, and respect others.   | 7    | 1.53  | .623           |
| <b>Learner</b>   |      | 2.178 | .48742         |

The findings obtained in table2 revealed that the most acceptable implication of idealism regarding to the learner was "School uses punishment in order to adjust students' behavior " with a moderate degree. School uses punishment in order to adjust students' behavior. This item occupied the first rank with a mean of (2.7) amongst the implications. On the other hand, table (2) shows that the item "School motivates learners to become cooperative, obedient, and respect others "was rated by elementary teachers in the last rank with a mean of (1.5).

Table.3 Means and Standard Divisions of Teachers' Responses about the teacher role in Idealism

| Items   | Rank | Mean | Std. Deviation |
|---|------|------|----------------|
| Q 18.School works on implementing suggestions and instructions.   | 1    | 2.20 | 1.004          |
| Q 12.The teacher is the main core in the education process  | 2    | 2.15 | 1.141          |
| Q 31.Official examinations are the best way to measure students' achievements.  | 3    | 1.96 | 1.154          |
| Q 27.Individual differences are taken into consideration by the school  | 4    | 1.96 | .896           |
| Q 29.Teachers evaluate their students in light of accurate measurements governed by the governing body which is the ministry of education | 5    | 1.86 | 1.058          |
| Q 30.Teachers evaluate their students in light of accurate measurements governed the teachers themselves.                                 | 6    | 1.74 | 1.000          |

|  |   |        |        |
|--|---|--------|--------|
| Q 16. Teacher is the ideal role model before his/her students mentally as well as morally. | 7 | 1.58   | .693   |
| <b>Teacher</b>   |   | 1.9223 | .53068 |

It can be seen from Table (3) that the items gained a mean of 1.9 in relation to the learner. The item ".School works on implementing suggestions and instructions" occupied the first rank with mean of 2.2 among the implications. The item ".Teacher is the ideal role model before his/her students mentally as well as morally" was rated by elementary teachers in the last rank with a mean of (1.5).

Table.4 Means and Standard Divisions of Teachers' Responses about the teaching methods in Idealism

| Items   | Rank | Mean  | Std. Deviation |
|---|------|-------|----------------|
| Q 25. Teachers use lecturing as a teaching method to transform real information to their pupils which helps in storing their minds with definite facts. | 1    | 2.39  | 1.323          |
| Q 24. Extracurricular activities such as school clubs and classroom activities are taken into account by the school.                                    | 2    | 2.17  | 1.216          |
| Q 11. Teachers focus on curricular activities that are parts of school curricula  | 3    | 2.17  | 1.086          |
| Q 28. School uses such teaching methods as analyzing as well as synthesizing to solve problems.   | 4    | 1.95  | .933           |
| Q 15. Through discussions and dialogue, the teacher focuses on brainstorming to get ideas and meanings  | 5    | 1.80  | .632           |
| Q 26. Teachers use such teaching methods as dialogue, discussions, and mental activities in order to solve problems                                     | 6    | 1.69  | .970           |
| <b>Teaching Methods</b>   |      | 2.027 | .5229          |

Table 4 show that the item "Teachers use lecturing as a teaching method to transform real information to their pupils which helps in storing their minds with definite facts." Came in the first rank between the methods that used by the teachers. The teachers rated the item "Teachers use such teaching methods as dialogue, discussions, and mental activities in order to solve problems" in the last rank.

Table.5 Means and Standard Divisions of Teachers' Responses about the curriculum in Idealism

| Items  | Rank | Mean  | Std. Deviation |
|--|------|-------|----------------|
| Q 9.The school views knowledge as an independent entity far from the sensual experience                    | 1    | 2.63  | 1.102          |
| Q 14.Educational objectives concentrate on exercising the human mind while ignoring physical entities      | 2    | 2.59  | 1.192          |
| Q 7.Facts perceived by the human mind are more accurate than direct sensual experience                     | 3    | 2.43  | 1.035          |
| Q 4.Curriculum which is taught to pupils must provide subject matters that should be kept constant for all | 4    | 2.39  | 1.165          |
| Q 22.Philosophy, history, and art studies are considered the major subject matters the school offers.      | 5    | 2.25  | 1.026          |
| Q 10.The school views subject matter as the core curriculum  | 6    | 2.22  | 1.196          |
| Q13.The school maintains popular culture through teaching  | 7    | 2.19  | 1.039          |
| Q23.Mathematics is the subject matter that school offers in order to educate the human mind.               | 8    | 2.09  | .961           |
| Q8.The role of school is to transfer knowledge from generation to another                                  | 9    | 2.05  | .964           |
| <b>Curriculum</b>  |      | 2.316 | .54893         |

Table. 5 shows that the item "The school views knowledge as an independent entity far from the sensual experience" occupied the first rank with a mean of (2.6) amongst the implications of idealism concerning the curriculum. The item was ranked by the teachers last with a mean of (2.0).

Overall, the study findings showed that the general perceptions of the elementary teachers in Jordan towards implementing the idealistic educational views in elementary schools were unenthusiastic with a mean of (2.13). Moreover, the results revealed that the content occupied the first rank with mean of (2.3) among the implications of idealism in elementary schools in Jordan, and the perceptions with regard to the teachers was ranked in the last rank with mean of (1.9). Based on these findings, the researchers suggest conducting similar studies employing a qualitative method such as 'interviewees' to deeply understand such a phenomenon in addition to including high school as well as university instructors to the study sample.

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# STUDENTS DISCOURSE IN A SCIENCE CLASS ROOM; MAKES BETTER LEARNING: A DIFFERENT APPROACH

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## Abstract

Being a class room teacher in rural areas for more than two decade's author has observed that rural area learners are suffering from multi faced learning barriers.

Conceptual understanding and reasoning capacity is very poor and they are performing poorly in their school based examinations.

Aim of this paper is to present a suitable, cost effective and result oriented method that can help to impart better science education to the rural learners who are otherwise underprivileged.

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**Keywords:** Rural learners, Effective Science Education, Learning Barriers', Concept and reasoning

## Learning Barrier an important factor

Basic problem of present day science education is non availability of students in university science curriculum. There is a huge shortfall in the skilled workforce pertaining to the STEM related field. A report (Lewin & Naidoo, 1998) suggests that "Less than 0.5% of South African students achieve university entrance qualifications in science and mathematics". In 2006 less than 29% of all admitted students to higher education were in SET (science, engineering, & technology) field (Scott, yeld, & Hendry, 2007). During 2005 it was 19% (Scott, yeld, & Hendry, 2007). The improvement from 19% in 2005 to 29% in 2006 is still un-impressive. An overall participation rate in the higher education system (Scott, yeld, & Hendry, 2007) is only 16%. This means that out of all youths of age group 20-24 present in the country only 16% of them are entering to the higher education system. Again only 12% of these participating populations are the black South Africans. Author would like to rephrase this "Black South Africans" as rural or native "South Africans" because by virtue of the earlier non democratic regime these native South Africans were concentrated in the rural hubs. This implies that out of every hundred youths of age group 20-24 in

the country only two Rural South African youths are going for higher education. The same report also indicates the shortage of high-level skills. Present democratic government is rightly stressing the need to aim of developing high level of knowledge and skills for all learners (National Curriculum Statement; Policy Document 2006, published by the Department of Education). A report (SAT MONITOR, 2010) published by the Solidarity Research Institute shows out of a total of 12881 medical doctors only 3691 are black South Africans. It is less than 35% of the total registered medical doctors. The same SAT Monitor report-2010 shows the presence of 5203 (16.7%) black Chartered Accountant in a total of 31160 Chartered Accountants. A five year cohort study 2000-2004 (Scott, yeld, & Hendry, 2007) shows that 45% of all enrolled students left the university without completing their courses. Only 38% could complete their courses in scheduled five years time. Majority of the population, who could complete their courses in stipulated time, are from the community who do not belong to the previously disadvantaged black community. On the other hand majority of the present youth community are from the previously disadvantaged community. Dropout rate (Scott, yeld, & Hendry, 2007) for all technical institutes (include all technikons) is a whopping 66%. Completion rate by the black students is less than 30% for all courses under the said cohort study. Even school final result (Grade 12 school leaving examination) is also alarming. A result analysis statement released (sent to schools-2011) by the Department of Education, Khulangwane Circuit (A rural area circuit in the district), Ehlangeni District, Mpumalanga province shows that the average pass rate in Physical Sciences is a mere 50% for the period 2008-2010. We need to agree that these "Rural South Africans" form a major portion of countries population. There is a need to empower this major part of the population to enable them to take part in the countries development effectively. The reasons for this failure by the learners in general are the learning barriers prevalent on the learners. Learners are not acquainted with the basics of science and mathematics.

Rural learners in current set up are burdened with multiple barriers. Few of these are cited for my reader's.

Performances of a group of 289 learners from three different schools were assessed by this author. Grade ten students were asked to write the number "two thousand thirty four" in numerical. This question was the part of a mathematical test set by the school district authority in 2012 June examination. One hundred and thirty seven learners failed to write the same correctly. This is almost 47% of the population. Students are supposed to acquire this particular numerical skill at their grade 6 or 7.

Learners do not have basic mathematical skill that is required to study and learn science and related subjects.

Regarding writing skill; copy of a grade eight learners' from a class of 2013 is presented in fig. 1.

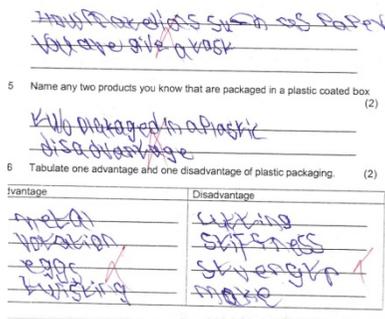


Fig. 1

Many a learners do not have the skill of writing and expressing in the language that is used as the language of instruction in the class room.

Lack of proper skills also develops other related learning barriers. Even though attitude cannot be considered as a learning skill but, a negative attitude towards learning can also be considered as an effective learning barrier. Negative attitude towards learning is always observed in the rural schools (fig. 2 & fig. 3).



Fig. 2



Fig. 3

Use of abusive words towards teachers and school is rampant in rural schools. Sleeping in the classroom, disrespecting the word of teacher is very often found in the class. Hooliganism, destroying school properties is common in rural schools. These all together attribute towards a negative attitude and hence a great barrier towards proper learning. Along with these; rural schools are also running short of resources and facilities to impart training to the disadvantaged learners. Author himself being a student from deep rural set up has experienced them all in his personal life. Poverty and lack of knowledge walks hand in hand. To eliminate poverty youths are needed to be induced with proper teaching-learning activities. Developing

interest among the learners is one very important part of a teachers' activity for imparting better education and this can only happen when teaching is learner centered and actively is learners oriented.

As a teacher from a rural set up I am presenting my attempt in alleviating the future of these rural learners.

Learning barriers that are most prevalent in our rural schools are summarized for our sincere attention.

1. Overcrowded classrooms
2. Misinformed or less informed learners
3. Lack of reasoning ability amongst the learners
4. Poor information processing ability of the learners
5. Poor reading and writing skill in the learners
6. Lack of facilities and fund to the schools and educators

### **Effective learning; A review**

Learning is greatly influenced by the previous knowledge of the learner (Asubel, 1968). This knowledge may come from information written in books, experiences from life situation or a statement from others. It is important for a teacher to identify these previous knowledge / pre-concepts and manipulate it effectively in favor of proper conceptual learning. In many occasions it is observed that, the concept held by the learners about the topic is different than it is supposed to be. It is suggested that (Edgar, 1990), it should be the duty of the teacher to find out the logic of the students' misunderstandings. Research has shown that a learner's prior knowledge (preconceptions) often confounds an educator's best efforts to deliver ideas accurately (Roschelle, 1995). Knowing learner's prior knowledge helps the teacher, to find out what is to be negatively reinforced and which is to be positively reinforced for developing proper conceptual understanding and creating an effective learning environment. A teacher must understand the fact that teaching is a continuous process of de-learning and re-learning. There is a state of dynamic equilibrium in which the wrong concepts are removed and a new and correct concept is established. A teacher cannot be an effective teacher without knowing the students pre-conceptions. These pre-conceptions of a student may be a misconceptions or alternate conception which could be a major hindrance in future learning and proper conceptual development. Hence it is always important to de-learn the misconceptions and re-learn the proper conceptions. Teacher can make teaching effective, only when s/he has a clear view of the learners' previous knowledge. Few well researched and effective options on how to determine pre-concepts are discussed and compared with the back ground of rural schools.

## **Strategies for learning**

### **Concept Maps:**

Scholars have shown that, Concept Mapping is useful in determining students' mental state of conceptual understanding and developing a proper conceptual understanding. Process of using concept mapping may be considered as an effective teaching method (Chowdhury, 1993); (Novak & Heinze-Fry, 1990); (Novak & Gowin, Learning How to Learn, 1984) to impart better conceptual development and hence a better learning. A good number of articles are published on the advantages of Concept Mapping in (CMC – Vol. 1, 2004) the proceedings of First International Conference on Concept Mapping (Editors: Canas, Novak, & Gonzalez, 2004). Unfortunately, several high school teachers interviewed by this author during the period of 1991 - 2005 in India always avoided the idea of using concept mapping in their classes. Also as a working classroom teacher in schools this author has never seen any high school teacher to use Concept Mapping in the classrooms. Use of concept mapping in UK secondary schools are also not wide spread (Kinchin, 2001). According to this author main factors that are responsible for non popularity of concept mapping amongst the school teachers are:

#### **1. Classroom Size:**

Most important barrier in using Concept Mapping is the class-room size. Classes of fifty plus students demand a lot of extra time from the part of a teacher who wants to involve the students in making concept maps. Rural teachers are so over loaded with classes that they rarely have any time to spare during school hours. After collecting the maps, drawn by the students; teacher needs to study and analyze the work of each individual students. Simply making of few maps by the students really does not help them to improve their conceptual level. Author (Chowdhury, 1993) has observed that post map discussion makes a long lasting impact on students' learning but, hindrance is the time for conducting post implementation study and analysis of concept maps produced by the individual learners. Most part of the time of a teacher is spent in the class-room, which makes it difficult for a teacher to study and analyze the concept maps created by the individual students.

#### **2. Teacher training:**

Another important factor is expertise of teachers. Quite a number of teachers are not competent to analyze and explain the concept maps drawn by the learners effectively.

### **Student Interviews**

Other method of finding pre-concept is the study of students' response by interviewing the students. Interview techniques (Hackling & Garnet, 1985); (Osborne & Gilbert, 1980); used by these authors are again

individual centric and a large sample size is a time consuming process and pose a strong barrier for the large rural classes. A regular high school teacher is not adequately equipped to use interview method on a daily basis.

### **Tests**

Other methods are multiple choice tests (Treagust, 1988); (Linke & Venz, 1979) and diagnostic test (Banerjee, 1993); Combination of diagnostic and multiple choice tests (Chowdhury P. (., 1993). These methods are very often used by different teachers in their classes, mainly to determine the post effect of teaching-learning process. But they are rarely used to determine pre-knowledge. Teachers use these tools as a part of their formal test materials. In order to use these tools effectively for pre-concept determination, teachers need standardized test materials for every topic to be taught. Rural area teachers mostly suffer from the lack of standard test materials. Oversized classes with overloaded work effectively stop the teachers to prepare a standard test material. In many a cases schools even avoid to help the educators to collect standardized test materials from reputed sources because it comes with a cost. It becomes an economic burden on the part of a teacher to collect standardized test materials. On the other hand better from the worst is always expected from the teachers.

### **A possible solution**

Now we need to understand that no single pedagogic tool is adoptable in a rural classroom situation in its togetherness. But we need a viable solution of our teaching learning problem. Learning is a process of interaction between More Knowledge Others and Zone of Proximal Development (Vygotsky, 1978). A teacher is the only MKO available to the rural learners. Learning is a mediated relation between individuals and knowledge (Bussi, Corny, & Mariani, 2012). Teaching and learning of sciences always involve semiotics and semantics. Author hereby suggests a semantic mediation for learners' involvement and hence creating a positive learning attitude. As a high school teacher we need to be innovative and imaginative. It is a very important question: "why some students succeed in science, while so many others find it impossibly difficult and frustrating (Lemke, 1990)?" This is a real time challenge for rural teachers. There are enough indication of (Ong & Ruthven, 2010) ineffectiveness of note giving and copying. Unfortunately most of our rural classrooms are still engaged in the process of note writing and answer copying (fig. 4). Students are busy copying answers from a previous question paper as answers are written on the chalk board by the teacher.



Fig. 4

Learning is a process consisting of both constructivist and information processing (Stott & Hobden, 2010). It is established that talking in a class enhances learning (Borde, 2007). Language is a system of resources for making meanings and our language gives us semantic (Lemke, 1990). Author strongly believes that language is the main accelerator of information processing. Aksela, while working with microcomputer-based laboratory inquiry; strongly suggested (Aksela, 2011) that peer interaction (students' talking) provide necessary positive and supportive environments for higher-order thinking, encouraging students' thought and discourse in chemistry.

On the other hand several researchers also have doubted that the talk; which takes place when children are asked to work together. Talks may be uncooperative, off-task, inequitable and ultimately unproductive (Galton, Hargreaves, & Pell, 2009); (Wegerif & Scrimshaw, 1997)). The same also has been observed by this author. There are also some students those who definitely follow the instructions. It is (Alder & Bapoo, 2002) argued that "learners have to be initiated into specific way of talking".

Author argues that talking in a specific way does help to improve learners working memories. Also it develops learners thinking and hence reasoning ability. All together students discourse may develop better concept and enhance performance level. This is also supported by Aksela (Aksela, 2011).

Author also suggests use of students' talk may effectively overcome the deficiency of resources. Interactions in between a lesson with the students and posing very short questions based on the important concepts taught can effectively help a teacher to determine the state of cognitive development of the learners. This method, if used with deliberate effort and planning can effectively determine the level of conceptual understanding of the learners at any stage of learning process. These also effectively involve students in scientific talking and improve their reasoning ability. Size of working memory (Stott & Hobden, 2010) is the limiting factor in learning and thinking. The process of making students to talk can effectively help students to overcome the barrier of low working memory. This goes in

congruence of Mercers' (Mercer, Dawes, Wegerif, & Sams, 2003) (Mercer & Wegerif, 1999) argument of talking as an important tool for social thinking. Thinking can effectively improve the working memory. Conversations allow learners and the teacher to consider, question and add to each other's thinking ( (Borde, 2007). Over all it makes learning an interactive and student centric process. Mercer (Mercer, Dawes, Wegerif, & Sams, 2003) (Mercer & Wegerif, 1999) quotes Vygotsky; suggesting that language plays a very important role in learning.

They are:

- i) As a cognitive tool which, children come to use to process knowledge.
- ii) As a socio cultural tool that, children use for sharing their knowledge.
- iii) As a pedagogic tool which, teacher use to provide intellectual guidance.

Language makes its highest contribution towards the cognitive development. Researchers ( (Mercer, Dawes, Wegerif, & Sams, 2003); (Mercer & Wegerif, 1999); (Bruner, 1990); (Rogoff, 1990)) have also suggested that children's' talk help in promoting children's thinking. "Both the information processing model and social constructivist theory must be considered when examining learning in the 21st century"(Gabel, 1999).

The method of involving guided discourse obeys the norm of the social constructivist theory very effectively while engaging students in a meaningful discourse. Most importantly, it provides complete freedom to the teacher in operational term. It is strongly suggested that the method (discourse in classroom), if used on a regular basis, it is going to improve the performance of the learners.

### **Method adopted and put forward by the author**

The above discussions suggest that language plays an important role in developing students' understanding and conceptual development. Hence it is of importance in the class. A classroom teacher needs to make use of language effectively to make the students to learn. Students discourse in a controlled environment is an important pedagogic tool to develop students understanding and hence improve their performance. Author designed and implemented a specific way of controlled classroom discourse where students are activated to discuss and answer the posed questions during the course of teaching-learning process.

In order to use this method effectively in the classroom, a teacher needs to make certain planning and preparation. An overall step wise planning as used by the author is presented below.

1. Identify the main concepts that are required to understand the topic to be taught.
2. Set few short questions on the identified concepts.
3. Instruct the students to make a group of them as and where they are seated.
4. Take few minutes time before the start of a topic and pose the pre decided questions to the class. Instruct the students to answer after discussing in their respective group.
5. Write all the responses given by the students on the chalk board.
6. Encourage the students to identify (talk) the correct response with reasoning.
7. Analyze and give response to address the knowledge gap.
8. Make the process repetitive for progressing through topic to topic.

Immediate after the responses are collected from different students it become important for the teacher to provide immediate explanations. This stage is detrimental in the conceptual learning process. Teachers need to target the wrong responses and explain in detail why these responses are wrong. This process of de-learning ultimately facilitates re-learning of proper concept. Author argues that, it is important for a teacher to teach about the correct response but; it is more important for a teacher to teach about the wrong responses that should be avoided at all time of learning. Awareness about the wrong approach will make the learners more conscious and help in an effective learning.

The same is applicable while progressing with a topic. Teachers need to pre-identify the basic concepts and come prepared with required questions that they may ask during the progression of a topic.

## **Study of semantic mediation in a classroom**

### **Context**

Before we proceed further it will be proper to look into the students' environmental background that in particular pertaining to the learning barrier.

| Sl. no. | Barriers of learning for the students'  |
|---------|---|
| 1       | Most of the learners have no motivation. They have no idea for why do they come to school.  |
| 2       | Learners are taught in a language (English) that is different from their home language. They are resistive and shy to speak in the classroom. Some time they do talk when code switching takes place. |
| 3       | Back ground knowledge of the learners are far below of the required average.  |
| 4       | There is no learning environment for most of the learners outside the school campus.  |
| 5       | There is no technology available to make learning attractive or that can develop  |

|   |  |
|---|--|
|   | curiosity amongst the learners.  |
| 6 | Science and technology concepts are seemingly alien and abstract to the learners.                          |
| 7 | High density of new and abstract concepts in the science and technology texts.                             |
| 8 | New and unknown environment in terms of semantics and semiotics used in science and technology classrooms. |

### Sample for the study

During the year 2011 author was assigned to teach grade ten Physical sciences. A group of 77 students from grade ten were taught by the author and as a class room teacher author was at liberty to use his own methodology of teaching. Students were taught throughout the year using this method. One point was consciously implemented by the author. During the whole process of teaching learning activities no old question papers were given to the learners along with the answers to practice. Not even before the final year ending examination. Their performances were judged on the basis of their performances in the tests administered by the district education authority and other required activities as assigned by the department.

Without personifying the students their attitude and activities were noted by the author and at the end of the term performances of the learners were recorded.

### Score of the learners

| Term           | Number of Students Scoring Below 30% | Number of Students Scoring Above 30% | Number of Students Scoring Above 40% | Number of Students Scoring Above 50% | Number of Students Scoring Above 60% |
|----------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| First Quarter  | 74                                   | 3                                    | 0                                    | 0                                    | 0                                    |
| Second Quarter | -                                    | -                                    | -                                    | -                                    | -                                    |
| Third Quarter  | -                                    | -                                    | -                                    | -                                    | -                                    |
| Fourth Quarter | 24                                   | 29                                   | 4                                    | 13                                   | 7                                    |

**Analysis of the said performance**

| <b>Grade10<br/>Physical<br/>Sciences<br/>No. of<br/>Students<br/>77</b> | <b>Students<br/>Attitude</b>  | <b>Participation</b>   | <b>Performance</b>   | <b>Comments</b>  |
|---|---|--|--|--|
| <b>First<br/>Quarter</b>  | Students are resistive to speak and also resist taking part in the classroom discourse. They demand notes and question answers.   | Only four students participate in the process of classroom discourse.  | Only three pass and they are from the four who took part in discussion. They scored only a mere 30% marks. | 95% of the students show very poor performance. Resentment is felt amongst the students about the non conventional method of teaching. |
| <b>Second<br/>Quarter</b>   | Half of the students are still resistive to the activities. They feel that they are over loaded with work because teacher is not providing old question answers to learn. | Participation increases. Participation is passive rather than to be active.  | Performance in the tasks given improves  |  |
| <b>Third<br/>Quarter</b>  | Non participating students stop disturbing the class.   | Students show interest in discussing answers more frequently to the posed questions. They sit together to discuss and find answers of given tasks. But some are still busy copying answers from their peers. | Students show more confidence to solve posed tasks. Performs better  |  |
| <b>Fourth<br/>Quarter</b>   | Classroom is well controlled  | Non participants fail to improve their performance   | 31% of students fail to pass. 26% of the students score 50% or more  | Fail percentage decreases and also more than 25% of the students show above average performance.                                       |

## Comments

An increase in the pass rate from 4% to 70% is an encouraging factor of this study. The process not only helped the learners in developing better understanding of science it also reflected in their performance. This process of learning made the learners self dependant rather than becoming a note and answer based parasite. About 8% of the students scored more than 60% in their final assessment. It means that the method could help the serious students to achieve a good understanding of the science concepts and hence improves their performance level.

Students were never given the old questions and answers to copy as prevailing in the current system. Neither any notes were provided to the class in the form of question and answer. This was consciously done to avoid a chance of the intervention result being masked by the existing methodology of teaching. This method of determining pre-concept of students and then involving them towards a meaningful discourse does not require any extra investment in terms of money and time. No extra stationary or equipments are needed. Even the lowest resourced school can adopt it. It is highly suitable for the under privileged schools. It makes a teacher more innovative and creative. Teachers need not to specialize on methodology or tools to use in this system. This method can be used effectively at any part of teaching learning process to identify the knowledge gap, if any. Most importantly; learners get a chance to be involved actively in the teaching-learning process. This method is highly student centered. This method could be very effective in a rural school system where teachers are suffering from resource crunch and over loaded class-rooms. It is effective in proper concept development and hence towards an effective learning. Author hereby suggests to the academics to try to implement the method in their classes to find the effectiveness of the claim made by this author.

## Annexure

How the talks are prepared:

(An example)

Topic: "Atomic Model"

Instead of talking atom, students are asked to answer "What is a model?" Students make several types of noise. But, no one comes out with an answer. Suddenly one of the boy answers "the girls seen in pictures and posters are models". As a subject teacher this author asks, why these girls are shown in pictures / posters. Discussion proceeds and lesson progress through the year in a similar manner for different topics.

## Models

| Serial Number | Questions posed by the teacher  | Expected Response from the students   | Teachers' Activity   | Teachers' Response   |
|---------------|---|---|--|--|
| 1.            | Talk about a model. ( An open ended statement to start a discussion) // What is a model? ( A straight forward question) | Students may come out with the idea of Models walking in a model show, Models in a product advertisement, Models of a Housing Building etc. | As the students tell different names teacher needs to write the same over the writing board. |  |
| 2.            | Why we need these models?<br>What is the role of these models?  | As felt by the students different responses may be expected   | Different responses are noted  | At this stage teacher needs to identify the need of MODELS to study the scientific properties and inform the students about the uses of models / theories in sciences. |

### Introduction of the "Atomic Model"

#### Activity

1. "Take a piece of chalk and start breaking it". "Where you come up to a point where you may not hold it any more to write". Chalk is a compound made by Ca, C, and O<sub>2</sub>. We may get a single of CaCO<sub>3</sub>.

- a) How small is the single CaCO<sub>3</sub>?
- b) Can we see a single CaCO<sub>3</sub>?

2. "Take a piece of Wood Charcoal". This is an element (inform the students) known as Carbon. Start breaking it as small as possible. Get to the level of getting fine powder from the charcoal.

- a) If we get a single C element, how does it look? (please note the answers given by the students)
- b) Do you think that the single C and the single CaCO<sub>3</sub> will be looking the same? (please note the answers given by the students)

3. Now explain to the class that smallest part of an element and a compound are not the same thing.

4. Ask the students to discuss in their group and write at least FOUR SENTENCES on atoms and molecules.

Develop your own questions and activities according the topic you are planning to teach.

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# **PATTERNS OF VIOLENCE AGAINST WOMEN AS PERCEIVED BY WORKING – CLASS FEMALES IN A NIGERIAN CITY**

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## **Abstract**

The study was conducted to find out the patterns of violence against women as perceived by working – class females in a Nigerian City. A total of one hundred and fifty respondents were selected from the target population using the multi-stage sampling procedure. A fifteen-item questionnaire tagged “patterns of violence against women questionnaire” was designed and used to elicit the required responses from respondents. The questionnaire was both face and content validated and the reliability determined using the test retest method. The correlation coefficient between the two administrations was 0.76. Data collected were analyzed using the descriptive statistics (frequency counts and percentages) for the demographic characteristics of respondents, while t-test and analysis of Variance (ANOVA) statistical procedure were used to test the hypotheses. Results indicated that the most common form of violence against women is the physical violence while the least is economic violence. Based on the findings of this study, it was recommended that there be more enlightenment campaigns on violence against women and women be encouraged to talk about it. Culture has to change in order to eliminate all forms of retrogressive practices against women including violence against women.

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**Keywords:** Violence, Pattern, Perception, Working – Class

## **Introduction**

Violence against women is a global problem which has recently attracted attention internationally; it affects women of various classes and ages. It is viewed as one of the most widespread and common ill against women with a number of causes and consequences for women at all levels

and categories who are being subjected to it. Violence against women is regarded more as a human right issue which affects the socio-cultural and economic fabric of a society. On the international scene, the problem of violence against women has been noted to be a complex phenomenon which might not be easily defined. It is assumed to cover such areas as violence within the family, sexual abuse, physical assault, verbal abuse, emotion and psychological torment, forced prostitution and a host of others. (United Nations High Commission for Refugees (UNHCR), 2001).

Violation against the integrity of women such as various harmful practices like female genital mutilation is also regarded as a form of violence against women. Since violence against women occurs in various forms and measures in various societies, it is therefore suggested that the phenomenon is better explained within a given context. Thus, in this study the term “violence against women” means any act of gender – based violence which is likely to have a negative physical, biological or psychological impact on women whether young or adult. It is also conceptualized as a multifaceted scourge and its impact on women of various age cohorts.

World Health Organization (WHO) (1998) stated that violence against women is worldwide and cuts across cultural, geographic, religious and socio-economic boundaries. Smith (2012) also stated that about half a million women worldwide die yearly from causes related to violence. The report illustrated that women who experience violence during pregnancy are at a risk of miscarriage and low – birth weight babies than women who does not. According to Harry (2008), the problem of violence against women remains endemic in all countries and regions and prevails despite series actions taken to prevent and eliminate it.

Violence against women is “an extensive human rights abuse” across Europe. According to the European Union Agency for Fundamental Rights (FRA) (2014) in a survey on the extent of violence against women across the European Union, one in three women across the EU report having experienced some form of physical or sexual abuse since the age of 15. The EU-wide survey was based on 42,000 in-person interviews with a randomly selected sample of women across the 28 EU member states. Women were asked about their experiences of physical, sexual and psychological violence, including incidents of intimate partner violence (domestic violence), and also asked about stalking, sexual harassment, and the role played by new technologies in women’s experiences of abuse.

The report found that one in 10 women had experienced some form of sexual violence since the age of 15, and one in 20 had been raped. One in five women have experienced some form of stalking since the age of 15, with 5% having experienced it in the 12 months preceding the survey. However, three out of four stalking cases reported in the survey never come

to the attention of the police. One in 10 women has been stalked by a previous partner. Of women in the survey who indicate they have been raped by their current partner, about one third (31%) say they have experienced six or more incidents of rape by their partner. Just over one in 10 women experienced some form of sexual violence by an adult before they were 15. According to the survey most violence is carried out by a current or former partner, with 22% of women in relationships reporting partner abuse.

A study was conducted by Yusuf (2000/2001) on the incidence and dimension of violence against women in the Nigeria Society: A case study of Ilorin Township. The subject for the study consisted of 136 women selected from various parts of the metropolis, through a combination of clustering and random sampling methods. A questionnaire was administered to the selected sample to find out factors responsible for the incidence of violence against women and the general attitude of women towards the act as well as the implications to the victims, the family and the larger society. Findings from the study revealed that a large proportion of the respondents reported that they experienced wide-range of violence and that in general men are held responsible for most of the violent acts committed against women.

Oyediran and Isiugo-Abanihe (2005) examined women's perceptions of wife beating. The data were derived from the 2003 Nigeria Demographic and Health Survey (NDHS). Both descriptive and analytical methods were used to assess the net effects of socio-demographic factors on women's perceptions of domestic violence. The study demonstrated that a large percentage of Nigerian women agreed that a man is justified in beating or hitting his wife; 66.4% and 50.4% of ever-married and unmarried women respectively expressed consent for wife beating. Respondents' approval of wife beating or abuse varied by personal attributes such as ethnic affiliation, level of education, place of residence, wealth index and frequency of listening to radio. This paper recommended the raising of public consciousness against it.

According to Haven Wolverhampton (n.d) an organization registered in England for supporting women and children affected by domestic violence and homelessness, Nigeria has one of the highest rates of domestic violence in Africa More than two thirds of Nigerian women are believed to experience physical, sexual and psychological abuse at the hands of their husbands. A small-scale study conducted in Lagos and Oyo states revealed that nearly 65 percent of educated women said they had been beaten by a partner, boyfriend or husband, while 56 percent of lower-income market women experienced similar violence.

Countless women and girls in Nigeria are subjected to violence by some members of their families and within their communities, as in many countries throughout the world. Women of all ages and from all socio-

economic groups, living in rural and urban communities, are affected. The lack of official statistics makes assessing the extent of the violence an almost impossible task, but studies suggest levels of violence are shockingly high. More than a third and in some groups nearly two-thirds of women in Nigeria are believed to have experienced physical, sexual or psychological violence in the family. On a daily basis women are beaten and "punished" for supposed transgressions, raped and even murdered by members of their family. In some cases, vicious acid attacks leave them with horrific disfigurements. Girls and young women are forced into early marriage by parents and relatives. In many communities, the traditional practice of female genital mutilation continues to traumatize young girls and leave women with lifelong pain and damage to their health (Amnesty International, 2007)

Commenting on the rising violence against women and girls in Zimbabwe Moyo (2013) stated that the Zimbabwean women are no strangers to gender-based violence as, over the decades, they have suffered all sorts of abuse including rape, forced marriage, torture and death at the hands of their male counterparts. In response, many advocacy and rights groups have been working to explore ways of raising awareness in the hope of curbing these abuses. According to him, despite these efforts, reports point to a rise in cases of gender-based crimes across the country, with the highest numbers recorded in Mashonaland Central Province, where politically-motivated violence is also high. In Harare alone over 650 women and girls were raped in between January and October 2013, according to a *Herald* newspaper report. The report also noted that in June 2013, 12 cases of murder were before the High Court, an increase of 60% on year 2012 figures he (Moyo, 2013) added.

On religion and violence against women, Al-Tawil (2012) carried out a cross-sectional study in Erbil Iraq during the second half of year 2011. Two groups were considered; group one (G1) included women residing in Ankawa sub-district (representing Christian culture), and group two (G2) included women residing in Erbil city (representing Muslim culture). A convenience method of sampling was used to select the sample (250 women in each group). Questionnaire was designed to collect information about history of exposure to physical, sexual, and psychological violence, in addition to the related factors. Binary logistic regression was used to determine the independent effect of each factor on the prevalence of violence.

The result revealed that the overall prevalence of violence (physical and/or sexual) in G2 (20.8%) was higher than that of G1 (18.8%). The prevalence of psychological violence was 40% in Erbil, which was significantly higher than the prevalence (24.8%) of Ankawa. The rates of physical and sexual violence were also higher in Erbil (18.4%, and 10.8%

respectively) than rates of Ankawa (16.8% and 8% respectively). Factors found to be significantly associated with overall violence were: culture of Erbil, alcoholic husband, wife working as manual worker (compared with professionals), and having children. It was therefore concluded that violence against women is a serious public health issue and that culture play a significant role in the prevalence of violence.

Macassa, G., Walander, A. & Soares, J. (2013) in their study titled "Violence against women in Stockholm County: does marital status matter?", investigated differences in victimization among single and married mothers using data from 6,388 women from the 2006 Stockholm County Public Health Survey (SCPHS), a cross-sectional survey based on a self-administered postal questionnaire. Results showed higher odds of victimization among lone mothers compared to married ones. Additionally, the greatest odds of victimization were observed among those with low education, low income, and decreased social and practical support.

The World Health Organization, the London School of Hygiene and Tropical Medicine and the South African Medical Research Council on global and regional estimates of violence against women developed a report which identified the prevalence of two forms of violence against women — violence by an intimate partner (intimate partner violence) and sexual violence by someone other than a partner (non-partner sexual violence). The findings of the report which were striking showed that on the overall, 35% of women worldwide have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence.

While there are many other forms of violence that women may be exposed to, this already represents a large proportion of the world's women. Worldwide, almost one third (30%) of all women who have been in a relationship have experienced physical and/or sexual violence by their intimate partner. In some regions, 38% of women have experienced intimate partner violence. (WHO, 2013). This study therefore examined the Patterns of Violence against Women as Perceived by Working – Class Females in a Nigerian City (Ilorin metropolis of Kwara State Nigeria).

### **Statement of the Problem**

Violence against women has been recognized as one of the common form of discrimination against women as well as a manifestation of historical unequal gender relations between men and women. It is believed worldwide that violence against women is an obstacle to the achievement of equality, development, world peace etc. and it constitutes a violation of the rights and fundamental freedoms of women. It adversely affects their security, liberty, integrity and dignity; in other words, it impairs or nullifies their enjoyment of those rights and freedoms as it endangers their lives and limits their

potential. While remarks have been made about the increase rate of violence against women, it is observed that there is still inadequate information about the magnitude and or impact of the problems and only very limited researches has been conducted on the subject matter in Kwara State Nigeria. Thus, this study sought to explore the patterns of violence against women as perceived by working – class females in Ilorin metropolis of Kwara State Nigeria.

### **Research Questions**

The following research questions were asked to guide the conduct of the study:

1. What are the demographic characteristics of respondents in terms of age, religion and marital status?
2. What are the patterns of violence against women as perceived by respondents?
3. Is there any difference in the patterns of violence against women as perceived by respondents on the basis of Age?
4. Is there any difference in the patterns of violence against women as perceived by respondents on the basis of religion?
5. Is there any difference in the patterns of violence against women as perceived by respondents on the basis of marital status?

### **Research Hypotheses**

The following research hypotheses were tested:

1. There is no significant difference in the patterns of violence against women as perceived by respondents on the basis of age.
2. There is no significant difference in the patterns of violence against women as perceived by respondents on the basis of religion.
3. There is no significant difference in the pattern of violence against women as perceived by respondents on the basis of marital status.

### **Research Methodology**

The research descriptive survey design was adopted for the study. The method entails obtaining a representative sample of a targets population and subsequently drawing inference on the entire population. The multi-stage sampling procedure was used in selecting a sample of one hundred and fifty female civil servants in Ilorin metropolis of Kwara State Nigeria. A fifteen – item questionnaire titled “patterns of violence against women questionnaire” was designed to elicit the required response from respondents. The questionnaire was both face and content validated and the reliability

determined using the test retest method. The correlation coefficient between the two administrations was 0.76. Data collected were analyzed using the descriptive statistics (frequency counts and percentages) for the demographic characteristics of respondents, while t-test and analysis of Variance (ANOVA) statistical procedure were used to test the hypotheses. All hypotheses were tested at 0.05 alpha level of significance.

## Results

The results of the analysis are presented in line with the research questions and hypotheses

Table 1: Distribution of Respondents based on Age, Religion and Marital Status

| <b>Age</b>                         | <b>Frequency</b> | <b>Percentage (%)</b> |
|------------------------------------|------------------|-----------------------|
| 20 – 25 years                      | 72               | 48.0                  |
| 26 years and above                 | 78               | 52.0                  |
| Total                              | 150              | 100.0                 |
| <b>Religion</b>                    | <b>Frequency</b> | <b>Percentage (%)</b> |
| African Traditional Religion (ATR) | 03               | 2.0                   |
| Christianity                       | 68               | 45.4                  |
| Islam                              | 79               | 52.6                  |
| Total                              | 150              | 100.0                 |
| <b>Marital Status</b>              | <b>Frequency</b> | <b>Percentage (%)</b> |
| Single                             | 67               | 44.6                  |
| Married                            | 83               | 55.4                  |
| Total                              | 150              | 100.0                 |

The table depicts the distribution of respondents based on variables of age, religion and marital status. The result shows that 72 respondents which represent 48.0% of the total respondents were within the age range of 20 – 25 years, while the remaining 78 (52.0%) were 26 years and above. This shows that the majority of the respondents are old enough and should therefore be conversant with the pattern of violence against women. Based on the distribution of respondents by religion, 3 (2.0%) practice African Traditional Religion, 68 (45.4%) Christianity while the remaining 79 (52.6%) practice Islam. This result reflects the distribution of the population of people in Ilorin metropolis according to religious affiliation as the majority of the people in Ilorin are Muslims. On marital status, 67 (44.6%) of the respondents are single while the remaining 83 (55.4%) are married. The distribution of respondents according to marital status proved useful to the study as literature revealed that women of all ages and from all socio-economic groups, living in rural and urban communities, are affected by violence.

## Item Ranking

Table 2: Rank order of items on patterns of violence against women

| No. | Types of Violence | Mean Score | Rank            |
|-----|-------------------|------------|-----------------|
| 1.  | Physical          | 16.38      | 1 <sup>st</sup> |
| 2.  | Psychological     | 15.82      | 2 <sup>nd</sup> |
| 3.  | Economical        | 8.04       | 3 <sup>rd</sup> |

The result indicates the rank order of items on the patterns of violence against women among respondents. It reveals that physical forms of violence has the highest mean score of 16.38 and ranked 1<sup>st</sup>; psychological forms of violence has a mean score of 15.82 and ranked 2<sup>nd</sup> while economical forms of violence ranked 3<sup>rd</sup> with a mean score of 8.04. This result is in line with Amnesty International, (2007) who asserted that more than a third and in some groups nearly two-thirds of women in Nigeria are believed to have experienced physical, sexual or psychological violence in the family. In the same vein, according to WHO (2013) 35% of women worldwide have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence.

## Hypotheses Testing

**Hypothesis 1:** There is no significant difference in the patterns of violence against women as perceived by respondents on the basis of Age.

Table 3: Means, Standard deviation and t-value of responses on the patterns of violence against women on the basis of age

| Age                | N  | X    | SD     | df  | Critical t-value | Calculated t-value |
|--------------------|----|------|--------|-----|------------------|--------------------|
| 20 – 25 years      | 72 | 72.2 | 110.68 | 148 | 2.24             | 1.96               |
| 26 years and above | 78 | 84.6 | 98.24  |     |                  |                    |

The table shows that the calculated t-value of 2.24 is greater than the critical t-value of 1.96; thus the stated hypothesis was rejected. There is therefore a significant difference in the pattern of violence against women according to age. According to Amnesty International, 2007, women of all ages and from all socio-economic groups, living in rural and urban communities, are affected. The lack of official statistics makes assessing the extent of the violence an almost impossible task, but studies suggest levels of violence are shockingly high.

**Hypothesis 2:** There is no significant difference in the patterns of violence against women as perceived by respondents on the basis of Religion.

Table 4: Analysis of Variance (ANOVA) results comparing the mean score of responses on patterns of violence against women as perceived by respondents on the basis of religion

| Source of variance | df  | Sum of squares | Mean square | Calculated f-value | Critical f-ratio |
|--------------------|-----|----------------|-------------|--------------------|------------------|
| Between Groups     | 2   | 218.63         | 72.87       | 2.98               | 3.00             |
| Within Group       | 147 | 2857.15        | 24.63       |                    |                  |
| Total              | 149 | 3075.79        |             |                    |                  |

The result shows that the calculated f-value of 2.98 is less than the critical f-ratio of 3.00, thus the hypothesis was accepted because a significant difference does not exist. There is therefore no significant difference in the pattern of violence against women on the basis of religious affiliation. This finding is in disagreement with that of Al-Tawil (2012) who found out that the prevalence of physical and/or sexual violence, psychological violence were significantly higher women residing in Erbil city (representing Muslim culture) than their counterparts residing in Ankawa sub-district (representing Christian culture) in Iraq.

**Hypothesis 3:** There is no significant difference in the patterns of violence against women as perceived by respondents on the basis of Marital Status.

Table 3: Means, Standard deviation and t-value of responses on the patterns of violence against women on the basis of age

| Marital Status | N  | X     | SD    | df  | Critical t-value | Calculated t-value |
|----------------|----|-------|-------|-----|------------------|--------------------|
| Single         | 67 | 58.32 | 6.301 | 148 | 3.24             | 1.96               |
| Married        | 83 | 62.73 | 6.164 |     |                  |                    |

The result indicates that, the calculated t-value of 3.24 is greater than the critical t-value of 1.96; based on this, hypothesis 3 was therefore rejected. There exists therefore a significant difference in the pattern of violence against women based on marital status. This finding is in agreement with that of Macassa, G., Walander, A. & Soares, J. (2013) who reported higher odds of victimization among lone mothers compared to married ones.

## Findings

Following are the findings of the study:

1. Physical forms of violence in form of wife battering, rape, sexual harassment in cost is the most prominent followed by psychological

violence (child marriages, abduction, verbal abuse etc) while the least experienced type of violence is economic violence which includes monetary deprivation, commercial sexual exploitation, trafficking of women and children etc.

2. There exists significant difference in the pattern of violence against women according to age of respondents.
3. There is therefore no significant difference in the pattern of violence against women on the basis of religious affiliation.
4. There exists significant difference in the pattern of violence against women based on marital status.

### **Conclusion**

It is evident from the research that physical violence against women is the most frequently experienced, and that there exist significant differences in the pattern of violence against women according to age and marital status. The incidence of physical violence could be attributed to the perceived cultural practices and beliefs that women are expected to subject themselves to men. It is therefore recommended that since violence against women is a human right issue; there should be more enlightenment campaigns on violence against women and women be encouraged to talk about it. Culture has to change in order to eliminate all forms of retrogressive practices against women.

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# METHODOLOGY AND TEACHING FOR THE INTEGRATION OF AUTISTIC CHILD

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## Abstract

Leo Kanner in 1943 for the first time described the autistic disorder calling it a clinical syndrome characterized by an inability relational, resistance to change, atypic language (deficit of acquisition, echolalia, mutism, occasional pronoun reversal), repetitive play and stereotype excellent, mechanical memory, excessive emotional reactions and clumsiness. The definition of autism is developed and evolved over the years from this first description, but they are often considered some cases with Autistic Disorders in early childhood difficulties of communication and interaction that are secondary to other diseases. This has a number of implications in terms of prognosis and treatment that are likely to overshadow the main objective which aims primarily to integration into society.

Despite the objective difficulties cognitive, relational and behavioral integration should be pursued in the school of all: living in relationship with non-disabled peers, an opportunity not only to search for functional learning, but also to promote organizational adaptation of the educational institution, a real investment of resources, involvement of all internal and external figures who interact with the child and the adoption of refined methods of facilitating the integration.

The objectives relate to the methodological-didactic "make a special teaching" to respond to the particular needs of the autistic child

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**Keywords:** Autism, teaching, integration, TEACCH program

## Introduction

The autism spectrum disorders cause severe disability in the social and persist throughout life. Pupils with autism spectrum disorders have in

common, to a greater or lesser difficulty in the areas of social interaction and communication, repetitive and stereotyped behaviors and peculiar mode of learning. Although united by these characteristics, they represent a very heterogeneous group; in fact, there are some people in which component prevails deficit linked to severe mental retardation, often associated with neurological disorders (first of all epilepsy), and others in which the symptoms assumes the character closest to the personality disorder, with IQ scores in the standard and sometimes even higher; communication skills are also highly variable, with patients without severe language and comprehension deficits, and others with good skills. Syndromes present within the category of autism spectrum disorders (or Pervasive Developmental Disorders, as defined by the main International Classifications) linked by the presence of the symptoms described are divided into Autistic Disorder, Childhood Disintegrative Disorder, Rett's Disorder, Asperger's Disorder and Pervasive Developmental Disorder not otherwise specified, a diagnostic category to which the latter is used when you do not meet all the criteria for the previous ones, but it is in the presence of alterations in the areas of social interaction and communication behavior. This heterogeneity makes it essential to a careful assessment of the individual student and design a highly individualized. These two actions, assessment and individualized planning, require the cooperation of at least three actors that the Law 104/92 identifies as fundamental to inclusive education: school, family, health and social services. In general, it is evident that there is no therapy or a method for autism, also in consideration of the variability of the situations that are included within this diagnostic label, but early treatment based on the approach and intensive psycho educational, becomes the preferred means of give again to children with autism the right to a better life.

In this paper we try to examine an organization of educational intervention that can not overlook the proposals that are derived from various specific programs, both in the assessment and intervention, which may help to identify ways of working that meet the needs custom integration. What needs to be pursued, in effect, is the integration at the highest level, to be understood as a path whose primary goal is the maturation of significant experiences in both learning and social. In addition, the knowledge of the different methodological approaches is also important to fill with content appropriate individualized teaching moments "one to one" provided in the personal education plan. Structuring the ability to stay in unpredictable environments, while maintaining a non-disruptive behavior is, in fact, an educational destination of major importance. *Special Teaching* to meet the very special needs of children with autism requires assessment and intervention strategies derived from cognitive-behavioral, the systems of

structured teaching, the facilitation of various forms of communication, the education, the perception of mental states own and others, the adaptation of individualized goals and those of the class, the proper use of the "resources."

### Objectives

For an educational institution that wants to "become special", in order to meet as effectively as possible the special needs of individuals with autism, it is essential: in the class to promote the knowledge of related disability, use of new information technologies, the methodologies used educational and teaching developed specifically for children with autism. For people with autism, simply being in the classroom itself may represent an important relationship, even if they employ much of their time in individual activities and repetitive. Far develop the ability to stay in unpredictable environments, while maintaining a non-aversive behavior is an educational destination of considerable importance, since it is necessary to take into account the significantly different way to use the systems perceptual, motor, mnemonic, intellectual, communicative, affective-emotional and relational. It is therefore necessary to check the "strengths and weaknesses" of the autistic child, so you can plan and systematically adjust plans customized and integrated intervention. Moreover, even if the activities that take place in the classroom are not suitable to the level of the student, it may be useful for certain periods to try to get his attention to "participate in the culture of the task" (Moretti, 1982; Rollero, 1997 Tortello, 1999), that is, to put it in a position to grasp at least some elements of a lesson to appreciate the topic you are dealing with. Hence the importance of providing some of the objectives of the utmost importance for the possibility of *teaching one to one*, to be done even outside of the class when the type of work to be done is not compatible with the common organization of the environment (for example, the presence of too many distracting motivations). Such moments out of the class, however, should be time-limited (usually no higher than 10-12 hours per week) and programmed so that they can be reduced with the progress of the educational and adaptation of the child. The space for the individual activity should be organized according to the principles of structured education, typical of the approach TEACCH, (*Treatment and Education of Autistic and Related Communication-Handicapped Children*) whose characteristics have to be taken up by the network and institutional health care that is created on the territory. It is carried out, as well, a total care of patients with autism through a single answer that involves the various services.

For the purposes of inclusion of children with autism, will be useful to promote *knowledge of deficits and disability* in the classroom. The moment

is imparted appropriate knowledge and an appreciation of the companions with disabilities is easier to stimulate actions to help and support. Specially with the autistic this aspect is of paramount importance, since it is necessary that schoolfellows understand that some behavioral characteristics, such as poor social relationships or any aggressive behavior, are not due to "wickedness" or desire to offend, but they represent the consequences of a deficit. You can use different approaches, from simple explanations of the main aspects of the syndrome, to watching television shows or movies on the subject who presented admirably stories related to autistic people, to read and comment biographies of autistic high level until the scientific study of the knowledge currently available autism. The same testimonies of parents of children with autism gathered verbally or through writing books, can efficiently raise the level of knowledge of everyone.

Essential then is the *use of new information technologies* in education that are taking considerable importance in the Italian school, though not always to the proliferation of hardware associated software tailored to specific needs. The prospects opened to facilitate the learning of the child with a disability are significant and relate to aspects of the curriculum (tutorials on instrumental skills of reading, writing and arithmetic), that the ability to manage in a controlled recovery projects and programs purely rehabilitative.

Even for the autistic student computing can be an exciting opportunity, able to bring it closer to the activities of the rest of the class. You notice very often that students are motivated to interact with the computer, which allows you to focus for long periods of time on certain tasks easier to manage exercises independently.

It 's definitely need to refer to techniques and special software in relation to the objectives that are being pursued, taking into account that the most important priority is to foster the development of the cognitive dimension, as a fundamental condition for increasing communication skills and imaginative. The recent evolution of multimedia tools, which use different codes (oral and written language, iconic music), can create, at least initially, a confusion in the decoding process of the child, so it may be useful to refer to the software less exercise sessions processed by the computer point of view.

With the passage of time, then, in relation to the motivation level shown by the school-boy, it can decide to opt for programs with a multimedia structure, in which the contents are not presented only in sequential and static.

In the experience of inclusive education a significant part of the child's time should be devoted to exercises similar to those carried out by his companions. The didactic action, therefore, should build on the objectives

adapted to those of the class, with exercises incorporating the use of similar materials. In this way even if the student with autism may insist to carry out their activities independently and apparently not integrated with the rest of the class, however, tend to structure a sense of belonging to the community. Classmates in turn, can trigger sequences of interactions can greatly facilitate social growth of the student with autism. This will require their active involvement, through raising awareness of issues, due to their complexity, must be addressed with appropriate methods and tools if you want to "understand" the problems of those who behave differently from the rest of the class. The behavioral and cognitive of autistic subject make it very complex interactive relationships of the onset of significant thickness. In general, it can, however, identify a number of measures that will facilitate forms of help and support from peers: to encourage the development of relationships help teach skills and pro - social skills facilitating indicate the relationship; situations tutoring program; work on creating a non-competitive climate to enable shared learning experiences.

One of the main keys to the success of the process of inclusive education is to foster friendship and help from friends (Stainback and Stainback, 1990; Salisbury, Gallucci, Diver and Peck, 1995; Janney and Snell, 1996).

Of course, the relations of friendship and support are highly individual, fluid and dynamic, different depending on the age and mostly based on free choice resulting from all personal preferences. However, this does not mean that they can not be facilitated and supported by actions taken by teachers and parents, and a favorable climate in the classroom where even the able-bodied fellows will derive considerable benefits both cognitive and social (Peck et al., 1990).

## **Methods**

Regarding the strategies of educational intervention and the contents to be favored to promote learning autistic student, comes the need for a customized approach that combines the information coming from the most refined methods of intervention, with the methodological-didactic and organizational measures necessary for the promotion of a real integration (Cottini, 2002a).

The intervention strategies proposed by *behavioral approach* inspired much of the teaching, which is related both to non-disabled children and with disabilities. And it is necessary to provide special situations of help, provide forms of imitative learning, reward behaviors satisfactory when learning is made difficult by the presence of deficits also implement techniques such as the help and aid reduction, modeling, chaining, reinforcement, the use of non-subversive strategies to contain problematic

behaviors. Autistic children with low functionality, in fact, prove to benefit in a significant way of teaching a precise and predictable, with goals organized in a taxonomy and controlled management of contingencies of reinforcement.

Knowledge of educational and teaching methodologies validated by the international research is essential for the development and implementation of an individualized education program. In particular, it is desirable that all teachers who know children with autism: educational and teaching methods used within the program TEACCH; strategies applied to Augmentative and Alternative Communication 'autism; techniques of assessment and intervention for the management of behavior problems.

The principles of *structured education* provided by the TEACCH program constitutes a methodological contribution of great importance provided by Schopler and his collaborators (Schopler & alt., 1990), who suitable to be generalized, with some adjustment, even at school level. The adaptation of the environment and activities to the needs of autistic allows you to build a highly structured environment in which the reference points become visible, tangible, predictable and affordable. The *organization of the physical environment* proposed by TEACCH is clearly not replicable in a comprehensive school-wide policy. Some devices may still allow a presence and better adapted within their own class.

It could, for example, be determined by using adhesive tape is placed in an area where the student school, with close to a cabinet or shelves where you can find the necessary materials to teaching. The same space can be expanded to include other banks when a task is scheduled for small groups. The spaces used for special activities - such as the gym, the music classroom, laboratory, etc.. - should be clearly indicated, so that the child can become familiar with a provision that takes contours less chaotic and, consequently, more reassuring. With the passage of time and the progress of the adaptation of the child, these devices may be no longer needed, for which they will be progressively eliminated to give the organization a conformation as normal possible.

The *visual diagrams* indicate the student activities to be performed and the sequence of the same, helping to anticipate and predict the various tasks. Are generalized to the school level, to help you understand the course of the day and the alternation of moments of work (individual or group) to moments of the game. Choosing the most appropriate visual aid (concrete objects, photographs, drawings, pictograms, written words) should be based on the assessment of the child's ability to understand.

*Work systems and the precise organization of labor*, and materials provide students with autistic information on the type of task to be accomplished and the implementing rules. In the experience of inclusive

education a significant part of the subject's time should be devoted to exercises similar to those carried out by his companions. In this way, even if the student with autism may insist to carry out their activities independently and apparently not integrated with the rest of the class, however, tend to structure a sense of belonging to the community.

The precise organization of the tasks provided for in the TEACCH program can also be useful for provide opportunity for the student to practice autonomous and repetitive, which, even when not determine important key evolutionary learning, may be useful for increasing time spent in the classroom.

For students with autism who have good cognitive function is certainly useful to include in IEP(individual education plan) goals related to the perception of the mental states of self and others.

Learning to recognize emotions, to understand and predict the behavior of a person. On the basis of the thoughts or actions that performs, in fact, can facilitate the understanding of everyday situations and improve the soft skills of children. Apart from this, these skills are also extremely deficient in individuals with autism to "high functionality".

The program offered by Howlin et al. (1999), inspired by the principles of *theory of mind*, is aimed precisely in this direction, providing for the progressive teaching of mental states in three areas: *emotions*, the *system of beliefs and false beliefs* and *symbolic play*, with particular reference to *pretend play*. It is proposed practices through teaching cards easily generalized in the school context, in part, during the work of the individual child and partly as an asset for the entire class especially at the level of kindergarten.

The *Facilitated Communication* (Cottini, 2002b) resulted in both an increase in communication skills that the level of social integration. Thus, for children who are unable to express themselves verbally and with a deficit of motor control, which, however, demonstrate an awareness of the written language (or at least to be able to learn), can certainly be also offered at the school level the use of communication facilities through various instruments (keyboards on paper drawings with letters or words, typewriters or computer media). Teachers, once learned the practice of facilitation, can toggle the various figures of *facilitator* who consider themselves the main measures for the achievement of autonomy on the part of the student.

And necessary to recommend, however, an approach that is at the same time open and critical, leading educators to identify Facilitated Communication in an additional teaching tool can be used with some student and certainly not an elective therapy applicable to everyone.

It may be right to use AAC (*Augmentative Alternative Communication*) when a child fails to develop verbal language or when it is

not sufficient to enable him to communicate with others, either because of poor vocabulary, either because it is incomprehensible to those who do not attend regularly . The word alternative is to indicate the use of modes of communication other than oral language. The adjective Augmentative is to indicate how the methods of communication used are aimed not to replace but to enhance the natural communication.

Currently you prefer to use the term Augmentative Communication, as it allows you to think about the strategies, techniques and aids such as ability to provide something additional to communication skills which the person is already in possession (gestures, vocalizations , gaze , etc.). The purpose of this type of communication is to compensate for the shortcomings of communication in order to provide the means of expression suitable for expressions adequately their needs. It 'obvious that there are no ready-made solutions, but these will be different, and then customized according to the age of the individual, relational and cognitive development, their motivation to learning a new way of communicating, the environment in which he lives and so on. The tools provided must be not only appropriate but also flexible, in that they must adapt to the changing abilities of the person with autism. It is especially important to help the student with autism to develop and strengthen their skills residual teaching strategies appropriate, to allow it to be used as independently as possible of the various symbols and aids available. In fact, one of the main instruments of Augmentative Communication systems are just symbolic graphics that give the opportunity to express themselves through graphic signs to people who are unable to produce symbols, but they are able to select.

The strategies of most CAA validated by research are those that involve the use of manual signs and images such as photos, drawings and pictograms: in particular, have been used in many experiments symbols PCS (*Picture Communication Symbols of Meyer-Johnson*) through the methodology of the PECS (*Picture Communication Symbols Exchange Bondy & Frost*). A validated methodology to cope with the problems of behavior is known as functional communication (FCT, *Functional Communication Training*) (Arduino, 2005). For integration of the tables of communication may also use communication aids denominated VOCAs (*Vocal Output Communication Aids*), which can be constituted by one or more buttons. Their pressure causes listening to a pre-recorded messages, which can be programmed, but they are defined number, and then limit the communication. The software programs which reproduce the tables of communication, however, have no numerical limit of messages and the access can take place with the keyboard, pointing devices, sensors. Techniques for Augmentative Alternative Communication certainly can not replace the convenience, speed, accuracy of oral language but offer the

opportunity to autistic individuals with disabilities minutes of finally being able to communicate.

Children with autism may exhibit different behavior problems: opposition to the proposed work, temper tantrums, aggression, self-harm non-compliance with the rules of the class, disruptive behavior, rituals that disrupt the work of other students, and others. Most behavior problems are caused by: problems of sensory tolerance to certain environmental stimuli (noise, confusion, light, heat); educational proposals not adapted to the characteristics of the child (too complex or, in a minority of cases, too simple), communication problems, both in the sense of a lack of understanding of what others say, both in the sense of difficulty for the child to express themselves.

Usually it is difficult to intervene after the problem has manifested itself, while it is more effective to prevent these problems by structuring the environment and assessing precisely the occasions when involved. A structure that, starting from the skills, give visually certainty, predictability, safety, gives an answer "educational" to problem behaviors (Micheli, 2003). The behavior problems require an assessment which allows to make a hypothesis about what it has determined. For this purpose it is useful to refer to the technique of 'functional analysis developed in the field of behavioral. In addition, a specific assessment of the level of understanding of the language is action essential for the prevention of problem behaviors and, more in general, for all the intervention.

## **Results**

The educational success that it is possible through the development of simple goals, limited, gradual, progressive, through trial and continuous adjustments of learning, it is now urgent to switch to a more enlarged than has hitherto, in the knowledge that the common goal is achieved with the effort of all.

Becomes fundamental step to replace the special education teacher with the "supports", understood as a set of tools, operators, energy, and resources that must be coordinated, linked to specific contextual situations, to various actors protagonists in that moment, in that specific educational and social reality in which you intend to achieve the integration of these students.

They are supports not only the community, social group and school, the group class, tutoring but also to the documentation, the organization of space and training courses, meetings between the operators involved, including physicians with parents, assessments periodic group. In short, the backups require the joint and synergic contribution of different contributions, by both the central and peripheral structures of the Administration, which by representative bodies, institutional levels (Ministry of Health, Ministry of

Labour, Ministry of Technology), government local groups involved in the integration of people with disabilities.

Some serious deficiencies were in the system and heavily seen : there can be no true integration of the pupil disabled when it becomes a sterile conflict between teachers for the percentage breakdown of the hours related to own presence, and when the cooperation between operators is limited to bureaucratic compilation (PDF Profile dynamic functional) when the "Group H" of the school is only because it has been approved by the school Committee, and when the projects are done by using the economic resources and not on the contrary.

Should be highlighted the lack of specialization of almost 40% of support teachers but also the non-scheduled training of teachers and generalized curriculum, which promotes the delegation only to the almost total support teacher. The presence of the latter is characterized, then, by insecurity and constant turn-over, resulting in continual need of recruitment, temporariness, discontinuity and teaching difficulties in the growth of professional skills. It should be also redefine the professional role of the teacher support and think about its use more functional through at least 200 hours of specialized training, commensurate with the type of disability, to be added to the current 400 hours of basic training activities needed to achieve the specialization in support; enter into initial teacher education curriculum a number of credits in the field of special pedagogy and didactics. This leads to a better understanding that every disabled person has a history with the causes and specific constraints and therefore the integration can never be undifferentiated or generic, since the conditions are not undifferentiated. They have the right to education and vocational training, as well as stated in art . 38 of the Italian Constitution, 'cause these guys are equal citizens , who by law must be guaranteed equal opportunities, we must also provide for a systematic and continuous updating of all teachers on issues of special education, refresher courses required to achieve managers and technical inspectors.

One of the objectives of the Project coordinated network, which is based on a course of individualized care and a psychoeducational program shared between family, school and services, is to promote the generalization of skills and competencies identified in the initial Functional Assessment.

The Functional Assessment, which will be periodically updated, aims to: "differentiate", highlighting areas of potential, some subjects who are included in the organizationn diagnostisc of Pervasive Developmental Disorders; "orient" the individualized intervention; "Suggest" specific methods and techniques of intervention; "evaluate" the results of interventions. The therapeutic work focused on the development and acquisition of new skills in structured settings at the service requires,

therefore, a guarantee of quality and continuity over time, the operational coordination with the family and the school, the fundamental natural environments for growth, education and development of the boy/girl, and must be based on targets 'functional' (communication, interpersonal skills and social autonomy ) shared, verified and updated over time, which would enable a proper adaptation to the environment as possible of the subject, according to parameters health and individual well-being (ICF - International Classification of Functioning, Disability and Health). Such activities, however, must maintain operational coordination steadily over time its reference to the original concept of "evaluation", based on precise indicators on which to "measure" the quality on which to make a good scientific research in the context of a systematic collection of documentation on experiences and good practices (Ianes, 1999). The recognition of the appropriateness, efficiency and above all of the ' effectiveness of interventions you will have to increasingly be based on comparisons of the results achieved in terms of social adjustment and quality of life of people with autism, giving more space to the judgments of households (Cottini, 2005c). The educational intervention in the school should encourage, in particular: the acquisition of a language (in whatever form possible, focusing on the verbal , non-verbal , bodily , written etc.). development of perceptual skills and exploration of the environment; the promotion of basic instrumental skills, active participation in the life of the class, start socializing in the group and outside the school.

Success of this intervention is certainly facilitated by an early educational inclusion to schooling by the autistic child, as well as the expertise of all those involved, which must be prepared and motivated people in terms of relationships, knowledge of the disease and strategies pedagogical and educational applicable to it. This allows to also support cases more "severe", characterized by the presence of disturbing behavior such as, for example, aggression and self-injury. In this way, the school, teachers and classmates, they will be able to receive with greater serenity, and proactively, "special friend".

Preconditions to achieving the goal of full inclusion school are: emotional availability and communication of teachers, which need to take personal responsibility, confidence in achieving the goals that must be as concrete as possible, the involvement of parents and family members, that must achieve a continuity of goals and strategies at home. E ' need to attend, as parents, to the drafting of the educational teaching of children, an individualized project realistic and shared. The teaching will be shared (even formulated together with their parents), explicit, flexible, useful in the method and timing. Finally, the networking, coordination and integration of measures. The optics is essential that the synergies between clinical

dimension, family and internal organization of the school. Necessary to define a close relationship and synergy between the knowledge in the scientific field, medical and psycho pedagogical and what is experienced on a daily basis within the classroom, in order to overcome possible separations.

## **Conclusion**

Our contribution has wanted to consider the autistic child in his school experience, trying to identify the routes to facilitate the integration process, highlighting how the situation is to determine when a class is added to a student affection autism need specialized training continues. There is still the need that achievements are continually moved forward, they open themselves to new challenges, using all the resources and involving integrated with the school, including those of organizations and institutions in the private and social with many years of experience and expertise in the field. Reflecting today on autism is not only investigate the disability, but understand to be in front of a person, so that the sum of all disability can not be considered "loss of personality". If we stop to consider the "missing", we use a quantitative criterion, which belongs to the calculation of objects, but that is absolutely unacceptable when referring to human beings. Only through qualitative criteria, however, it is possible to distinguish between health and disease. Get used to seeing the suffering without reacting, watching the misery without action to defeat it is no less autistic behavior of a child with this disability (Basso & Lucioni, 2000).

Starting from this assumption, we have identified some methodological paths (the ability to adapt the objectives of the class and individualized ones to make them, at least in some parts, compatible, the organization of activities in cooperative groups; proper utilization of the resource companions and the study of the deficit in the classroom, the opportunity to refer to the new information technologies), taking into account on the one hand the existence of various approaches to the treatment of autism, experienced at international level, which have proven their effectiveness, although in a different context from that school, and secondly the need to combine the technical information with a focus on key methods for the delineation of a special teaching for the integration of the autistic child.

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## **IMPLICATIONS OF COMMERCIALIZATION OF HIGHER EDUCATION IN CHINA**

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### **Abstract**

Unquestionably, the role of higher education institutions (HEIs) in society and economy is engorged. The term higher education proposes an educational level above the secondary education with advanced tools of knowledge which enables the students to generate, distribute, and preserve systematic academic knowledge at colleges, universities, and institutes of technology. This qualitative study is an endeavor to analyze the effect of commercialization policy on the higher education system and socio economic development of the Chinese society. During 1999, marketization and commercialization of education sector remained the sole policy instrument for attaining the objectives of liberalization and modernization of Chinese higher education. The realization that the development and advancement in the field of science and technology was impossible without development of education system, particularly the higher education, forced China to employ different strategies. Chinese government resolved to provide an access to over 15% of its total population to higher education. These initiatives can be divided in five categories i.e. ensuring provision of education, management of HEIs, investment for the growth of higher education, recruitment and job placement for graduates and delivery of autonomy to the universities and HEIs. The commercialization of higher education has converted the whole Chinese education system into class based system while establishing the overwhelming monopoly of private sector as being practised throughout the West and U.S. which has confronted the

Chinese with new social problems due to population size, patterns of governance, demography and socio-economic circumstances.

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**Keywords:** Commercialization of higher education institutions (HEIs), Socio-economic Development, Liberalization, Public policy & governance

### **Introduction**

Education has a strong correlation with socio economic development of the country because a society having high literacy rate has more chances of development at the economic and social levels as compare to the nations lacking in it. Revolution in information technology and scientific advancements has linked the production and productivity with knowledge which has increased the need of qualified workforce. The contribution of higher education institutions (HEIs) in society and economy is amplified (YÖK, 2007: 39). The term higher education proposes an educational level above the secondary education with advanced tools of knowledge which enables the students to generate, distribute, and preserve systematic academic knowledge at colleges, universities, and institutes of technology. During the last few decades, the Chinese government introduced political, social and economic reforms to convert its planned economy into market oriented economy. The realization that the development and advancement in the field of science and technology was impossible without development of education system, particularly the higher education, forced it to employ different strategies including commercialization or marketization of higher education. This paper is an endeavor to analyze the effect of commercialization policy on the higher education system and on the socio economic development of the Chinese society. This study is qualitative in nature based on document analysis coupled with intellectual discourse on the issue.

### **Commercialization of Higher Education:**

It has been universally acknowledged that in the present era when everything revolves around the economy, the commercialization is inevitable for enhancing efficiency and to meet the diversified demands of the consumers through resource mobilization, especially when the existing public service or goods are insufficient to meet the demand or when the government is unable to allocate more public resources to the services or goods. In brief, commercialization and privatization is the pathway to meet the increasing demand with higher standards of satisfaction. For delivery of public services, the concept of commercialization and marketization was introduced in higher education to reduce the state activities by transferring the responsibility to the non-state sector or by altering the nature of

government's involvement. This trend was further promoted by the international financial institutions like World Bank, IMF, etc. to link the educational loans and aids with commercialization and marketization. Consequently, all the countries across the world have adopted the concept of commercialization of education to certain extent. It was believed that the liberalization of Chinese higher education on the patterns of U.K and US models will transform the public sector more efficiently and effectively. Therefore, Chinese policy makers introduced privatization and commercialization in higher education to reduce the state involvement by transferring the responsibility to the non-state sector.

### **Case Study of Chinese Higher Education:**

After founding the People's Republic of China, the key attention of state policies was on the productive labor. During Initial period, the Chinese education system was inclined by Soviet Model and the Central Committee of the Communist Party (CCCP) and the State Affairs Council had the supervisory authority over the affairs related to education sector. During that period, more than 100 new higher education institutions were recognized, and total enrolments amplified to 961,623 in 1960 from 441,181 in 1957. But in 1963, the government reduced the number of higher education institutions from 1,289 to 407. During the Cultural Revolution of 1966-1976, the leadership presented the slogan that "study is useless" therefore, most of the schools and universities remained close for many years of Cultural Revolution. Throughout the Mao's period, the government was exclusively accountable for the costs of higher education and assigning jobs to the passing out graduates.

In 1978, the Chinese government realized that the destination of prosperity could not be attained without promoting and developing education sector. So, it initiated reforms process for transformation of its higher education system into market oriented to meet the requirements of the market economy. In 1985, Decision on Improvement of the Educational System was published by the CCP Central Committee describing devolution of administrative power to perform multiple roles like research, teaching, social services and business. This document assigned limited autonomy to the universities. However, this policy was not carried out effectively but was proved a step towards liberalization and commercialization of education sector. In 1993, the government announced further reforms to surge accessibility to higher education and a 'user-pays' system of student fees was applied along with definite essential changes in the job assignment system.

During 1999, the well-organized, reasonable and accountable marketization and commercialization of education sector remained the sole policy instrument for attaining the objectives of liberalization and

modernization of Chinese higher education. To ensure consumption of the graduate unemployed labor force, the graduate job assignment system was introduced. The 'user-pays' system of student fees encouraged private investors to invest in the field and a large number of non-government, private education institutions of higher education emerged across the country for the first time since 1949. The nationwide fee-charging system increased the universities' enrolment and in 1998, the enrolment number reached to 1.0836 million. In 1998, the Higher Education Law was passed which provided legal protection and brought greater autonomy to the universities.

In 1999, the enrolments in higher education institutions more amplified. It was assumed that the new reforms would intensify the regular universities' enrolment to 1.537 million from 1.08 million in 1998, that projected surge was about 41.7 percent but dramatically, the registration reached 1.59 million which was 47.4 percent. The total registration for all types of higher education institutes in 1999 was over 2.7 million.

In 1999, the Chinese government initiated to rush the pace of higher education growth, and initiated a strategy of providing an access to over 15 % of its total population to higher education. It was estimated that China will reach the ceiling of 15% probably in 2010, but due to privatization and commercialization, the target was achieved in 2002; almost eight years before the anticipated time. In 2004, the enrolments reached to 4.47 million i.e.19 percent enrolment. In addition, the registration of students' in higher education institutions by the end of 2004 reached 20 million, the major higher education sector in the world.

After gaining autonomy, the universities applied different strategies to figure their position in the ranking of national and international universities by upgrading their programmes of study, hiring competent faculty and providing better learning environment. Simultaneously, this competition provided opportunities for generation of revenue by offering diversified courses and led to international cooperation among the universities and establishment of links with the businesses and industrial sectors for receiving grants. Previously, the education in universities was free but after implementation of user-pay principle, the universities have been converted into commercial entities for charging tuition fee from the students.

### **Analysis and Conclusion**

The initiatives taken by the Chinese Government for development of higher education can be divided in five categories i.e. ensuring provision of education, management of HEIs, investment for the growth of higher education, recruitment and job placement for graduates and delivery of autonomy to the universities and HEIs. The basic objective of these reforms was to establish a new system where forecasting and macro management

vests in the state and the HEIs are required to follow the laws and enjoy independence to provide education according to the needs of society and the market.

The evaluation of reforms strategies adopted by the Chinese leadership reveals that these reforms were initiated to address the consequences of economic development and its challenges. It was assumed that the enlargement of higher education would have following direct impacts on the economy;

- Production of skilled human resource for the market
- Expansion in enrolments would attract more and more tuition fees which in turn would contribute towards increase in GDP
- Enrolment of youth in the higher education institutes would leave job opportunities for unemployed workers
- The expansion would not change China's higher education from elite to a mass education system
- It would enable the Chinese nation to contest in the setting of globalization and the knowledge-based world economy

It is an admitted fact that due to competition and internationalization, the quality and standard of higher education has been improved. According to Modernization theory of Development, if over 15 % of the total population in a state has an equal access to its higher education than it can set up its national goals for development. In 1999, it was anticipated that China will reach the ceiling of 15% probably in 2010 but thanks to privatization and commercialization, the target was achieved in 2002 i.e. almost eight years before the estimated time.

Though, the Chinese strategy has supported the development of higher education but as the China's socio-economic conditions were improvised for such a rapid growth, therefore, produced undesired results which are causing inverse effects on the society like;

- i. The marketization and commercialization have increased the number of graduates at university level but the overall capacity of Chinese industries and market is not at the level to absorb and accommodate such a large number of university graduates. So, the strategy to expand the number of university graduates without creating an adequate pool for their employment has increased the rate of unemployment.
- ii. The commercialization of higher education has converted the whole education system into class based system and has established overwhelming monopoly of the private sector.
- iii. The introduction of high fees structures (user-pay) have, on one hand, deprived a large number of deserving and qualified students from getting admission for want of huge fees while on the other

hand provided opportunity to the private universities to exploit the situation.

- iv. The principles of socio-political equalities have been regarded as the foundation stones of Communist Ideology, but the commercialization and expansion in the network of elite-universities has generated socio-economic disparities across the society and shattered this ideology.
- v. The Chinese reforms were mainly designed on the patterns that have already been in practice all over the Western and American higher education sectors. China has had extended history of regional differences and the marketization and commercialization of higher education has further enlarged this already existed gap between the “haves” and “haves not” in society as skyrocketing surge could be witnessed in tuition fee.

On the basis of above, it can be concluded that the commercialization of higher education has brought fruits in West and U.S. but this experience has confronted the Chinese with new social tribulations and implications due to population size, patterns of governance, demography and socio-economic circumstances.

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# LESSONS LEARNED FROM ADOLESCENT AGED SIMULATED PATIENTS IN UNDERGRADUATE ADOLESCENT MEDICINE CURRICULUM: A STUDENT'S EXPERIENCE

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## Abstract

**Introduction:** Worldwide, several studies have shown adolescent simulated patients being used for teaching of communications skills with adolescents. In Malaysia, there is scarce research demonstrating the educational benefits of simulated patients in adolescent medicine teaching over traditional teaching methods.

**Objective:** To evaluate the role and effectiveness of adolescent aged simulated patient as a teaching tool, in the adolescent medicine module at National Defence University of Malaysia.

**Methodology:** This is a cross-sectional study. Forty-four third year medical students participated. A total of 6 simulated patients (16 to 19 years old) were recruited to portray roles of adolescents with various psychosocial issues for two times during each posting for four postings. Each of the students, as a pair had two encounters, (as interviewer and observer). All students (in the interviewer roles) rated the abilities of the adolescent simulated patient playing a specific role on a validated questionnaire. The adolescent simulated patients and faculty teachers also gave feedback on similar validated questionnaires.

**Result:** Forty-four students gave the adolescent simulated patients general performance a mean mark 3.4 out of 4 point scale ( $p=0.050$ ). All medical students reported that the simulated patients helped them in: (a) communicating with adolescents ( $p=0.006$ ), and (b) understanding the different psychosocial issues that adolescents may encounter ( $p=0.048$ ).

Feedback by teachers and adolescent simulated patient about the adolescent simulated patient program was very positive.

**Conclusion:** The lessons learned have shown that structured case scenario portrayal by the simulated patients had significantly complemented students' learning in communicating with adolescents.

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**Keywords:** Adolescent medicine module, simulated patient and structured case scenarios

## Introduction

World Health Organization (WHO) defines adolescents as individuals between the ages of 10 to 19 years (Encyclopaedia Britannica). In Malaysia, the adolescent population constitutes 19.2% of the population (Yearbook of Statistics Malaysia, 2009). The Malaysia National Adolescent Health Plan of Action (2006 – 2020) includes five priority areas such as physical and mental health issues, sex and reproductive health issues, nutritional health, eating disorders and risky health behaviors. Adolescence is a time of life when they develop habits that put them at higher risk for future chronic health concerns. Adolescents frequently tend not to share personal issues with their health care providers, thus communication with the adolescent patient requires unique skills on the part of the medical doctor.

Therefore, medical schools should take on the responsibility of teaching their students how to interact with and treat adolescents. At Faculty of Medicine and Defence Health, National Defence University of Malaysia, the Paediatric and Adolescent Medicine posting is of 8-weeks duration, with four group rotations in one academic year, which is implemented, in the third year of the undergraduate degree program. The objective of the Adolescent Medicine module, which is of 2 weeks duration within the 8 weeks posting, is for the students to acquire knowledge and skills in communicating with adolescents and understanding the core selected psychosocial issues experienced by adolescents, in order to be suitably robust for future significant contributions to the healthcare of adolescents. The teaching/learning activities identified in the module, include a mixture of exposure to adolescent health clinic with simulated patients, self-directed video production of core issues in adolescents and practice sessions on interview techniques using HEEDSSSSSS psychosocial assessments, didactic teaching, debate sessions, seminars, tutorials and case write ups using students' own created case scenarios.

Simulated patients have potential to be the highest fidelity 'simulator' and are well established in most undergraduate medical programs (Cleland et al., 2009; May et al., 2009). The literature on the role of simulated patient in medical education is expanding. However, at the level of the adolescent

medicine program, there are several gaps in the literature. We seek to fill this gap through documenting our experiences in using simulated patient in the adolescent medicine program.

## **Literature review**

### **Paediatrics undergraduate curriculum**

Generally, in other parts of the world, the undergraduate teaching in the Paediatrics posting includes the Adolescent Medicine as a module in some but not in others. To cite one example, at the University of Otago, Wellington, New Zealand, Paediatric and Adolescent Health Module is placed in the fifth year, which include two sessions: (1) the teaching of acute paediatric and (2) community paediatrics.

In Malaysia, out of the 34 public and private universities, only two universities (i.e. Universiti Teknologi Mara Malaysia and National Defence University of Malaysia) have included the teaching of Adolescent Medicine as a module in the paediatric curriculum. However, other universities also include sessions on Adolescent Health issues in a number of sessions only but not as a module.

### **Simulated patients**

A review of the literature found many relevant topics concerning the use of simulated patients in undergraduate and postgraduate medical education. Howard Barrows is credited with using the first simulated patient in Los Angeles in 1963; this was an artist's model who posed as a patient with multiple sclerosis. Barrows, defines the term standardized patient (SP), the umbrella term for both a simulated patient (a well person trained to simulate a patient's illness in a standardized way) and an actual patient (who is trained to present his or her own illness in a standardized way (Barrows, HS 1993). Later on, the simulated patient is defined as "a normal person who has been carefully trained to present the symptoms and signs of an actual patient" (Collin and Harden, 1998). In their study, Barrow (1993) and Spencer and Dales (2006) stated that simulated patients are useful to train medical students to learn professional conduct and are also used extensively in testing of clinical skills of students, usually as a part of an Objective Structured Clinical Examination. The use of simulated patients in both undergraduate and postgraduate assessments of clinical skills, as well as in diverse areas of medical education, has since become progressively widespread (Clay et al., 2000). Continuing medical education programmes for primary care physicians aimed at improving their skills in communicating with adolescents, using simulation methodology with teenage actors have been reported by Hardoff and Schonmann (2001). Since the introduction of the first standardized patient in medical education by Dr. Howard Barrows in

1963, simulated patients are extensively used in medical and nursing education to allow students to practice and improve their clinical and conversational skills for an actual patient encounter (Suzanne et al., 2005; Gaba et al., 2006). Training programs to improve physicians' communication skills with adolescents have been developed at the Israel Center for Medical Simulation (MSR) (Hardoff et. al., 2008).

### **Justification/rationale of this study**

In Malaysia, there is limited research showing the effectiveness of simulated patients in adolescent medicine teaching in any educational modality including knowledge, application, retention or performance. We seek to fill this gap through documenting our experiences in using simulated patient in the adolescent medicine program. The Faculty of Medicine and Defence Health (FMDH), National Defence University Malaysia (NDUM) had taken upon, the challenge in introducing the use of the adolescent simulated patient in the undergraduate adolescent medicine curriculum for the third year medical students. Using adolescents as simulated patients is relatively new in NDUM and we have conducted a cross-sectional study.

### **Objective**

The objective of this study is to evaluate the role and effectiveness of adolescent aged simulated patient as a teaching tool, in the adolescent medicine module at National Defence University of Malaysia (NDUM).

### **Methodology**

#### **Study design**

This was a cross-sectional study conducted at the Faculty of Medicine and Defence Health, National Defence University of Malaysia in Hospital Angkatan Tentera Tuanku Mizam Kuala Lumpur from September 2013 to May 2014. In this study, the focus was on the use of adolescent simulated patients for teaching purposes in undergraduate adolescent medicine curriculum. It had addressed the following research questions:

1. What are the implications of using simulated patients in the undergraduate adolescent medicine curriculum?
2. How can the strengths of simulated patient in the teaching of communication skills be applied in the undergraduate adolescent medicine education?

The answers to these questions were explored in the setting of the adolescent medicine curriculum at the NU DM. We evaluated the views of teachers, students and adolescent aged simulated patients with regard to the adolescent simulated patient program in our undergraduate adolescent medicine curriculum for the 2013/2014 academic session.

## Study population

Medical students completing an eight-week rotation in Paediatric and Adolescent Medicine clinical clerkship during 2013/2014 academic sessions in year 3 of a five-year undergraduate medical program based in NDUM were eligible to participate in the study. All 44 third year medical students were recruited as the universal sample size for the study and divided into 4 groups (Group 1: n=11, Group 2: n=12, Group 3: n=10 and Group 4: n = 11).

A total of 6 simulated patients (16 to 19 years old) were recruited to portray roles of adolescents with various psychosocial issues for two times per posting for four postings, during the initial academic year. Informed consent was obtained from the recruited simulated patients and their parents. In the initial meeting with all 6 adolescent simulated patients, we explained the objectives of the simulated encounters and introduced the simulated case scenarios (structured by the faculty) and “coached” them on the specific case scenarios. The simulated patients were children of the staff at NDUM campus and their friends.

## Instruments

During the period of study three sets of questionnaires were used:

- (a) Questionnaire 1 - the students were given a 6-item questionnaire to provide feedback on the simulated patient performance and the benefits from their experience;
- (b) Questionnaire 2 – the simulated patients were given a 15-item questionnaire to provide feedback on the student’s communication skills. A 4-point Likert’s scale (1 = complete disagreement; 2 = somewhat disagree; 3 = somewhat agree; 4 = complete agreement) was used to measure the students and simulated patient responses.
- (c) Questionnaire 3- the teachers involved in the program was given a 10-item questionnaire to provide feedback on the students’ and simulated patients’ performances.

The questionnaires were pretested to ensure face validity.

## Implementation of study

Six adolescents, aged 16 to 19 years were recruited to participate in the simulated adolescent health clinic at FMDH NUDM. Each of the adolescents (simulated patient) with some experiences at the local Drama group, were “coached” by the Faculty lecturers, to enact a total of eleven-twelve realistic adolescent case scenarios during each of the two weeks Adolescent Medicine Module posting. Each encounter with the respective simulated patient involved a pair of students. Each of the students had two encounters, (One as interviewer, who is engaged in interview technique using HEEDSSSSSSS psychosocial assessment and other as observer).

Students (in the interviewer role) rated the abilities of the adolescent simulated patient playing a specific role on a validated questionnaire. Therefore, each of the six simulated patients had two encounters per posting for four times in the initial academic year. At the end of each encounter, the adolescent simulated patient's evaluation of the student's communication skills was collected using a structured questionnaire using a 4-point Likert's scale. Although only a small number of adolescent simulated patients were involved, their comments proved to be insightful, personal and sensitive to the needs of the adolescent. The encounters were video-taped and shown for review and feedback, to all the (11, 12-10-11) students, respectively, in each of the respective group rotations.

### Outcome measure

Outcome measures consisted of self-rated knowledge, clinical confidence, communication skills, and effectiveness of simulated clinical teaching.

### Data analyses

Means and standard deviations of variables were calculated. Univariate analysis of variance (ANOVA) models were used to determine significant. SPSS (version 19.0) statistical programs were used to undertake analyses.

### Results

#### Feedback from the students on the simulated patients' performance:

All 44 (100%) year 3 medical students took part in the adolescent medicine module that offered teaching using adolescent simulated patients over the duration of the study period. There were 23 (52.3%) male students and 21 (47.7%) female students. Their age ranges from 21-22 years with the mean age of  $21.4 \pm 0.2$  years (Table 1)

**Table 1:** Student profile

| Student group | N (sample size) | Mean Age (years) | Gender |        |
|---------------|-----------------|------------------|--------|--------|
|               |                 |                  | Male   | Female |
| Group 1       | 11              | 21.3 $\pm$ 0.2   | 5      | 6      |
| Group 2       | 12              | 21.4 $\pm$ 0.3   | 7      | 5      |
| Group 3       | 10              | 21.5 $\pm$ 0.1   | 5      | 5      |
| Group 4       | 11              | 21.3 $\pm$ 0.2   | 6      | 5      |

All students (n=44) completed the structured questionnaire and gave their feedback on the adolescent simulated patients at the end of the simulated adolescent health clinics (Table 2).

A majority (n= 42, 95.4%) of third-year students reported that the role played by the simulated patients had considerably increased their sensitivity to the needs of adolescent patients, and to a lesser degree, assisted their knowledge and enhanced their skills for dealing with adolescents. Students rated highly (97.2%) the involvement, relevance and understanding and the opportunity to work with adolescent simulated patients.

**Table 2:** Response from the students regarding the role of the simulated patient.

| Items   | N  | Mean | SD  |
|---|----|------|-----|
| 1. Can clearly convey exactly what he/she is experiencing like a real patient.                              | 44 | 3.6  | 0.7 |
| 2. Can provide relevant information so that the student would be able to identify the health issue at hand. | 44 | 3.5  | 0.5 |
| 3. Can portray the key features present in that particular health issue.                                    | 44 | 3.6  | 0.7 |
| 4. Had included some bodily cues so that the student could easily pick up.                                  | 44 | 3.7  | 0.6 |
| 5. Had acted just like an adolescent with particular health issue.  | 44 | 3.7  | 0.6 |
| 6. The simulated patient is able to portray and communicate effectively to the students (doctor to be).     | 44 | 3.4  | 0.5 |

In Table 3, all medical students reported that the simulated patients helped them in: (a) communicating with adolescent (p=0.006), and (b) understanding the different psychosocial issues that adolescents may encounter during their transitional period into adulthood (p=0.048).

**Table 3:** Response of medical students: Effectiveness of simulated patient in clinical teaching

| Item   | Grp 1<br>(N=11) |     | Grp 2<br>(N=12) |     | Grp 3<br>(N=10) |     | Grp 4<br>(N=11) |     | p<br>value |
|--|-----------------|-----|-----------------|-----|-----------------|-----|-----------------|-----|------------|
|  | x               | sd  | x               | sd  | x               | sd  | x               | sd  |            |
| 1. Help me in my communicating skill                                       | 3.7             | 0.4 | 3.0             | 0.5 | 3.5             | 0.5 | 3.2             | 0.5 | 0.006*     |
| 2. Help me in understanding the psychosocial issue faced by the adolescent | 3.7             | 0.6 | 3.3             | 0.5 | 3.5             | 0.5 | 3.1             | 0.4 | 0.048*     |

(x=mean, sd=standard deviation)

(\*p significant (<0.05))

Forty-four students gave overall rating the adolescent simulated patients' general performance 7.7 out of 10 point scale. Comparing the feedback between the four groups of students on the role played by the adolescent simulated patient was found to be significant,  $p=0.050$  ( $F=3.306$ ) (Table 4).

**Table 4:** Performance of simulated patient according to student groups (One-way ANOVA)

| Item  | Grp 1<br>(N=11) |     | Grp 2<br>(N=12) |     | Grp 3<br>(N=10) |     | Grp 4<br>(N=11) |     | p<br>value    |
|---|-----------------|-----|-----------------|-----|-----------------|-----|-----------------|-----|---------------|
|   | x               | sd  | x               | sd  | x               | sd  | x               | sd  |               |
| Very good roles and very authentic role playing | 3.7             | 0.6 | 3.3             | 0.6 | 3.5             | 0.5 | 3.1             | 0.5 | <b>0.050*</b> |

(x=mean, sd=standard deviation)

\*p significant (<0.05)

### Feedback from the simulated patients

Six simulated patients (2 male and 4 female), aged between 16 to 19 years, were selected to participate in the adolescent medicine teaching sessions from 1.9.2013 to 30.5.2014. All the simulated patients (n=6) were considered to have sufficient abilities to play consistent realistic roles, and to provide formative feedback to the students upon completion of the session.

The simulated patients were asked to respond anonymously to a number of close-ended questions on the student communication skills. Good communication can be described as "*authentic, non-judgmental, active listening for the essence in order to understand the patient (attitudes), and talking well (skills)*".

Table 5, show that the simulated patients reported that a significant proportion (n= 38; 86.3%) of the students demonstrated good communication skill and they are able to communicate effectively with the patient (simulated patient). The stimulated patients reported that all medical students (n=44; 100%) can clearly convey exactly what sort of information he/she is looking for during the interview session. All medical student (n=44; 100%) has shown good attitude in '*ensuring everything said will be kept confidential*'. It has been shown, that 93.1% of medical students has demonstrated good attitude and professionalism during the interview sessions.

### Feedback from the teachers

Table 6, shows the scores of the teachers about the quality of the role playing by the adolescent simulated patients were positive, for example: "*very good roles and very authentic role playing*", "*very natural in answering question*" and "*communicate effectively with student*". Marks for

the overall performance of the adolescent simulated patient were high, 8.1 on a 10-point scale (Table 7

**Table 5.** Simulated patient feedback on the student communication skills  
(1=complete disagreement; 2=somewhat disagree; 3=somewhat agree; 4=complete agreement)

|                             | Item   | 1<br>(N) | 2<br>(N) | 3<br>(N) | 4<br>(N) |
|-----------------------------|--|----------|----------|----------|----------|
| <b>Attitudes:</b>           |  |          |          |          |          |
| 1                           | Had reassured that everything said will be kept confidential.  | 0        | 0        | 34       | 10       |
| 2                           | Actively listening for the essence in order to understand the patients   | 0        | 0        | 24       | 20       |
| 3                           | Had acted like a doctor to be and was not judgemental or patronizing.  | 0        | 0        | 35       | 9        |
| 4                           | Had made the simulated patient feel important and respected.   | 0        | 3        | 30       | 11       |
| 5                           | Had shown empathy  | 0        | 0        | 21       | 23       |
| <b>Communication Skill:</b> |  |          |          |          |          |
| 1                           | Can clearly convey exactly what sort of information he/she is looking for  | 0        | 0        | 35       | 9        |
| 2                           | Had obtained the relevant information pertaining to health issue.  | 0        | 3        | 33       | 8        |
| 3                           | Has been able to recognize the body cues even when it is at variance with the spoken words given by me (simulated patient) | 0        | 7        | 32       | 5        |
| 4                           | The student is able to communicate effectively with the patient (simulated).   | 0        | 6        | 30       | 8        |

**Table 6.** Teacher evaluation on the performance of the adolescent simulated patients

| Items   | N | Mean | sd  |
|---|---|------|-----|
| 1. Simulated patient appears authentic  | 5 | 3.6  | 0.4 |
| 2. Simulated patient could be a real patient  | 5 | 3.4  | 0.5 |
| 3. Simulated patient is clearly role playing  | 5 | 3.6  | 0.4 |
| 4. Simulated patient stay in his/her role all the time  | 5 | 3.4  | 0.5 |
| 5. Simulated patient can provide relevant information so that the student would be able to identify the health issue at hand. | 5 | 3.4  | 0.5 |
| 6. Simulated patient can portray the key features present in that particular health issue.                                    | 5 | 3.2  | 0.6 |
| 7. Simulated patient has included some bodily cues so that the student could easily pick up.                                  | 5 | 3.0  | 0.4 |
| 8. Simulated patient answer question in natural manner  | 5 | 3.4  | 0.5 |
| 9. Simulated patient stimulate student to ask question  | 5 | 3.0  | 0.4 |
| 10. Simulated patient is able to portray and communicate effectively to the students  | 5 | 3.2  | 0.6 |

The teachers remarked that the adolescent simulated patient encounters addressed interesting aspects of communication, for example: “*dealing with peers professionally (less formally, yet remaining serious)*”, “*learning to deal with two people in a consultation (dividing attention)*”, “*defining personal barriers in a consultation (with a quarrelling couple)*” and “*asking questions about/discussing health issues*”.

The teachers’ and students’ overall rating score of the performance of simulated patients was 8.1 (SD = 0.5) and 7.3 (SD = 0.7), showing a significant authenticity of role play ( $p < 0.016$ ) when analyzed, using the unpaired  $t$  test (Table 7). These findings suggest simulated patient can be very authentic. Our study had shown that the simulated patients are a valuable complement to other teaching- learning methodology in teaching adolescent medicine.

**Table 7:** Teachers’ and students’ overall rating score of the performance of the simulated patient

| Item   | Teacher<br>N=5 |     | Students<br>N=44 |     | p value |
|--|----------------|-----|------------------|-----|---------|
|  | Mean           | SD  | Mean             | SD  |         |
| Overall rating of the simulated patient performance on a 10-point scale. | 8.1            | 0.5 | 7.3              | 0.7 | 0.016*  |

## Discussion

Since the introduction of simulated/standardized patients by Barrows in 1964, adults have extensively been used as simulated patient in medical education (Barrow, 1964). The use of adolescents as simulated patients is relatively new in medical education, especially in Adolescent Medicine program and has been scarcely reported. To fill in this gap, we evaluated the views of teachers, students and adolescent aged simulated patient with regard to the effectiveness of the adolescent simulated patient’s involvement, in our undergraduate Adolescent Medicine curriculum.

From the findings in this study several conclusions can be made:

- (1) The majority (95.4%) of the students felt that the adolescent aged simulated patient conveyed what he/she is experiencing like a real patient. Authentic adolescent responses toward the doctor to be (student) had been achieved by the simulated patients, who themselves are in their teenage years
- (2) It is interesting to note that all (100%) of the students felt that the simulated patient had provided the relevant information so that they

(student) would be able to identify the health issue at hand. This can be attributed to fact that the simulated patient had been “coached” by the faculty beforehand as well as the fact that the simulated patient are teenagers who themselves may be experiencing or are in “empathy” with those feelings and issues

- (3) A significant proportion (95.4%) of the students felt that the simulated patient can portray the key features present in that particular health issue. This may in part be due to the fact that, the simulated patients belong to the local Drama group which was also complemented by the “coaching” received from the faculty beforehand.
- (4) A higher proportion (84.1%) of the students was able to pick up the body cues that the simulated patient had added into the encounter (Table 5). This had provided authenticity to the simulated patient’s performance.
- (5) All student (n=44, 100%) are in an agreement that the simulated patient had acted just like an adolescent with that particular health issue (Table 2). This is not surprising since the simulated patient themselves are adolescents and they had been “coached” beforehand.
- (6) The feedback from the students reported that 100% of the students had given the final conclusion that the simulated patient is able to portray and communicate effectively to the students (doctor to be).

Thus it can be said that simulated patients may be used as a teaching tool, as in this study in the teaching of Adolescent Medicine. However, the differential value of real patients as opposed to SP has been recognized as an important research area.

From the study (Table 5), it is interesting to note that the simulated patients reported that a significant proportion (86.3%) of the students demonstrated good communication skill and they are able to communicate effectively with the patient (simulated patient). Good communication can be described as *“authentic, non-judgmental, active listening for the essence in order to understand the patient (attitudes), and talking well (skills).* From the feedback of the simulated patients all medical students (100%) can clearly convey exactly what sort of information he/she is looking for during the interview session. It has been shown in this study, that 93.1% of medical students has demonstrated good attitude, communication skills and professionalism during the interview sessions.

From the teacher point of views, it has been shown that the overall performance of the adolescent simulated patient was high, 8.1 on 10-point scales. The role played by the adolescent simulated patients were positive, for example: *“very good roles and very authentic role playing”, “very natural in answering question”* and *“communicate effectively with student”*.

With regard to authenticity, both the teachers and students agreed that the simulated patient showed a significant authenticity of role play ( $p < 0.016$ ) (Table 7). These findings suggest simulated patient can be very authentic. Our study has shown that the simulated patients are a valuable complement to other teaching learning methodology in teaching adolescent medicine.

### **Outcome measure**

**Self-rated knowledge-** Students had clearly stated that the simulated patients had helped them in their understanding of the core and selected psychosocial issues faced by adolescents (Table 3).

- a) **Communication skills-** Students had stated that the simulated patients had helped them in their interviewing techniques ie communication skills (Table 3).
- b) **Clinical confidence-** The simulated patients had stated that the student (s) had been able to communicate well in order to elicit the psychosocial issue(s) in hand when they had portrayed the structured case scenario (Table 5)
- c) **Effectiveness of simulated teaching-** The simulated patient is able to portray and communicate effectively to the students (doctor to be) (Table 4)

From our study, we concluded that the **implications of using simulated patients** include the following:

- 1) By participating in simulated patient encounters, students gradually become more comfortable in the role of clinician in a controlled educational environment, with help from the faculty they know well, rather than the teacher they just met.
- 2) The primary goal in Adolescent Medicine Module is to teach to the students the interviewing techniques using HEADSSSSSS acronym. Variable clinical experience, ambiguous evaluation criteria and inconsistent methods of instruction, can undermine this goal. Simulated patients, coached to consistently portray a wide variety psychosocial issues, can help overcome many of these educational problems.
- 3) All medical educators are familiar with the difficulty most students encounter applying information learned through didactic instruction into practical skills and clinical decision-making. The ability of students to elicit a thorough history, develop appropriate treatment plans, and communicate effectively is often more difficult to teach, and therefore more difficult to evaluate, than memorization of disease presentations, treatment protocols, and clinical complications. Unfortunately, when students have problems assimilating information into clinical settings, they are frequently not detected until later in the

clinical training, leaving limited opportunities for remediation and/or additional instruction. Using simulated patient encounters during the period of Adolescent Medicine posting, can identify weaknesses that may otherwise go unrecognized during the students' clinical rotations and this support the finding by Calhoun and Bridget (2004).

Finally, lessons learned from the study are summarised in Box 1.

**Box 1: Lessons learned from the study**

1. The simulated patient is able to portray and communicate effectively to the students (doctor to be).
2. The simulated patient had helped the student(s) in their interviewing techniques using the HEADSSSSS acronym
3. The simulated patient had helped the student(s) in their understanding of the core & selected psychosocial issue(s) faced by the adolescent from the structured case scenario portrayal.
4. The feedbacks from the students on the simulated patients had highlighted the valued learning experiences in communication skills
5. The feedbacks from the simulated patients on the student's interviewing techniques and communication skills had highlighted that the students had been able to pick up the issue(s) at hand, portrayed by the patients and they had assured confidentiality just like in a real patient-doctor relationship

In summary, this study supports the view that the use of adolescent aged simulated patients in our Adolescent Medicine program is of value, from the point of view of teachers, students as well as adolescent aged simulated patient. Important lessons were learned during the period of the study. The major lessons learned are summarized in Box 1. Although further research on evaluation of adolescent aged simulated patient program is important, we believe that the use of adolescent aged simulated patients in the Adolescent Medicine program hadproved to make a valuable contribution in the undergraduate medical curriculum.

## **Conclusion**

Our results indicate that the use of simulated patients in the adolescent medicine program resulted in students feeling more confident about their communication and history-taking abilities. Teachers, students and adolescent simulated patients have highly valued the adolescent aged simulated patient program in teaching of adolescent medicine at National Defence University of Malaysia. The study supported and concluded that simulated patients had complemented students' learning.

In adolescent medicine, it seems highly probable that the use of simulated patients will continue to increase both for teaching and for

assessments. Furthermore, it seems highly probable that the use of simulated patients has numerous advantages as opposed to real patients and this needs further study. It is to be hoped that research into medical education will receive the attention it merits and will be facilitated by the use of simulated patients.

We hope our experiences may be valuable for faculty entering this field and for those already established, to promote reflection on their programs and to plan future activities. We believe our own perception in using simulated patients in the adolescent medicine program has improved, as a consequence of discussing the experiences in the process of preparing this paper. A concluding message is the need for continued efforts in establishing an evidence-based simulated patient methodology in Adolescent Medicine modules.

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# **EFFECT OF COOPERATIVE INSTRUCTIONAL STRATEGY ON INTEREST, AND ACHIEVEMENT IN BIOLOGY AMONG LOW –ACHIEVING SENIOR SECONDARY SCHOOL STUDENTS IN NIGER STATE, NIGERIA**

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## **Abstract**

This study employs a quasi-experiment, non equivalent control group, pretest-posttest design in investigating the effect of Cooperative Instructional Strategy on Interest and Achievement in Biology among Low-achieving Senior Secondary School Students. The population of the study was all senior Secondary School Students in Bida Educational Zone, Niger State, Nigeria. Two research questions and two null hypotheses guided this study. The sample was 44 students drawn from four schools purposively sampled, from 40 schools in the Educational Zone. An Instrument Tagged Biology Interest Inventory (BII) and Biology Achievement Test (BAT) were developed and used for the study. Data was analyzed using means and analysis of covariance (ANCOVA). Findings indicate that Cooperative Instructional Strategy (CIS) significantly affects student interest and achievement in Biology. Recommendation among which include, The use of Cooperative Instructional Strategy (CIS) of teaching should be encouraged and practiced among students in senior secondary schools especially those whose performance is below average or those regarded as low-achieving students.

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**Keywords:** Cooperative Instructional Strategy, Interest, Achievement, Biology, Low-Achieving Student

## **Introduction**

To Achieve Learners' Active Participation in Science Education (Rennie, Feher, Dieking & Falk; 2003) and Savery & Duffy; 2003)

maintained that science teacher needs to teach students how to learn and not just to give them what to be learnt. This approach according to the researchers will help students utilize knowledge of science in different situations and provide them opportunities to actively participate in the teaching/learning situation. This is the constructivist view of learning (Brooks & Brooks, 1999; Rochelle, 1992; Glasserfeld, 1987) who views learning as a process in which the learner constructs knowledge from pre-existing ideas. The implication is that when a learner reconciles the new information with his previous ideas and experiences, he can change what he believes, or disregard the new information as irrelevant. In either case, he is an active creator of his own knowledge. Helping students to construct their own knowledge Brooks and Brooks, (1999) urged that it is a great challenge to the Biology teacher owing to the unfavourable classroom environment in our schools.

To address these challenges, the teacher's role needs to shift from that of the 'dispenser' of knowledge to the 'facilitator' of learning. This is evident in the huge amount of funds being invested by both governments, private, and voluntary organizations in the establishment and equipping of science schools in Nigeria for learning (Wasagu, 2006; Okebukola, 2005). Despite efforts being made to improve teaching and learning of Biology, high records of poor achievement of students in Biology is on the increase (Ali, 1998; Adeyegbe, 1998; WAEC, 2010), resulting to low-achievement in school Biology.

The low-achieving Biology students therefore, need special intervention if they must record success in dealing with Biology problems. Low Biology achievers are those students whose achievements are consistently very low and who, in spite of efforts to cope, may be quite slow, confused and lack confidence in themselves (Okebukola, 2005). They are those whose achievements are consistently below average, and who may have numerous aversions associated with solving arithmetic and other related problems, (Montague, 1998). Such problems could be attributed to a number of environmental factors such as peer group influence; weak relationship with teachers, poor mastering skills of the teacher's incompetence, competent on the part of the students themselves, cultural and other school related factors (Umaru, 2010).

Research studies by Eniayeju (1990) and Odoh (2000) have shown that low academic achievement in Biology is due to poor understanding of the basic concept, lack of teaching aids and textbooks that reflect the students' environmental needs, low level and low quality of cognitive interactions with teachers, and language problems. All these compel students to memorize and regurgitate facts and principles (Okebukola, 2005). Several researchers (Woods, 2007; Gou, Abram and U'Appolonia 2003; Nwosu,

2003) have therefore suggested that use of alternative contemporary teaching strategies, which reflect the constructivist approach to learning, may help to facilitate the teaching and learning of the subject, may lead to success, and increase students interest in the subjects.

Elliot, Kratochwill, Littlefield and Travers (2000) defined the term interest, as an enduring characteristic expressed by a relationship between a person and a particular activity or object. Ngwoke (2005) explained interest, as something with which one identifies one's personal well-being. In this sense interest is a source of motivation. Ryan and Deci (2000) argued that since intrinsically motivated behaviour is a behaviour an individual undertakes out of interest, then clarifying the importance of interest would add to educator's understanding of the impact of intrinsic motivation in learning.

According to Ngwoke as cited in Umaru (2010), interest drives people to do what they are free to choose. When people see that something will benefit them, they become interested in it. Every interest satisfies a need. In activities like identification, Drawing, Labeling, Syntheses, understanding and learning concept in Biology, interest leads one to know and learn more from the task. Interest adds enjoyment and makes the performance of activity or task more economical in terms of demand on limited cognitive resources. The interest students show in an activity or in an area of knowledge predicts how much they will attend to it (Papalia, Old and Feldman, 2002). To the researchers, Interest, therefore means an enduring trait expressed by a relationship between a person and a given task. Interest is the factor that makes a students' to pay attention to attributes and paying attention makes learning faster and better.

The researchers' experiences with adolescents in secondary schools indicate that most of them adopt role memorization and repetition strategies. These strategies have been observed not to be effective in learning, especially, when complex tasks are involved (Wood, Willoughby and Motz, 1998). This weakness of stated strategies creates the need to expose students to a more effective strategy such as cooperative instructional strategy the low-achieving Biology students therefore, need special intervention if they must record success in dealing with Biology problems.

Cooperative Instructional Strategy has been found, though not in Nigeria, to be effective tools for learning a variety of learning tasks, and if effectively used, can enhance achievement in such a tasks (Baron, 2004). Effective in increasing academic achievement in all ability levels, gender and ethnic groups (O'Donnell, 2002) and Barron, 2004), Cooperative learning is also said to be effective in promoting higher thinking skills, problem solving abilities and greater meta-cognitive awareness and Interest in an academic endeavour (Woolfolk, 2004). Cooperative instructional

strategy (CIS) is a strategy in which students are involved throughout the class time in activities that help them construct the understanding of the materials in a variety presented to them. According to Timberlake (2002), cooperative instructional strategy provides students the opportunity to engage in active interaction such as cognitive conflict, social construction and meta-cognitive in the learning process. In this learning situation, the teacher no longer delivers a vast amount of information but uses a variety of hands-on activities to promote learning with students working in groups.

The benefits of cooperative learning are not restricted to increases in academic achievement; increases in self efficacy, intrinsic motivation, decision making skills, empathy, tolerance for differences, feelings of acceptance, and even school attendance have also been reported (Odoh, 2013). Hence this strategy of instruction has been suggested as an important means of enhancing learners' interest and self-efficacy (Schunk, 1985). This is because when learning skills have been acquired through instructions, learners become more focused and approachable, and learn in a systematic manner. The acquisition of skills necessary for tackling learning problems is also believed to raise learners' interest self-efficacy and belief for task accomplishment (Umaru, 2010).

Interest and Academic achievement which are psychological constructs would be influence if learners are exposed to instructions with cooperative learning strategies.

### **Empirical Review**

Peklaf (2003) investigated the effect of Cooperative learning on achievement in Mathematics and Native Language and related students' achievement in cooperative learning to the gender, abilities and cognitive styles. 370 (170 in experimental and 200 in the control group) 5<sup>th</sup> grades students from 9 different primary schools participated and were introduced into one quarter of the hour dedicated to Mathematics and Sloveno Language during the school year. Control group were exposed to the traditional way of teaching in both courses. From the results derived analyzed with ANOVA, positive effects of cooperative learning were found in both courses. The results in cooperative learning group were further analyzed according to students' gender abilities and cognitive styles. No significant interactions between students' achievement and their gender or abilities were found, but statistically significant interactions between students' cognitive styles and achievement were found in both courses, field dependent students benefited most from cooperative learning.

Garduno (2001) investigated gender differences in cooperative problem solving Mathematics; she found no statistically significant differences in achievement or self-efficacy in 7<sup>th</sup> and 8<sup>th</sup> grade students in

Mathematics in single or mixed-gender group. However, females from mixed-gender groups reported better attitudes towards Mathematics than females from single-gender group at the end of the study. Also females from mixed-gender groups also reported better attitudes towards Mathematics than males from mixed-gender groups.

Simsek, Yilar and Kucuk (2013) investigated the effect of cooperative learning methods on student academic achievement in social psychology lessons. Their research included 107 first grade students from two classes. Each class was selected to test one teaching method. The first class was selected as the non-group investigation group (n=52), the second was selected as the reading writing and presenting group (n=55). Results from data collected through the academic achievement test. Show that the reading writing presenting method (cooperative method) has a more positive effect on increasing students' academic knowledge and achievement in social psychology lesson than the non-group investigation method.

Ajaja & Eravwoke (2010) investigated the Effects of Cooperative Learning Strategy on Junior Secondary School Students Achievement in Integrated Science. Five research questions and hypotheses were formulated to guide their study. The design of their study was a 2\*2 factorial, pretest – posttest control group design. Variables investigated included the two instructional groups (cooperative and traditional classroom groups), sex (male and female), ability (high and low), and repeated testing (pretest and posttest). The population of the study was made up of 120 JSIII students. The instruments used for the collection of data included a Scholastic Ability Test in Integrated Science (SATIS), Students Aptitude Scale (SAS) and Integrated Science Achievement Test (ISAT). Their major finding from the use analysis of Covariance (ANCOVA) revealed a significant higher achievement test scores of students in cooperative learning group than those in traditional classroom; a significant higher attitude scores of student in cooperative learning group than those in traditional classroom; significant higher achievement test scores of all students of varying abilities in cooperative learning group than those in traditional classroom, a non-significant differences in achievement test scores between male and female students in the cooperative learning groups, and non-significant interaction effect between sex, ability , sex and method, between ability and method, and among method, sex and ability on achievement.

### **Objectives of the Study**

The following objectives were formulated to guide this study;

1. To determine the difference in the mean scores on interest in Biology of those exposed to cooperative instructional strategy and those in the control group

2. To determine the difference in the mean scores on achievement in Biology of those exposed to cooperative instructional strategy and those in the control groups

### **Research questions**

- 1 What is the difference in the mean scores on interest in Biology of those exposed to cooperative instructional strategy and those in the control group?
- 2 What is the difference in the mean scores on achievement in Biology of those exposed to cooperative instructional strategy and those in the control groups?

### **Hypotheses**

**Ho1:** Cooperative Instructional Strategy has no significant effect on student interest in Biology as measured by their mean score on BII.

**Ho2:** Cooperative Instructional Strategy has no significant effect on students Achievement in Biology as measured by their mean score on (BAT)

### **Methodology**

This study employs a quasi-experimental, non equivalent control group, pretest – posttest design. The population of the study was all Secondary School Students in Bida Educational Zone, Niger State, Nigeria. The sample was 44 students drawn from four schools purposively sampled from 40 schools in the Educational Zone. Each of the two schools was randomly assigned to experimental and control group. In each of the two schools, one intact stream of SSII and SSIII classes were randomly selected for the study.

The instrument used for the study was 15 essay questions tagged Biology Achievement Test (BAT) and Biology Interest Inventory (BII) with 10 items developed by the researchers, after extensive Literature review. The internal consistency estimate obtained for BAT and BII using Cronbach alpha was 0.85 and 0.78 respectively. The coefficient of stability obtained using Pearson Product Moment Correlation was 0.78 and 0.79 respectively.

### **Treatment Procedure**

Before the commencement of the training, the researchers familiarize themselves with the subjects (respondents) to ascertain whether respondents experience low achievement in Biology in school. Those whose record of achievement ranges between 30-49% in first term examination were picked and tagged the low-achievement. This was believed to have helped the researcher in determining how best to motivate the subject to acquire the new techniques.

Immediately after assigning the subject to treatment and control groups, the pretest was administered to them. Instructions on Cooperative Instructional Strategies (CIS) were taught to those in treatment groups. All these were done through the following processes: positive inter-dependence, individual accountability, interpersonal skills, face to face interaction and processing out (that is, feedback mechanisms and conclusions also were used through out the session (adapted from Johnson & Johnson 1994).

The trained research assistants who are Biology teachers were used. Each one handled the treatment and the control group. This help to minimize the teacher effect. The study lasted for eight weeks through which scores were gathered for pretest and post-test, the experimental groups were expose to cooperative instructional strategy while the control groups, were only been exposed to conventional teaching method.

The data collated, were organized, and analyzed using mean and standard deviation and analysis of covariance(ANCOVA) was used to test the hypothesis at 0.05 level of significant.

## Result

Table 1: Pre – Test and Post Test Mean Score and Standard Deviation of interest in Biology (BII).

| <b>Biology Interest Inventory (BII)</b> | <b>Pre-Test</b> | <b>Post- Test</b> | <b>Mean gain score</b> |
|---|-----------------|-------------------|------------------------|
| Treatment Mean                          | 6.33            | 18.83             | 11.8                   |
| N                                       | 24              | 24                |                        |
| Std. Deviation                          | 2.22            | 1.34              |                        |
| Control Mean                            | 6.20            | 8.50              | 2.3                    |
| N                                       | 24              | 24                |                        |
| Std. Deviation                          | 2.20            | 1.08              |                        |

Data presented in table (1) above indicate the pretest and posttest mean Interest score of the students in the treatment and control groups. The Low-Achieving Biology student taught using instruction in cooperative strategy had a pre-test score of 6.33 with a standard deviation of 2.2 and a post-test score of 18.83 with a standard deviation of 1.34, the pre-test – post-test mean score gain was 11.8. The control group had a pre-test score of 6.20 with a standard deviation of 2.20 and a post-test mean score of 8.50 with a standard deviation of 1.08, the pre-test – post-test control group gain score is 2.3. Result showed that those exposed to instructions in cooperative strategy out weight those in control group and developed more interest in Biology due to the use of cooperative strategy.

Table 2:Pre – Test and Post Test Mean Score and Standard Deviation of Biology Achievement (BAT).

| Achievement in Biology (BAT) | Pre-Test | Post- Test | Mean gain score |
|------------------------------|----------|------------|-----------------|
| Treatment Mean               | 6.50     | 18.83      | 12.33           |
| N                            | 12       | 12         |                 |
| Std. Deviation               | 2.21     | 1.47       |                 |
| Control Mean                 | 6.20     | 8.50       | 2.4             |
| N                            | 12       | 10         |                 |
| Std. Deviation               | 2.20     | 1.14       |                 |

Data presented in table (2) above reveal the pretest and posttest mean achievement score of the students in the treatment and control groups and pre-test – post-test mean gain score of the group. The Low-Achieving Biology student taught using instructions in cooperative strategy had a pre-test score of 6.50 with a standard deviation of 2.21 and a post-test mean Biology Achievement score is 18.83 with a standard deviation of 1.47, the pre-test – post-test mean Achievement in Biology gain is 12.33. The student in control group had a pre-test score of 6.20 with a standard deviation of 2.20 with a posttest of 8.50 with a standard deviation of 1.14, the pre-test – post-test mean gain score is 2.4. The differences in mean gain scores for the two groups, which favoured the treatment groups, indicated that the Low-Achieving Biology Students benefited from the use of instructions in cooperative strategy.

### Hypothesis 1:

**Table 3:** Summary of 2 ways Analysis of Covariance (ANCOVA) on Interest in Biology as measured in BII.

| Source              | Type Sum of Square   | df | Mean Square | F       | Sig. |
|---------------------|----------------------|----|-------------|---------|------|
| Corrected Model     | 583.759 <sup>a</sup> | 4  |             |         |      |
| Intercept           | 37.888               | 1  |             |         |      |
| Interest in biology | 1.235                | 1  | 145.940     | 86.051  | .000 |
| Sex                 | .068                 | 1  | 37.888      | 22.340  | .000 |
| Group               | 289.918              | 1  | 1.235       | .728    | .405 |
| Sex* group          | .028                 | 1  | .068        | .040    | .844 |
| Error               | 28.831               | 17 | 289.918     | 170.945 | .000 |
| Total               | 5009.000             | 22 | 1.696       | .017    | .889 |
| Corrected Total     | 612.591              | 21 |             |         |      |

a. R Squared = .953 (Adjusted R Squared = .942)

Data presented in Table 3 shows that treatment as main factor had a significant effect on interest in Biology. This was because the F-value of 170.945 in respect of the treatment group as main effect was shown to be significant at 0.005 levels. This therefore, implied that training in cooperative instructional strategy improved student interest in Biology

significantly. The adjusted R squared of 94 further suggested that 94% of the total variance on the dependent measure was contributed by treatment using instructions in cooperative strategy. These evidences showed that instruction in cooperative strategy was effective in enhancing student's interest in Biology

**Table 4:** Summary of 2 ways Analysis of Covariance (ANCOVA) on Achievement in Biology as measured by BAT

| Source          | TypeSumofSquare      | df | Mean Square | F        | Sig  |
|-----------------|----------------------|----|-------------|----------|------|
| Corrected Model | 583.524 <sup>a</sup> | 3  |             |          |      |
| Intercept       | 4075.152             | 1  | 194.175     | 116.247  | .000 |
| Sex             | .055                 | 1  | 4075.152    | 2439.669 | .000 |
| Group           | 582.424              | 1  | .055        | .033     | .459 |
| Sex* group      | .055                 | 1  | 582.424     | 348.680  | .000 |
| Error           | 30.067               | 18 | .055        | .033     | .859 |
| Total           | 5009.000             | 22 | 1.670       |          |      |
| Corrected Total | 612.591              | 21 |             |          |      |

a. R Squared = .951 (Adjusted R Squared = .943)

Data presented in Table 2 shows that treatment as main factor had a significant effect on Achievement in Biology. This was because the F-value of 348.680 in respect of the treatment group as main effect was shown to be significant at 0.005 levels. The result implied that training in co-operative instructional strategy improved student Achievement in Biology significantly. The adjusted R squared of 94 further suggested that 94% of the total variance on the dependent measure was contributed by treatment using instruction in cooperative strategy. These evidences showed that instruction in cooperative strategy was effective in enhancing student Achievement in Biology.

## Discussion

The finding of this study indicated that those exposed to instructions in cooperative strategy had more interest in Biology and performed better than those not exposed to instruction in cooperative strategy. Thus, the interest students showed in an activity or area of knowledge predicts how much they would attend to it, and how well they process, comprehend and remembers it. Instruction in cooperative strategy could have been the reason for the higher interest in Biology as demonstrated by those in treatment condition. This finding agree with the finding of Odoh (2013) and Okebukola (2005) who maintained that Cooperative Instructional Strategies is an essential tools that boost students achievement in Chemistry. Similarly, the finding showed that instruction in cooperative strategy was effective in enhancing student interest in Biology. The finding is in line with the finding of Simsek, Yilar and Kucuk (2013) who investigated the effect of cooperative learning methods on student academic achievement in social psychology

lessons. The results obtained from the data show that the reading writing presenting method (cooperative method) has a more positive effect on increasing students' academic knowledge and achievement in social psychology lesson than the group investigation method (control group).

The differences in the meanscores gain for the two groups which favoured the treatment groups indicated that the Low-Achieving Biology Students benefited from the use of instructions using cooperative strategy. The finding is in line with the finding of Timberlake (2002), who maintained that cooperative instructional strategy provides students the opportunity to engage in active interaction such as cognitive conflict, social construction and meta-cognitive in the learning process.

The finding of this study showed that instruction in cooperative strategy was effective in enhancing student Achievement in Biology. This suggests that good learners engage in the process of assessing the quality of their work based on evidence and set criteria. They get involved in active self-appraisal and management of the thought. These are attributes of cooperative strategy. Also as students monitor their own learning they learn to check their own responses and become aware of errors or answers that do not fit. Instruction in co-operative strategy of positive inter-dependences, individual accountability, inter-personal skills, face to face interaction and feedback mechanism had helps the respondent's achievement in Biology. This finding is similar to the findings of Ajaja & Eravwoke (2010) who investigated the Effects of Cooperative Learning Strategy on Junior Secondary School Students Achievement in Integrated Science. Their major finding revealed a significant higher achievement test scores of students in cooperative learning group then those in traditional classroom. Thus, instruction in cooperative strategy could have permitted the low-achieving students to gain control of their learning activities and were therefore, able to learn, the processes in Biology achievement such as, labeling, drawing, identifying and so on were enhanced due to instructions in cooperative methods.

### **Recommendations**

1. The Cooperative Instructional Strategy (CIS) of teaching should be encouraged and practiced among students in senior secondary schools especially those whose performance is below average or those regarded as low-achieving students.
2. The pre-service teachers should be exposed to the new strategies so as to enhance effective teaching and learning in schools
3. Ministry of Education (Federal, State and Local Government areas) should as a matter of urgency, add to their curricular the use of CIS in

addressing the problems of low-achieving Biology students in senior secondary school in Nigeria and

4. They should frequently organize lectures, seminars for Biology and other science teachers in Nigeria on the need to use the new CIS.

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