European Journal of Educational Sciences (EJES)

2015 / December

Publisher:

European Scientific Institute, ESI

Reviewed by the ”European Journal of Educational Sciences” editorial board *2015*

December 2015 edition vol. 2, no. 4

ISSN 1857- 6036

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EJES, Team

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TECHNOLOGY PEDAGOGY AND CONTENT IN WEB-BASED LANGUAGE INSTRUCTION FOR SECONDARY VOCATIONAL STUDENTS

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Abstract

Students in vocational schools in Greece are less motivated and have low performance in courses demanding academic skills, like language learning with reading and writing tasks (e.g. essay writing). If they were asked, they would say that they prefer to do things rather than study or get involved in traditional classroom language activities. School cannot provide them with language materials and methodology adjusted to their needs. Language teaching and learning is an academic task-oriented subject and teachers find it extremely difficult to arise their students' interest. So, from this point of view there is a gap between need and supply. How to overcome this obstacle? Is it possible that an educational e-Learning environment applying a purpose specific e-pedagogy, will do this? An experimental teaching intervention took place in a Greek Secondary Vocational Lyceum (1st EPA.L -Epagelmatiko Lykeio of Lamia city, at 2012-13 school year) in the Greek language curriculum of 11th Grade students so as the researcher to answer the above question. In an activity based situated e-environment for agriculturists, engineers, electricians, car mechanics, students were asked to solve real life technical problems and practise their mother language skills by producing technical textual 'genres' that are likely to use as future professional craftsmen.

Keywords: Problem solving, vocational students, e-learning pedagogy, situated learning, content based language learning

Introduction

As mentioned above, the teacher-researcher decided to step to an e-learning class the content and pedagogical frame of which had to be designed

from scratch. Therefore, design and instructional maters, pedagogical strategies, effectiveness factors, students' learning needs had to be considered thoroughly if her alternative e-class meant to have a real added value in comparison to the conventional teaching and learning model.

Consistent introduction of E-learning into the learning process fosters the modern ICT introduction process and creates a good environment for the integration of learning content, learning technology, various learning process designs and professional competence (Grifoll, J., Huertas, Es., et al., 2010). E-learning referred to online learning or virtual learning has been defined as a wide set of applications and processes such as Web-based learning, computer-based learning, Virtual Classrooms (VCR) and digital collaboration (Shraim, K., & Khlaif, Z. 2010). These are teaching and learning environments where courses are not taught in a classroom face-to-face but delivered on the Internet (Cruthers, 2008). 'Distributed', 'web supported', 'web enhanced', 'web dependent', 'on line', 'distance', 'flexible' learning are also terms used to refer to e-learning, without, though, always exactly referring to the same thing. They actually may reflect different types of delivery or formal status. But, whether learning and teaching is exclusively conducted via on line classes or integrates elements from face-to-face teaching, virtual learning has great advantages, such as improving access to advanced educational experiences by allowing students and teachers to participate in remote learning communities. However, in order to benefit from these advantages, both learners and teachers will need to be able to adopt a new attitude towards e-learning models (Rozgiene et al., 2008). Therefore, investigating the readiness and attitude towards these models is important for their success. Designing e-learning or, as otherwise called, online (web-based) teaching environments, requires prior in-depth research and analysis, combining the understanding of both, the technical possibilities of the Internet and the ways in which the principles of instructional design maximizes the technical possibilities of the Internet (Khan, Badrul, Huda ,2005). E-learning "is a re-conceptualization of learning that makes use of not only instructor-led pedagogy but all the flexibility that asynchronous, multi-party contribution can bring" (Andrews R., 2011).

Literature Review

The research literature on e-learning has grown significantly and there is an interesting scientific dialogue on the effectiveness and success of electronic educational technologies. Though, much of this literature focuses specifically on tertiary education and not as much has been published in fully online and blended courses in primary and secondary schools (Picciano and Seaman, 2007). Because a more than desirable number of distance learning courses fail in their early editions, even the courses that have been running

for some time suffer the loss of a considerable percentage of students who decide not to complete their studies (Bustos-Contell, E., Labatut-Serer, G., et.al., 2013), a lot of documentation has been produced in the direction of e-learning systems quality and e-pedagogy. According to Jones and Peachey (2005), one of the main reasons for the failure of e-learning courses is that they adopt a merely virtual approach, without considering the human contact that students need in their learning process.

So, talking about e-learning efficiency in Higher Education, a plethora of small or wider scale research outcomes show us that we have to consider a range of 'critical success factors' (Salem M. Hassan, 2005, Masoumi, D., 2010) influencing the quality and effectiveness of e-learning settings: learner computer anxiety, instructor attitude toward e-Learning, e-Learning course flexibility, e-Learning course quality, perceived usefulness, perceived ease of use and diversity in assessments are the critical factors affecting learners' perceived satisfaction (Pei-Chen Suna, et.al., 2008). The quality of recourses needs to be framed within and guided by an understanding of the broader quality of learning activity. Subsequently, there is a set of factors: pedagogical, organizational, technical and factors contributed to learner, that must be specified (Masoumi, D., 2010). Other scholars (Roux Irene, Lazenby Karen, Lordaan Dolf, 2009) underpin the importance of giving the emphasis on the pedagogy of teaching on line (from research conducted in Pretoria University), others (Stansfield, M., Connoly Th., 2009) underline the importance of posing guiding principles for promoting best practices in virtual educational communities and others suggest the need of designing and implementing a strategic plan based on a triangle model of Technology, Organisation and Pedagogy (Sangra, Albert, Guardia, Lourdes, Fernades-Michels, Pedro, 2009).

The same concern over the efficiency of web distributed/e-learning is transferred to research papers relating to Secondary Education. Scholars from different countries, with developed or developing economies and thus varying technological experience from schools, come to similar conclusions: the secondary students of a state US school attending an e-history course (Wayne Journell, 2010) maintained a belief that e-learning was best used for information transmission and rote memorization rather than active or social learning, whereas the Palestinian school students attending the Alaws Educational Network (a platform that provided a variety of methods for a student-centred learning process including Virtual Classrooms (VCR), discussion forum and e-training courses) 'showed positive attitude towards the usefulness of e-learning methods but they were maybe not yet ready to adapt them' (Shraim, K., & Khlaif, Z., 2010). Although the research in the field of e-learning effectiveness in the secondary, K-12 stage education is limited and provide only limited insight into the complexities of the theme,

one thing that emerges is that the effectiveness of distance education appears to have more to do with who is teaching, who is learning, and how that learning is accomplished, and less to do with the medium. This question of students' support effectiveness is especially critical when considering the alternative nature of the educational experience and the proclivity for its attractiveness to at-risk student populations (Rice, Lynn Kerry, 2006).

The pedagogical framework represents an essential part of the e-learning system conceptualization and development and offers sound concepts for the development of learning scenarios in order to enhance the learning experience of students in secondary schools. According to the UNITE Europe-wide project1, this framework is composed of the pedagogical approaches, assessment techniques, teacher education and national specifics and current pedagogical practices implemented in national curricula. Often, on line pedagogical practices are restricted by school contexts, organizational structures and established mechanisms of control in schools, such as national curricula and assessment systems. The effective use of new technologies requires an organized pedagogical structure so that students can develop their own meaningful representations of knowledge using e-Learning. But in order teachers to adopt strategies facilitating learning, they can provide structured and focused classroom tasks (Granić, A., Mifsud, C., & Ćukušić, M., 2009). At this point we can only bring to mind the excellent work of Salmon's (2002) research which provides a solid foundation for relevant and purposeful online instructional activities ('e-tivities'2). The Five-Step Model offers an excellent paradigm for combining

[1] 'Within the context of a Europe-wide project **UNITE**, a number of European partners set out to design, implement and validate a pedagogical framework (PF) for e- and m-Learning in secondary schools. The process of formulating and testing the PF was an evolutionary one that reflected the experiences and skills of the various European partners and secondary schools involved in the project. The framework involved pedagogies which underpin the teaching of subject matter in a number of European secondary schools as well as the ways in which learning is delivered and assessed'. More information in the article: *Design, implementation and validation of a Europe-wide pedagogical framework for e-Learning - ResearchGate*. on:
http://www.researchgate.net/publication/223529298_Design_implementation_and_validation_of_a_Europe-wide_pedagogical_framework_for_e-Learning [accessed Jul 16, 2015].

2 **Characteristics of E-tivities** : It is important that online instructors have the appropriate educational resources to individualize their lesson plans and course materials for their classes. Salmon (2002) provides a host of educational resources (i.e. scenarios, ideas for reflective dialog and professional development activities) in E-tivities: The key to active online learning that can used by instructors in their classes. The e-tivities are designed to engage online students in meaningful work that captures their imagination and challenges them to grow. There are five vital features to e-tivities: 1. A small piece of information, stimulus or challenge (the 'spark'), 2. Online activity which includes individual participating posting a contribution, 3. An interactive or participative element-such as responding to the

theory and practice into the teaching and learning process by sharing meaningful activities in a learner-centered environment.

The study of international research in this field yielded interesting results, although I found that little research evaluating the effectiveness and successful outcomes for students using technology, especially in the vocational school sector, has been undertaken. The adoption by the trainee of a new learning style, in which a high degree of awareness of learning requirements and high metacognitive skills (that is the student / trainee knows how to learn and how to interact with educational material) appear to be essential part, is not an easy nor obvious case in web-based distance learning. And this is a basic reason why 'today online learning is primarily used in a blended learning environment in which the students learn through a combination of online learning system, hands-on activities and classroom teaching in the vocational college' (Cigdam, Harun, Yildirim, Osman Gazi, 2014).

However, wherever such E-learning policies in vocational school sector took place, the results were encouraging as far as the students efficiency and retention rates level is concerned. For instance, in the context of the Australian VETiS (VET in Schools) program, e-learning had a largely positive impact on the student's skill and confidence in technology and has prepared them very well for workplaces beyond school. E-Learning has also improved their method and medium of communication, helped in activities which focused on teamwork and assisted them to be organised. E-learning tools supported students in developing these employability skills and enhanced their work readiness for employment after Year 12 (Ryan, Katherine, 2014). Also, in another country, Taiwan, a Web-Enabled Problem-Based Learning and Self-Regulated (SRL) Learning was undertaken by teachers-researchers in order to enhance computing skills of Taiwan's Vocational Students. SRL was applied to help vocational students in Taiwan to concentrate on their learning, practice their schoolwork, and furthermore, take responsibility for their learning. According to the study, results were generally positive, showing enhanced student computing skills (Pei-Di Shen, Tsang-Hsiung Lee, Chia-Wen Tsai, 2007).

In relation to the Greek Secondary Vocational -Technical Education, the availability of online courses to produce an asynchronous distance teacher-student collaboration, is not a widespread regular schools strategy and there are not many innovative teaching interventions that attempt to introduce a more consistent and systematic adoption of E-learning education

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postings of others, 4. Summary, feedback or critique from an e-moderator (the 'plenary') 5. All the instructions to take part are available in one online message (the 'invitation') (based on the Book Review of 'E-tivities: The key to active online learning' by Brent Muirhead (on line: http://www.ifets.info/journals/5_4/muirhead_book_review.html)

in everyday teaching and student practices. Additionally, the majority of such small scale e-learning teaching projects are conducted by teachers of Informatics. However, the important thing is that at the end of such pilot educational programs the researchers come to similar conclusions. They underpin the need for the development of teaching electronic learning systems to enhance, update and enrich the technological courses taught in vocational secondary and postsecondary educational institutions in the country, so that students and professionals to amplify their knowledge and develop new skills and business activities (Siafis, Bissarion 2012).

Moving to an E-learning language instruction for Secondary Vocational Students

The problem to be treated

Students in vocational schools in Greece are less motivated. They come from educationally poor backgrounds and, thus, develop poor school progress. Among their low performance characteristics, as far as language competency is concerned, they have increased difficulty in reading comprehension and writing skills. They generally show a negative attitude towards general education courses, such as language learning and maths, in which they present very low scores compared with their General Education Lyceums peers. From my personal long experience as a vocational language teacher in Greek EPA.Ls and according to other colleagues-researchers' findings (Ploumidou, 2002, Rapti, Katsanou 2003, Papaleonida, P., Bechrakis, Th., 2007, Hatzisavvidis, S., 1993), vocational students find small or null interest in academic courses as they find them more difficult and poorly connected with real life or their work interests. 'Students show no special interest in general education classes, judging by the rating in the respective subjects, ...Here we can assume knowledge gaps or negative experiences. They appear to show higher interest in the specialty they have chosen. In some cases they even show exceptional performance' (Ploumidou, 2002). Generally speaking, vocational students prefer to do things and not to learn in the traditional course settings including face to face lecture, academic tasks and homework. They do not seek the optimum learning outcome, because they feel they do not need it in the 'outside' labor market. They do not have high educational goals after finishing school, as most are not interested in university departments, but they have immediate need or desire to work quickly. They want "to get a 'paper' (diploma or degree) so as to quickly get integrated into the labor market, or to 'see what they will do'" (Pangalos, 2005). "All I ask and will ask you too to be done is when I finish school to get a job because our parents cannot sustain us forever ..." (Ministry of Education & Religious Affairs, 2011). Students show more interest in acquiring technical skills and practical knowledge related to

specific professions and job sectors, rather than academic knowledge, knowledge that enhance thinking and logic. Often they devalue the teaching of language, history, mathematics and other general education courses, as they do not easily distinguish the connection to real life. Indeed, as shown by a recent survey (Ministry of Education & Religious Affairs, 2011), the basic specialty selection criteria are mainly related to students' interests and their employability after school, while 30% of students of secondary Vocational Education find it extremely difficult and 47% very difficult to attend theoretical courses.

Despite being native speakers of the Greek language, they do not have an excellent or very good command of the language. As far as their speech and writing ability more specifically, Greek vocational students show increased difficulty in presenting their ideas and arguments in written form successfully. As written texts obey to various composing contracts that differentiate them from the spoken word (as to spelling, vocabulary, syntax, meaning making, textual organization) and contracts related to the genre in which the produced text belongs, students attending EPA.L are unable to write with sufficient reasoning, documentation, analysis, description. They often do spelling mistakes, they give poor texts, with little information inside, often badly structured. Their written texts lack in size, have poor content, few arguments, texts are not complete with a beginning, middle and end (Papanastasiou, 2012, Rapti, Katsanou 2007).

Despite all this situation, Greek vocational lyceums have got language courseware taken from the General Lyceums, that is, vocational students are taught according to language curriculum for general and academic purposes. The school cannot provide them with language materials adjusted to their needs. Language teaching and learning is an academic task oriented subject and teachers find it extremely difficult to arise their students' interest. So, there is a gap between need and supply. The teacher, in order to fill this gap has to recreate her lessons and adjust them to her real students' expectations. So, the researcher thought that it would be more meaningful and appealing to the students if they were taught how to improve their mother language skills so as to communicate efficiently with future customers, to present business/technical information, explain problems, write and form attractive financial offers through internet, advertise their business, make accurate technical reports e.t.c. So, somehow the bet for the teacher was to transform academic language learning to a purposeful, subject specific language learning by utilizing technological potentials for constructing e-environments simulating job communities and work settings. Of course, that was not as easy, as the experimental group had no previous e-learning experience and they had not previously been taught

how to write technical genres: they were not familiar with technical writing and 'genres' pedagogy practices.

The students' profile

As an *Action Research* practitioner, I put my alternative teaching model into a test treatment. Any change in the experimental group's performance and attitude would be identified by comparing a pre-test and post-test qualitative data coming from the same group as well as from a second control group by following a true experimental research design. Special evaluation criteria were set for the test conducted throughout the 6-month period of the experiment and the results emerged from the final data comparison and assessment were quite interesting and encouraging. Before that, though, in order to better prepare and apply my language instructional program, I collected data concerning my students learning profile drawn from a variety of methodological tools, as a questionnaire, a diagnostic pre-test, by personal observation and by consulting my colleagues who had worked with the same students the previous school year. 'By doing so, the instructor will be able to offer the most appropriate courses to suit the students' needs and levels, and eventually achieve the best teaching and learning results' (Su, M. H. M. (2005). In short, my students:

- had not all the same level of digital literacy. Although in the previous year class (10th) they had attended Informatics course, very few had a strong technological capacity in terms of handling digital data and operating things in various software environments. Instead, all of them were familiarized with social media as they had a Facebook account and used social media to interact with other teenagers, to upload files and share digital material. Additionally, as most students of their age used mobiles and smartphones, played electronic games and knew how to surf in the entertaining web paths.

- 43% of the students from the control group and 50% from the experimental group worked alongside their schooling, 20% of the students from the control group and 23% from the experimental group had officially diagnosed learning disabilities and presented mild delinquency. 50% of the students from the control group and 59% from the experimental group had no personal access to the internet (via personal mobile, P.C, tablet).

- as all 11th grade EPA.L/Vocational students in Greece, they were separated to professional specialties (sectors). In my two groups there were car mechanics, electricians, agriculturists and engineers exercising the respective technical skills.

- the students of the experimental group showed worse performance in comparison to the control group. At the pre-test examination conducted in the school at the beginning of the project, the first group failed (scored under

the passing level) at 77%, whereas the second group failed at 67%. Additionally, 63% of the experiment group preferred not to answer the writing task of the test at all (the control group at 33%).

- in the process, the students of the experimental group quickly revealed their weakness to be self regulated: they had metacognitive difficulties, as they could not understand the written instructions, they asked for help or further explanations, they lacked knowledge of grammatical-syntactic terms (e.g what 2nd verb person is, how to turn from passive to active voice e.t.c.), they did not know to interact with the given resources and handle them in a critical, appropriate manner according to the problem's demands.

Adjusting e-pedagogy to Language Instruction: choosing the right pedagogy

An e-Learning system design based on selected pedagogical model enables teachers to make use of the learning resources in a form which is appropriate to the learning goals and the particular learning style of the student (Granić, et al 2009). Although research has shown a considerable number of positive outcomes of the use of ICT within the classroom setting, Hayes (2007) points out that the integration of ICT is highly dependent on the teachers who have to master these new tools and to reach their teaching objectives through their use.

Mother language competency is mainly important for these students in order to communicate in their work area, to understand texts related to technical issues (for example manuals usually written in formal Greek), to explain problems adequately and, generally, to keep a lifelong awareness and knowledge ability. Although the course content was *subject specific*, language use had a further value for the mother language improvement, as the main linguistic functions were activated in writing activities so as to produce narrative, argumentative, descriptive advisory texts. In this framework, suitability of words and syntax, accuracy, coherency, communicational effectiveness, critical thinking, topic analysis and solution's presentation were checked.

For the creation of a subject specific courseware the researcher needed the right input and strategy. Input refers to the spoken, written and visual data that learners work with in the course for the completion of a task. It relates to authenticity and in this context refers to the use of spoken and written material that has been produced for language teaching purposes (Reni, N. 2012). As for the strategy, the *problem solving* approach was chosen with regular technical problem supply by which a sequence of problems were posed to each vocational group to be solved.

The experience reported in the relative research field of Content Based Instruction and Problem Based Learning, although applied most in second language acquisition, was very encouraging especially when referring to vocational secondary education. Content Based Learning makes an assumption that learners learn best when they are given language in a meaningful, contextualized form, that is language is associated with useful information, so CBL is more motivating as the learner focuses on something else, such as ideas, opinions, issues and not on the language itself (Coelho, El. 2004). In relation to the English courses in vocational schools, Reni notices something important: The curriculum in a vocational high school gives the information about the teaching learning process that occur in vocational high school. The aim of vocational schools is providing the students for the work area. It should be more specific than senior high schools. For that reason, students of a vocational schools need English for Specific Purposes[3] to provide the next step for getting the job (Reni, N. 2012). ESP is best acquired through the subject matter basically due to learners' genuine interest in it. Subject matters can be introduced by English language teachers throughout English classes by employing vocational materials. All these stages employ learners' professional knowledge and prompt them to activate it in a foreign language (Kavaliauskienė, Galina 2004).

As it is clear, the above conclusions apply in curriculum areas concerning second language acquisition, whereas the present study focuses on the 'language for specific purpose' approach as a method for mother (Greek) language use improvement in vocational schools. So the researcher tried to educate her students to use Greek language purposefully in texts written for specific reason in a certain social/communicational framework. Students were provided with multimodal, supportive resources (charts, pictures, photos, videos, webpages, lists e.t.c) and critically chose the right elements to complete their e-activities. The Problem Based Learning approach was considered to be the crucial factor that motivated students to be engaged in the e- writing activities. The teacher-researcher tried to realize a transmission not just from a real classroom settings to an e-classroom environment, but to transform methodology as well, from language centered, academic classroom activities to Problem Based language e-activities connected to authentic, problematic situations in real work conditions. This last element somehow attributed the experimental project the character of a

[3] English for Specific Purposes: the term is described in Hutchinson, T., & Waters, A. English for specific purposes (1987, Cambridge University Press) as an approach to language teaching in which all decisions as to content and method are based on the learners "reason for learning". In other words, ESP is an approach to language learning which is based on learners needs.

Situated Learning based application. Most modern Situated Learning approaches put the emphasis on the concept of forming the learning-social identity as people negotiate meanings through interactions within communities of practice. These optics of S.L were widely adopted in education, in instructional design, in online communities and artificial intelligence systems (Clancey 1993). As far as language teaching is concerned, a natural relation between S.L and New Literacy has been recognized (Gee, 2010), as in S.L students learn through experiences. These experiences are acquired gradually through tools, technology and language varieties used by a socio-cultural group of people and the way the group gives meaning to these instruments. Thus, in S.L. people are more energetic at what they do and literacy practices have meaningful content as they are embedded in broader social goals and cultural practices. Of course, the present teaching intervention did not formally met all the conditions for having a S.L. as defined above, since: a) students were not apprenticed in real workshops, but in virtual workplaces, b) interaction has not worked so between them, as with educational material and electronic support and c) the teacher-researcher, as a Greek language teacher, was not 'special' in the technical aspects of activities, but partially substituted that role supplemented mostly by educational materials. For the purposes of the research, however, she studied various curriculum material of the Vocational Sectors and co-operated with colleagues-specialists.

The key features of the e-learning activities

Already from the analysis phase of the project, I realized that I had to design and develop a web based application concentrating the following ten technical and pedagogical prerequisites so as to better meet my students' real needs. The e-course had to be:

1. *multimodal* by representing information via an attractive variety of audiovisual semiotic recourses(text, image, photos, video, e.t.c). Students had openly expressed their dislike to reading and studying long texts (single, word printed material), whereas at the same time were strongly attracted by audiovisual applications and devices. So, it emerged as a strong need for the researcher to utilize not only verbal (single-mode) material, but multimodal courseware to support the e-activities and tasks in an effort to make the e-environment and study ware more attractive, pleasant and motivating for students of reduced school performance. Besides, research literature for multimodality is rich and has proved the beneficial linkage between multimodality and modern learning practices. Kress (2003) explores the connection between multimodality and learning (not only e-learning), suggesting that transformation is a key concept in a theory of meaning,

concerning how users re-shape meaning according to the available resources (also in Andrews R., 2011).

2. a *social media like,* easy to use, interactive platform. Regardless of their true digital literacy, all students were Facebook users. So it was obvious to the researcher that a social networking environment with the characteristics of Facebook, safe though and within delimited educational communities, would be an attractive medium for school practice. Among a series of educational Learning Management Systems, Edmodo was finally chosen for the application mainly because of its low technical complexity, operating adequacy and user-friendly interface. The teacher/administrator registered the students as Vocational group members (the electricians, the agriculturists..) and delivered different technical problems and accompanying multimodal resources for each group.

3. accompanied by gradually decreasing *guidance and instruction.* Another key pedagogical strategy is that of clear guidance through which students systematically and clearly understand how to get on with the input, what to do with the activity structures and meanings, thus developing metacognitive skills. The factors that determine the complexity of what learners have to do are relevance, complexity, amount of context provided prior to the task, possibility of language of the task, amount of help available to the learner (Nunan, 2004). And guidance refers to all above. As an instructor and mentor, the researcher had to answer students' questions concerning clarification on the requirements of the problems posed each time and the way they had to build their technical writing, but also she had to help her students with the professional roles they had to act out in order to adopt an appropriate writing style and give the appropriate form to the requested technical 'genres'. Students, although being trained in various crafts (by theory and laboratory lessons), were found not to be familiar with social practices and communication skills of the real job fields, so the instructor-researcher had to assist them get familiarized to a variety of communicative situations and the linguistic requirements each time.

4. *transformative* as transforming the way students studied, learned and interacted with the educational material through a highly-demanding, rich pedagogical environment and a multi-combined teaching methodology. When designing e-Learning systems it is important to have a clear understanding of the planned pedagogical objectives as well as to decide on which pedagogical approach is to be employed. In this case the introduction of an alternative pedagogical approach basically constituted a combination (a set) of pedagogical principles and strategies: technical problem solving, situated learning features, explorative learning with decreasing guidance, content-based language learning, pedagogy of 'genres', multimodal teaching material database, constructive learning. All these skills and strategies were

activated actually around a core topic problem to be solved, as students had to identify the problem, reflect on it, comprehend technical functions, find the missing information, recover old knowledge, critically combine various pieces of information, find out reasonable answers-solutions and finally write correctly.

5. *subject specific* with problem-based language activities immediately connected to the technical curriculum of the Vocational Lyceums (EPA.l): subjects taught in the Vehicles, Electrical, Agriculture and Engineering sectors, the sectors the students attended.

6. *outside world relevant, job connected* as in Edmodo's platform the students were separated in work groups and had to behave as in a real professional electronic forum-community with the corresponding multimedia recourses, content, answers and discussions focused on certain authentic problematic conditions situations. Students simulated professional technicians and thus slightly developed a specific type of social behavior and discourse. As Anderson, Greeno, Reder and Simon highlight (2000), situated learning approaches focus on coordination of trainees' actions among themselves and with the materials and information systems and, in that sense, learning is like a process of participatory routes which actively promote community operations and literate identities.

7. *familiar and confidence* giving, as students had to be helped feel at ease with content relating more to their own culture and interests and with materials helping them to easily cope with the technical problems and not feel as being tested and evaluated. Regular and immediate feedback had a crucial role in encouraging students keeping up with the activities and trying for the best each time.

8. highly *motivating* so as to make students get involved and try out their capacity. For that reason, the problems delivered on the platform every week had to be appealing and interesting: from different experience area each time, unexpected so as to break the monotony, with topics of interest to the target group or topics which offer the possibility of learning something new.

9. focused on certain specific things to do and with not excessive information provision, but enough so as the student can find the necessary information in it. Otherwise, problem-based tasks could deter students from getting involved to solve them.

10. based on a *blended e-learning model*. Moving to an e-learning, LMS based educational environment is not a natural thing to happen for vocational students who had never before worked in this way at school. The teacher-researcher had to take into consideration how much ready her students were for that and their own self regulating pace. The model of 'blended learning', in which the distance learning should work combined with

"face to face" training, was utilized for that reason: to fill the gradual transition from the familiar 'face to face' teaching to an exclusively assisted by computer teaching and learning. Although the researcher had first demonstrated to the experimental students the way the platform worked and how the e-course project would function, they initially showed so little confidence in dealing with the e-activities, that the she and her students was arranged to meet in the school P/C laboratory once a week for support giving and physical interaction.

The e-activity procedure through a Technical Problem Based Example

In order to clarify the way the language instruction is structured and works in this subject specific language course, I am quoting an example from the Car Mechanics Group.

The problem as it was delivered on the e-platform

Make a personalised offer for changing car tires - to be submitted january 17, 2013

The SCENARIO: You are a car workshop owner. Two clients whose car tires need changing ask you to make the best offer for their special case:

1) the first customer lives in Northern Greece in an area with low temperatures for several months a year. He mostly moves in hilly country roads. He has a 2006 DAIHATSU TERIOS II model.

2) the second customer lives in South Greece (city of Kalamata), a region with high average temperatures, he usually travels on the region's streets and avenues and in the national road network. He has a 2010 Suzuki Swift model.

NOTE: In order to suggest the right tire choice, you should take into account the following things: the size and type of the vehicle, usual weather driving conditions, car driver's behavior and everything else necessary.

WRITING INSTRUCTIONS Write a documented suggestion for each client and the appropriate offer (one per customer). So, in your text you should a) propose specific kind and type of tire b) justify your choice (based on your customers' needs) c) indicate the technical characteristics of the appropriate tires and d) state the price details for each tire purchase as well as for all the labor and service work.

Attached digital RESOURCES

1. The new European Tire Labelling webpage (http://www.michelin.gr/tyres/learn-share/buying-guide/new-tyre-grades)
2. Tire searching website (http://www.elastika-online.gr/)
3. Winter tires/safe driving (webpage and video on http://www.safedriver.gr/ index.php?productID=16&ckattempt=1)

4. An e-auto journal titled 'The types of tires'
5. The michelin.gr website

Basically, as far as the students effort is concerned, the e-activity consists of two parts: a) finding the solution to the technical problem b) writing the text-the relevant technical 'genre' . So:

Trying to find the solution, the students

1. *identify* the technical problem - in the specific example they must find out types of tires appropriate for each car model in combination with the weather and driving conditions. They highlight the key features of each driver.

2. make a general *assumption* about the right type of tires, but in order to form a more precise knowledge on the topic, they seek for the missing information in the given digital resources.

3. *search and find* the technical characteristics fitting in each case. Additionally, because they have to make a financially attractive offer, they also **seek for** the best prices offered for each tire type and end up with precise tire model suggestions.

4. *type* the selected information in notes so as to be able to form a complete answer

Trying to write a personalized offer for each customer, the students:

5. Are given a *model standard offer* made for a different product (soil water heaters, agricultural vehicle, insulating technique etc).

6. Under the guidance of the instructor, *identify* the communicative purpose, the key words, features and structure of the standard text-genre

7. Then, try to *tailor* the specific, tire related information findings to the genre's characteristics. In this case, they have to write an appropriate title, shortly and reasonably support the certain choice, give a technical description of the specific product, underpin the advantages, state the suggested price in details, possible payment facilities, communication information etc

8. post/publish their final offer
9. take immediate feedback
10. review and rewrite their offer if needed

Conclusion

The pedagogical formula that was built in the triangle of Technology-Pedagogy-Content proved to be fruitful in the case of these 11thgrade vocational students, as it incorporated interesting, learner-centered content, challenging activities, e-learning tools. The language course became suddenly not as boring as in their previous classroom experience and this increased their actual participation in problem solving writing tasks. Although, by the

researcher's side, there was no persistence in producing morphologically flawless technical texts (especially in spelling), the students of the experimental group enhanced significantly their skills in developing technical document types: commercial offers, brochures, promotion services through professional website, technical advice, documented technical problem reasoning, demonstration techniques in an apprenticeship or video e.t.c. This progress was recorded as to level of quantity (text area), linguistic level (use of vocabulary, structure, grammatical-syntactical elements), communicative-social level (understanding communicative objective, adopting social-professional roles, adopting a similar style and linguistic diversity) and critical-quality or metacognitive level (understanding the subject requirements, adoption of text development strategies, management and editing of educational materials and sources, critical selection of information). The connection to the real business world helped the students to increase their internal motivation to be engaged in speech production as a part of a wider professional attitude and behavior. The contextualized learning environment strengthened their professional identity and the emerging literacy.

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DESIGNING CREATIVE COLLABORATIVE LEARNING (CCL) FOR ECONOMICS: USING PROFESSIONALS AND VIDEO CLIPS IN MBA CLASSROOM

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Abstract

Global economy is now characterized by frontier of models and theories that are often shaped by decision makers in global and national institutions. Creative collaborative learning (CCL) is attempted for this first time in a classroom environment for studying macroeconomics and world trade. CCL is suitable for student-centered learning MBA students who must put themselves through realistic situations, asking right questions, and making decisions. Traditional top-down methodology of emphasizing model building and mathematical proofs in studying macroeconomics are not suitable at the MBA level. The proposed CCL model in this study entails the joint efforts of three groups of players—the professionals, the students, and the instructor. Constructive knowledge is acquired not by drill and memorization of definitions, but by learning from the contexts in which terminologies are pragmatically applied, utilizing critical thinking. Professionals are invited to speak on industry topic, while specific video clips were searched and reviewed in C-span video library. The search and review exercise were analyzed by evaluating their effectiveness in motivating interests, learning of abstract terminologies, professional manner and articulation method, and recognizing the role of important institutions through the speaking professionals. CCL demands evaluations for "in-the-moment" expressions and quotations that can "elevate thinking" in a student-centered learning environment. Our paper illustrates how designs of CCL can be implemented in different topics on macroeconomics and world trade.

Keywords: Creative Collaborative Learning, Economics Methodology, Student-centered Learning

Introduction

Economic concepts are often abstract and difficult to understand. They are particularly so for macroeconomics and global world trade issues. Learning difficult concepts can sometimes rely on bringing back the memory of an instructor(s) articulating the difficult concepts. The most used teaching approach in economics involves an instructor and a class of students, with information and knowledge being transmitted from top down. Students study definitions and formulas by memorization, but many of them don't really understand the true meaning, nor are they able to explain the concept or apply them in a real world conversational situation. Methods of articulation can take on an important learning role in this respect. When a student remembers something that an instructor taught in a class, it is usually an example or a proposition that the instructor had made that lingers in the mind of the student. The student identifies that proposition with the face of the teacher, perhaps also his expression and the manner of articulation at the moment of a lecture.

This paper suggests a Creative Collaborative Learning (CCL) approach for studying complex and evolving concepts by listening how these concepts are articulated by professionals, either through invited professional speakers into the classroom, or in an experiential and/or virtual setting through video clips of live conferences. There are knowledge areas where this type of approach may be particularly suitable. CCL has been advocated in many areas of learning (Gokhale, 1995;Thousand, Villa,Nevin, 2002;Peppler and Solomou, 2011; Jarry-Benn, 2013) . In the area of macroeconomics and world trade, global conditions have been changing rapidly since the financial crisis of 2008, partly driven by theories and global geo-politics, and partly driven by changes in cooperation and conflicts between countries. For world trade and globalization, our world has been complicated further by the internet economy breaking through country border lines. When the theories and models used in a subject are going through an evolutionary process of changes, the use of CCL is particularly relevant.

Macroeconomics for an MBA program became increasingly difficult to teach after 2008, instructor can no longer rely on old models, and new methods of studying the subject must be explored. CCL brings new dimension to students studying macroeconomics and world trade in that they can experience how professionals in the real world in conferences and in actual project implementation can shape evolving ideas. Collaborative learning is not unique in this respect. More and more disciplines have turned to the use of this methodology for a more applied focus for the discipline. For example, in entrepreneurial studies, there are frontier development using

focused group studies to creatively what practitioners found important and interesting about their studies (Frank and Lundstrom, 2013).

This paper designs and studies the speaking of policy/opinion makers of macroeconomic and world trade by using a methodology of creative collaborative learning. Section 2 describes and compares the current predominate learning method and the Creative Collaborative Learning (CCL) method. We'll give several examples of speaking event in macroeconomic and world trade can be studied and analyzed using this approach. Section 3 explains how this methodology has been experimented in an MBA class. A survey to a sample of students was conducted, and some key results will be reported. Section 4 provides some concluding remarks.

Section 2: Creative Collaborative Learning with an Example

Before we bring up an example to illustrate the significance of CCL in learning in a changing environment, let us first compare the difference between traditional teaching and CCL. Traditional teaching approach includes the interaction between an instructor and a student where the instructor controls the whole learning process and makes decisions for the students. Information and knowledge are passed down from top to bottom. This learning method requires repetitive reinforcement, and students must acquire their knowledge through drill and practice. This type of learning mode may be best suited for sharpening skillset and knowledge that are unaltered, stable, and the utilization of the skill in the market place is competitive with speed of accomplishing a task being the most important criteria.

Student-centered learning method switches the information knowledge acquisition mode from top down to bottom up. Students' role is not passive, but are expected to acquire information and knowledge with their own initiatives, actively participating in a class environment, with the instructor playing a guidance role (Hannafin, Hall, Land & Hill,1994;Connor, 2006). Students are engaged and personally responsible. This method supports self-reliance of students, conducive to critical and creative thinking, and promotes collaborative team work with students and instructor.

CCL differs from traditional learning method, involving three participants rather than two – Professional, Student and Instructor. Students (coached by an instructor) learn from professionals. An embedment of the concept of a practicum with a student-centered learning method, the methodology may be suitable for disciplines where theories and models evolved from decision makings of the professionals (rather than a well-set stock of knowledge preserved and handed down unaltered generations after generations, e.g. training to be a physician. The significance of a CCL model lies upon a self-driven acquisition of knowledge experience where a

student's knowledge scope, theoretical, practical, and experiential, is expected to be formulated according to the career preference needs of the students, rather than predefined by the instructors or the professionals.

Preliminary thinking may suggest that CCL is best conducted in a live situation by engaging a professional articulating his expertise on a subject matter of relevance to a course. In a real world classroom setting, this can be impractical and at best very expensive. Our initial approach is to bring in C-span live conference into the classroom as a more practical substitute. Students try to understand problems through watching clips from the C-Span library where professionals discuss important macroeconomic and political issues were archived. A dialectic approach in studying and interpreting macroeconomic environments can then be brought into classrooms. This approach arguably is better than having an instructor directly instruct or a professional brought into a classroom to speak about a subject casually. First of all, speakers in a public forum have good incentives to do a good job in speaking performance, much more demanding than lecturing in a classroom. Secondly, C-span library prescreens sessions of substantive values and interesting to view, thus much more reliable than inviting a professional into a classroom where instructors have no control over the professional's performance. Thirdly, the ability to rewind and replay a clip can allow multiple viewings, catching up concepts easily missed in a real live conference setting. In addition, students also develop other skills for learning technical terminologies, as well as a way of presenting, learning of professional speaking mannerisms and how they handle questions and answers. That being said, there are offsetting values of having face-to-face interactions with professionals also. This will be elaborated further in the next section.

With invited professionals or with video clips, it is emphatically noted that CCL cannot be conducted without instructor's intervention. Professionals often concentrate only on a particular goal specific agenda in a conference delivery setting. Instructor's role in putting the agenda into perspective is exceedingly important. Instructor's intervention usually includes defining learning objectives, tracking collaborative efforts of students through some sort of monitoring, utilizing internet learning platforms such as Blackboard discussion, and requiring student presentations by offering critical comments, quizzes and exams, etc. An unconstrained CCL set up without instructor intervention is a sure recipe for failures, as students lack the background knowledge as well as a road map to probe the unknowns.

We used a C-Span recorded public speaking forum of Christine Lagarde of IMF and Janet Yellen of US Federal Reserve recorded on May 6, 2015 as an example for illustration. The topic of the forum was on lessons to

be learned from the 2008 financial crisis. Janet Yellen talked about how a well-functioning financial system should promote job creation, innovation, inducing real economic growth. Financial system should channel savings to productive investment, promoting business creation and job formation. It also should help households save for retirement, purchase homes and cars, and weather unexpected misfortunes. However, the financial crisis of 2008 uncovered problems of excessive leverage, resulting in and fueling bubbles in the housing market. The reliance on short-term funding by many institutions left the system vulnerable to runs. There were excessive risk-takings that ultimately had resulted in systemic risks to the system. To those problems, the Federal Reserve in US as well as other regulators have re-established laws and regulations, e.g. capital requirements, liquidity coverage, etc., and the running of stress tests to monitor the health of financial institutions.

Yellen's prepared speech can mostly be found from various other publications, and it is useful to hear that directly from the mouth of the authority. However, the overall tone of the speech is for managing risks in the US financial system via regulations. This approach of course should not be ignored or denied by any prudent central bankers of the world. Indeed, in the subsequent speech given by IMF's Christine Lagarde, these problems and solutions were acknowledged. Lagarde's delivery was very different on style however, approaching the subject with a curious quotation of Voltaire: "If you see a banker jump out of the window, follow him because there is certainly money to be made…"

Here, an apparent elusiveness popped up. It generated curiosities in the mind of the audience beyond the usual expectation that financial crisis normally arises just from excessive risk taking. Lagarde's remark provoked laughter from the audience, but did lead to the hinting of a more serious side of the main message she was after. At one instance, she seemed to suggest that the window could have been the subprime market loans. If so, that remark would be to reinforce Janet Yellen's position of excessive risk taking of the financial system. Yet, at another instance of the speech, Lagarde seemed to be referring the window as the window separating the bank and the nonbank sectors of the financial system.

We note that exactly what she had in mind was not as important as the remarks' potential to generate inquiries and questions. In an MBA classroom environment, debates of a policy position as well as difference in interpretation can contribute to ultimate deep learning. If Lagarde's remark was perceived differently by different people, including herself, a focus discussion of the remark can possibly bring out many additional features of the functioning of the financial system, reflecting philosophical difference between the FED in US and the IMF, an international organization.

Lagarde's remark on Voltaire is an excellent vehicle to provide this type of a learning experience. A student would need to review the segment several times in order to spot hints on what she really wanted to say. In many graduate schools, a study of someone's writing went through the same process. In that sense, the use of video clips is not unique to the contribution of critical thinking. Yet, for MBA class activities, a discussion of current issues spoken by an "authority-in-charge" is much more effective than studying the writing of some dead economists or professors in other universities who do not reward directly the students for studying their writings. In addition, being able to understand a live person in charge of important decisions could be more rewarding to MBA students than the knowing of the "truth" of knowledge, if there is such a thing in macroeconomics.

Lagarde's remark can also be contrasted with Janet Yellen's emphasis of laws and regulations as the method of dealing with excessive risks. Indeed, Lagarde took a different position at the end of the speech; "But regulation alone cannot solve the problem. Whether something is right or wrong cannot be simply reduced to whether or not it is permissible under law. We need a greater focus on promoting individual integrity." She went on to articulate why financial inclusion (minority needs, etc.) could be equally important.

The contrast was revealed more sharply in her concluding statement: "One final point: I hear, and I have heard many times over [perhaps referring to Yellen's position], that it would be so much better if bankers were boring again. You know what, I fundamentally disagree with that, because it takes the view that for bankers to finance the real economy, it is boring…If the definition of boredom is working for the real economy, and the definition of excitement is just making a lot of money, I think we have to change a few things around here."

Upon reflection, Voltaire's quote could be interpreted as Lagarde's urging of what bankers should be doing, or what is the proper window for the bankers to jump out to. If bankers are to be broadly interpreted as financiers, jumping out from the window could very well be referred to money being put into the main street where real economic activities matter (rather than just financial dealings—"making a lot of money"). In that sense, Lagarde's speech seemed more coming from an idealized perception of what a financial system should be, drawing distinction between financial deepening vs. financial inclusion, urging aspiration of financial inclusion for women and low-income individuals, etc. .Traditionally, these aspirations are subject matters not usually considered by IMF, as the original intention of IMF was to assist balance of payment problems of member countries. The implication of this elevation of thinking, if inferred correctly, can be subtle,

profound and controversial: A boring banker stays in a room, with money forever staying within the financial system, although in different forms in the system, e.g from banks to nonbanks. By contrast, an exciting banker jumps out of the window to the main street. This is a point that had not been featured well in traditional economics textbooks as well as the emphasis used in most classroom lectures. Unfortunately, along this direction of inquiry, the ensuing dialogue between Yellen and Lagarde was silent. A replaying of a video clip can make the silence more pronounced. The dialogue exchange dynamics itself can be insightful.

It is also important to point out a postscript to this learning exercise: In June the same year, IMF Lagarde further issued a statement urging US Federal Reserve to delay the raising of interest rate in September as a majority of financial experts in US believed US should act. At the time the statement was issued, it was largely scoffed off by the financial commentators in US in the media. As it turned out, the world events evolved from June to September in such a way that US Federal Reserve indeed did not raise interest rate in September. To be sure, this does not prove or disprove anything concerning an evolving relationship between USA and the rest of the world; but it is a policy observation worthy of discussion in a classroom environment for further anticipating actions for the future.

Section 3: Designing MBA classroom experiments

We progressed to formulate an experiment first for a macroeconomic MBA class with the following four learning objectives in video clip evaluation. Subsequent refinement of was also implemented in other courses. Those implemented in the macroeconomic course were:

1. An understanding of the recent issues in an economy of a country as articulated or projected by the speaker.
2. A recognition that there are pros and cons for every macro policy decision made.
3. An appreciation of in-the-moment expression of thoughts by policy makers of macroeconomics.
4. An elevation of thinking by reading into the expression of how policy makers articulate concepts or the points of contention.

Step 1 - Students in a class were to form country focus teams—e.g. USA, Canada, India, China, Brazil. To prepare for a study of issues of relevance in a country, each team was asked to research on the socio-economic characteristics of the country, e.g. GDP, population, GDP/capita, growth rate, political system, inflation rate, unemployment rate, strength of its domestic currency.

Step 2 - Students were then asked to focus on a search on the C-span video library for particular video recordings related to the issue in the

country which they were assigned. This should be an individual effort where each member of the team will work independently to look for a clip from the C-span video library.

Step 3 - Students were encouraged to communicate to other team members about difficulties and specific terminology used in the clip. They were asked to write down excerpts from a clip each individually selected in the form of a table aligned for the 4 objectives above. They were also asked to write down (a method of "brain writing") the reasons why an excerpt was chosen for each objective.

Step 4 - Students were engaged in a group discussion for coming up with a team template for the country's study. The team could use ONE clip for all four objectives, or one clip for each objective. They were asked to rank an excerpt on the basis of the extent by which a clip matches an objective (scale 1-5, 5 the highest score). A team member might not has fully understood an objective and picked an excerpt that did not meet the objective. If so, the numerical ranking of that excerpt should be low. The team has to collaboratively decide on what excerpt best served an objective.

From the team template, we note some successes and failures: Instructor Intervention via Learning Objectives 1 & 2 generally was quite effective. Students were able to distill facts about recent economy from the speech of a speaker. Even in the case where a clip is not recent, they were able to project propositions said in the past for the present state of the economy. The evaluations of the pros and cons of policy decisions were a bit of a mix. Some have difficulties in distinguishing between policy decisions and economic observations. The former is a subjective decision, the latter is an outcome. Some students do not have the analytical maturity to distinguish between the two. Relative to objectives 3 & 4, excerpts were more easily detected and communicated in writing. Generally speaking, objectives 1 &2 were more suitable for "beginner" students of macroeconomics.

We did not achieve the same degree of effectiveness for objectives 3& 4. Many students did not understand what expressions would belong to the category of "in-the-moment". Perhaps it is necessary that an overall main message of the speaker must first be understood thoroughly before a subliminal message is to be detected. Therefore, students need to understand the whole context of macroeconomic agenda pursued by a speaker in order to filter out some inner thoughts of the speaker. Yet, it is the expression of those inner "in-the-moment" thoughts that open up rooms for creative collaboration. A participant to a creative collaborative process would seize the moment and pursue inquiries in a direction unintended in the original preparation of an agenda driven speech. The same is true for the objective of "elevation of thinking". A listener must have some priors before listening to a message in order for the speech to elevate the thinking of the priors. If a

listener does not have priors, there cannot be an elevation of thinking because there is nothing to elevate from. Because of that, perhaps objective 4 is for more suitable for advanced macroeconomics students.

A survey was subsequently conducted for a sample of students asking questions on the following 4 dimensions of C-span video clip appreciations:

I. Effectiveness in Motivating Interests
II. Learning of Abstract terminologies
III. Learning of Professional manner and articulation method
IV. Recognition of the role of Institutions

The questions associated with each dimension are reported in the Appendix. Some key findings are noted below:

For I: Out of 12 respondents, 11 said their interests on macroeconomic issues have increased. The student responded negatively said "I took this course for requirement thus indifferent about interests". For the 11 responding positively, they were able to identify specify reasons on why the video viewing had benefited them and their interests on macroeconomics issues have increased.

For II: All respondents remembered at least one abstract concept learned from the course and one abstract concept learned from the video clip. All except one remembered the face of the professional with the abstract concept. All did additional search of the abstract terminologies identified via the clips in the library or on the internet.

For III: All acknowledged professionals can be role models for them to learn. Relative to learning from instructor versus learning from professionals, 4 ranked the two mentors equally effective, while 8 chose professionals being more effective. For improving English, all except one learned better with the professionals. This could be due to the fact that English is not the native language of the instructor in this experiment.

For IV: Only 3 out of 12 respondents recognized the role of institution in the clips they chose to review. 8 referred to the Yellen-Largarde clip, which was the example used by the instructor, not the clip they were supposed to review. One respondent's answer was deleted because of its misunderstanding of the question. Most respondents believed future ideas and models in macroeconomics will come from opinion leaders and policy makers, although 1 or 2 of them picked professors.

The most interesting achievement of this experiment was the survey result showing that students were able to remember a concept from their class, and identified that concept with the face delivering it. Theoretically, the attempt to associate difficult concepts with a face of delivery is the same as used in great movie scripts. Many people cannot remember a movie they have seen, but they may be able to remember a particular scene and a particular line delivered through the mouth of the actor. That, often, can

have a bigger impact for someone whose goal is to acquire a perspective rather than the sharpening of a skill. Arguably, that should be the emphasis of learning macroeconomics today. CCL is a means to achieve that objective of shaping a student-centered method of acquiring knowledge on abstract concepts such as those in macroeconomics as well as in other courses dealing with abstract theorizing.

With that directional goal for improvement, we believe CCL can be further enhanced in a classroom environment by adopting the following:

1. The duration of a course must be longer, at least 15 weeks. Students need time to digest new material and concepts, not to mention research time for extension of concepts.
2. Some additional intervention and monitoring mechanism have to be developed so that every member of a team could keep track of the progress of the collaborative learning exercise. Developing an evaluation exercise at the end of each step will be a way to make sure that there's no free riders in team effort.
3. The timing of basic tools for thinking in coordination with the time table of the collaboration exercise will be a challenge. Not every member of a team is as motivated to learn macroeconomics issues and has the same background knowledge of macroeconomics.
4. A point reward system needs to be developed so that leadership in collaborative learning would not be seen as futile and irrelevant efforts on the part of a motivated student. The best way to learn is to learn how to teach others. This is a managerial mission in every organization. It is suitable for an activity in an MBA classroom to embrace that feature into their team work.
5. It is perhaps not feasible to make learning on macroeconomics to be totally based on collaborative creative learning. The mix of prior knowledge with emerging self-learning knowledge most likely cannot be uniformly determined for all classes. The optimal mix ratio will a function of prior knowledge, the cultural background as far as studying habits, and the motivation of students in the taking of the course.

Several of these design measures were subsequently adopted in a course of 15 weeks emphasizing world trade. The CCL format used a combination of video clips and invited professionals as guest speakers in a three-hour duration. Students were asked to read assigned articles of relevance to the topic of the speaker of the day. The first hour of the class was for the professional speaker to speak to the class. In the second hour, the class was broken into teams to work on specific assignments (questions) provided by the instructor. A metric of how team works should be best conducted was distributed to everyone in the class. Instructor made periodical visits to each team as an observer to monitor collaborative

intensities, the extent of ideas exchange, and whether substantive creativity elements were involved. Students were asked to return to class room to make a presentation of the findings of their team, and specifically answered the questions posted by the instructor.

In a class of 19 students (4 teams), CCL were found to be challenging to students but of good learning values. Creative student-initiated propositions were detected much more often than the CCL conducted in a short 6 week course on Macroeconomics, often showing instances of "elevation of thinking", distinctly providing propositions beyond what the professional invited speakers were saying.

However, students commonly believed that the one hour team work time is too short. The design of this short delivery cycle was deliberate, as working managers in the real world often have to work under time constraints to produce reports. On the positive side, students attention span were highly improved using this method, as every student will be working in a small group environment assuming certain role, as opposed to a conventional classroom of instructor lecturing top down, where individual student can be completely withdrawn and not actively participating without the instructor knowing about it. Some students commented, "the class goes so fast that you look at your watch to meet short-term deadline, not to check when the class will end."

Another challenge team work has to confront was how creative ideas were received and debated with teammates. Individual team member may not have the communication skill to fully express his/her thoughts to the team, even in a small group environment. Language barrier of international student body can further complicate the practicality of this endeavor. Our instructional design adopted several features of CCL to cope with this.

1. Instructor collected notes each team provided. An individual when overwhelmed by language difficulties can still jolt down key words he/she wishes to express, and provide further information to instructor when time permits after a class.
2. An "articulator" of a team is assigned the role of summarizing and articulating the results of the team to the class. Member of a team takes turn to be the articulator, and each member should do it at least once in the course. The articulator has the full authority within the ideas discussed in the team on which idea to articulate and present to the class. For example, a particular individual may be handicapped in whatever way in a team environment, but when it is his/her turn to be the articulator, the person has the complete authority to choose the ideas discussed within the team that the person wishes to articulate. Furthermore, given a time constraint of 10 minutes in oral

presentation, language handicaps would not be overly taxing on class time when it comes to presentation for the whole class.

3. Feedbacks and interventions from the instructor and/or invited professionals can determine the success of a particular CCL exercise. The format as it was set up allowed intervention only for the last hour of a class. Drawing conclusions in the form of postscripts sent by emails after a class exercise is still another way to provide feedbacks. It may be important to emphasize that a CCL exercise should not aim at actually creating new ideas, and be evaluated as such. To do so will be an impossible goal set for the students as well as the instructor. Rather, the purpose should be set for an *attempt* to engage in creative thinking. The analogy of a physician attempt to make a patient healthy can be used. It is not important for the physician to define what healthiness means in order to engage a patient into a recovery exercise. It is more important to monitor whether the blood pressure of a patient has improved or got worse after each engagement exercise. For the monitoring of CCL, the subjective opinion of the instructor could be further challenged by students in evaluating a holistic approach for learning. There is yet to be a completely objective measure of success that needs to be further defined.
4. In addition to providing a detailed metric for evaluating team work performance (ranking from minimal standard to outstanding performace), we also designed a questionnaire for a team to evaluate their team members' contribution to the team. To be sure, the questionnaire was structured in a way that negative comments directed toward a particular member will not affect the grade of the member who was criticized, but will reward an individual in a team who receive majority positive comments from team members. This can alleviate the pressure and the time constraint imposed when the team is working together, but at the same time, recognizing individual contribution on creative thoughts as well as the extent of helping other team members.

Conclusion

Economic environments in the world have been changing, due to globalization and technological advances. Creative Collaborative learning (CCL) is suitable for MBA students in understanding these changing environments because it provides an experiential/virtual reality learning encounters with important policy makers from recognized institutions. As revealed in the key findings, students must put themselves through realistic situations and learn to ask right questions, be able to make decisions and be

able to communicate macroeconomic and world trade issues, including advances on internet commerce, in daily or public conversations.

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SCHOOL BASED FACTORS AFFECTING GIRLS ACADEMIC PERFORMANCE (KCSE) IN MIXED SECONDARY SCHOOLS: A CASE OF NAKURU MUNICIPALITY

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Abstract

This study intended to investigate School based factors affecting girls' performance in mixed secondary schools. The objectives of the study were to determine school – based factors, which affect girls' academic performance (KCSE) in mixed secondary, to suggest the possible strategies to counter the school based factors which affect girls' academic performance. The study sampled mixed Secondary Schools which are twelve in number using simple random technique to select six schools. From the sampled schools, an equal numbers of students were selected from form four classes in each school totaling 160. Sixty (60) teachers were included in the study and six (6) head teachers .Data was collected using questionnaires for students and teachers. Interviews were for head teachers. The research employed a mixed method design technique. Data was analyzed using descriptive statistics i.e. frequencies, percentages, mean and Standard deviation. Scientific Package for Social Sciences (SPSS) was also used. The findings of the study were to provide to the education stakeholders to come up with strategies for countering the school based factors affecting girl's academic performance in KCSE in Nakuru Municipality. From the research findings, it was established that school based factors affecting girls' performance were KCPE intake, time wastage, and boy/ girl relationship. The recommendations made were, there should be more guidance and counselling in schools, increase bursaries, inviting resource persons to talk to girls, special relationship between girls and female teachers and separation of girl's classes from boys.

Keywords: School based factors, aces, and girls

Introduction

Education is regarded as a powerful level for development in Kenya. It has often been referred to and described as the key to progress and social mobility (MoEST, 1999) Lack of the same on the other hand is considered to be the single most obstructive bottleneck to socio-economic betterment. In view of the above then it is not surprising that a large portion of the national budget in the country and indeed in most developing countries goes towards education (KNBS, 2006). Education plays a crucial role in preparing the young for their future roles in society. Education has become one of the basic rights which every citizen must have access to, therefore the need for education of both boys and girls should be stressed (World Bank,2002)

The last decades of the twentieth century saw many concerted efforts in research into gender issues all over the world. In Africa, international bodies and educationalists began in the 1960's to look into the ways girls and women were fairing in education. Their findings were depressing. By 1970's pro female initiatives by some African governments to encourage enrolment of girls in schools was started. Consequently, low enrolment figures indicated in the earlier years (1960 –70) were in the 1990's shown to have improved. Kenyan females constituted nearly 50% of the children enrolled in grade one Forum for Africa Women Educationist (FAWE 1996). What about performance? Researchers and teachers have to recognize prejudicial practices which may still disadvantage girls particularly within classrooms, even where policy and statistics suggest that equality has been achieved.

Our education system in Kenya is characterized by examinations and therefore it is an issue that attracts public attention. These examinations are used as yardsticks for learning and selection purposes. Each parent is eager that his child passes the examination as it is the basic requirement for entrance into formal sector. It is a criteria for determining those who should proceed and pursue in the examination at each level. Therefore every student going through this system of formal education has to sit for these examinations in our case, Kenya Certificate of Secondary Education (KCSE). Every year whenever K.C.S.E results are released, single sex schools usually dominate the top positions. In 2004 KCSE, results summary at the top were single sex schools. Among the 50 (Fifty) top Schools, there were only four mixed schools three of which were private and only one public. The public school was Sacho High School; the private schools were Moi High School Kabarak, Nyahururu Elite School and Chemelil Sugar Academy. In the top ten girls schools only and boys had equal slots of five (5) each. This has led to the question, how come girls on their own perform better?(KNEC,2004).

In 2005 KCSE, results the story was almost the same. Among the top 100 (one hundred) schools, there were only 10 mixed schools, 34 girls schools and 56 boys schools. The public mixed schools were Ober Secondary school which only had 28 students registering a mean of 9.3214; St. Georges mixed secondary school (8.1379) with 85 students and Uasin Gishu high school (KNEC,2005)

The rest seven were private mixed schools like Moi High school Kabarak with 231 students (9.8051), Sacho (became private in 2005) with 9.1680), Abuhureira Academy with 29 students (9.4317), Sheikh Khalifa Bin Zayed with 138 students (9.2826), Allidina Visram High with 129 students (9.2403), Chemelil Sugar with 73 students (8.3698), Nyahururu Elite school, 83 students (8.3658), Riara Springs Academy with 56 Students (8.3571). In the top ten, girls' only schools had 5 slots Kianda School, Precious blood Girls Riruta, Kenya high school, Bahati girls Secondary school and Bishop Gatimu Ngandu girls.

In 2006 KCSE again the single sex schools dominated the top. Most schools did well with the top school attaining a mean of 10.8840 i.e. Starehe Boys Centre. Among the top 100 (one hundred) schools, there were only 7 mixed schools. 36 girls only schools and 57 boys only. Six among the seven mixed schools only one was a public school i.e. Uasin Gishu High School with 131 students and a mean of 8.6106. The other six were private schools led by Sheikh Khalifa Bin Zayed with 144 students and a mean of 9.6736. The Aga Khan High school Mombasa with 147 students and a mean of 9.6666, Moi high School Kabarak with 238 students and a mean of 9.6218, Sacho high school with 124 students and a mean of 9.0403, Abuhureira Academy 27 students and a mean of 9.1481, Chemelil Sugar Academy with 70 students and a mean of 8.9428 (KNEC,2006)

In the top ten girls only schools had four slots i.e. Kianda School with 64 students and a mean of 10.3593, Loreto high school Limuru with 178 students and a mean of 10.3202, Precious Blood Girls Riruta with 92 students and a mean of 10.3043 and Mama Ngina Girls secondary school with 83 students and a mean of 10.0481.

This performance has influenced the number of girls that go to Institutions of higher learning.

Education for girls is vital because women are central to development. Therefore girls' education should be great contributions that can strengthen women's role in development thus raise the quality of global decision-making. It is therefore important to identify problems which hinder women from achieving equally in education especially in the mixed schools. A lot of research has been carried out in this area of girls' performance compared to boys. Some of those who have done the research are(Eshiwani, 1983,Herz,1991, Chege & Sifuna,2006, Nkinyangi,1980, Otite,1994,

Kiptanui, 2000,Kitetu,1998,) All agree that mixed schools lead to better socialization than academic achievement. However, academic performance of girls outshines their male counterparts when subjected to the same learning environment. It is in this view that an attempt was made to investigate performance of girls relative to their male counterparts in mixed schools.

This study focused on the performance of girls in mixed secondary schools after four years when they sit for their KCSE. Nakuru District for a long time, before and after independence has produced good results. In 2005 in the top ten, Nakuru District had only Bahati Girls and no boy's school. In the top 50 there were three schools again Bahati Girls, Mary Mount Secondary and Rongai Boys. Municipality had no single school in the top one hundred. The first school was Menengai High school a mixed school which was position 181. It had 236 students with a mean of 7.5339. It was followed closely by Nakuru High School (a mixed school then) a National School, position 192 with 405 students with a mean of 7.4864 (KNEC, 2OO5)

In the top ten schools, 2005 KCSE there was no school from Nakuru district, as Bahati Girls School moved to position 30. The first school in the District was Naivasha Girls with 97 students and a mean of 9.5979, followed by Bahati girls secondary with 81 students and a mean of 9.5185, St. Joseph's Seminary Molo (boys) with 70 students and a mean of 9.4428, Mary Mount Secondary school with 77 students and a mean of 9.3376, Rongai Boys secondary school with 88 students and a mean of 9.2840, Molo Academy (Boys) with 45 students and a mean of 8.4888, the last in top one hundred was Moi Forces Academy Lanet (Girls) with 163 students and a mean of 8.4539. Once again there was no school in the top 100 from Nakuru Municipality (KNEC, 2005).

The schools are Menengai High, Nakuru Day, Langalanga Secondary school, Afraha High School, Kenyatta Secondary, Upper Hill Secondary, Flamingo Secondary, Lanet Secondary, and Nakuru High School among others.

Statement of the problem

High girl-child participation rate in education is one of the most important talking points in any society. This is because education is one of the most effective instruments a nation has at its disposal for promoting sustainable social and economic development (GoK, 1990).Girl child education lowers infant mortality and improves health, nutrition and environmental management. In spite of massive funding on the part of the government to Education (2006, total public expenditure on education was 6.9 percent of GNP ,UNESCO, 2007), the KSCE results every year show

that single sex schools are still ahead of mixed schools(KNEC, 2004,2005,2006).

In recent years, discontent with girls' performance in various mixed secondary schools in national examinations has become widespread. Parents and social critics from all areas have vehemently complained that mixed schools are inadequately educating their children. Schools boards have been putting pressure on District Education Boards to do away with mixed schools. The Thursday Standard magazine 'On school and Career' September 2005 has been highlighting on possibility of making all school single sex to alleviate such problems. Researchers have written generally on the girl child's performance touching on topics like, Home based factors influencing Girls' performance in KCPE and KCSE, School based factors, Cultural factors and Girls' performance, Challenges facing Girl child in the quest for Higher Education. There have also been a lot of research on girls performance in different subjects especially the sciences and mathematics (Moulton,1997,UNICEF,2004,GoK,2005a,Eshiwani,1986,1993,Chapman,2003,Campbell,2004,Sifuna,2006,Fawe,1996,1997,Kabira,1997,Abagi,1994, Mampele,1994)

Little literature especially from sub Saharan Africa has attempted to directly asses the performance of girls specifically in mixed secondary schools. The findings were intended to cause action on part of the government and stakeholders to look for ways of promoting the girl child in mixed schools. Policy makers will use it to look into ways of empowering the girl child in a mixed school.

Objectives of the study.

To determine school – based factors, which affect girls' academic performance (KCSE) in mixed secondary schools in Nakuru Municipality.

Research Questions

The study was guided by the following research question;

a) How do school based factors affect girls academic performance

b) What possible strategies can counter the school based factors, which affect girls' academic performance?

Significance of the Study

The study was potentially beneficial in a number of ways.

The schools in the Municipality can take the necessary actions to minimize or improve girls' poor performance. This is because they would now know the root causes of girls' poor performance in KCSE in their schools.

The study would benefit the Quality Assurance and Standard Officers who can take curative measures to the problems and this would yield good fruits not only to Nakuru Municipality but also to the District, Province and Nation as a whole. Education planners will be able to make decisions about female education e.g. converting mixed schools to single sex schools.

Basic Assumptions of the Study

The following assumption guided the study.

a) The information given by the respondents is what they felt are the causes of poor performance of girls in mixed schools.

b) Both boys and girls were exposed to the same learning environment in terms of curriculum.

c) Both boys and girls came from similar backgrounds.

d) Both boys and girls on average scored the same marks in KCPE and therefore have some intellectual capacity.

e) Both get the same learning opportunities in school**.**

f) Girls in mixed schools do not perform as well as boys in the same school.

Limitation of the study

This study was conducted with the following limitations in mind:-

a) The study was limited to only 6 schools in Nakuru Municipality. The findings of the study could not therefore be really generalized to the entire District or Province.

b) Resources and time were important yet they were limited since time and money could not allow the researcher to reach all the schools. This was due to the fact that the researcher was collecting, analyzing and compiling the information while still undergoing the normal school attendance and teaching.

c) The financial limitation comes in due to the fact that the researcher was self-sponsored. There was typing, traveling and binding expenses.

d) Due to time limitation, the researcher was not able to trace the students who had already sat for KCSE in the previous years in the municipality whose responses would have been crucial to the research.

e) The study relied on self-report from Head teachers, teachers, form four students and it was not be possible to check the validity of their declarations against other measures in their respective institutions. Reliance on self-report can be problematic and may threaten the validity of the findings. It is possible that some participants were biased in their replies, and in replying honestly to certain questions. Triangulation of the research methods/Instruments addressed the limitation. It was however hoped that the results were to benefit all the education stakeholders.

Theoretical Framework

The current study was based on Pearson's theory, where society views all activities that are carried out to be based on social roles and interactions of men and women. This is an assumption of gender roles as dictated by society. The society seems to have ultimate authority on the precise nature of what women and men actually do, and their real contribution to production and reproduction which turns out to be biased against women according to (Orodho 2004). This theory argues that because of biases, the performance of women and men is affected in nearly all spheres of life e.g. business, education, and environmental conservation and development projects. Pearson's gender relations' framework was found appropriate for this study because it emphasizes the various social, cultural and economic norms and standards, which must be considered when girls or females take the opportunities to participate in social activities such as education.

Definition of Central terms

Mixed Schools – schools where both boys and girls learn together as opposed to single – sex schools.

Performance – Status of a pupil with respect to attain knowledge on skill as compared with other pupils and with other schools adopted standards.

Education – Any process, either formal or informal, that shapes the potential of a maturing organism. Informal education results from the constraint effect of environment and its strength in shaping values and habits cannot be overestimated. Formal education is a conscious effort by human society to import the skill and modes of thought considered essential for social functioning.

Mean grade – This is the average grade of all subjects done in this case at KCSE.

KCSE – This is the Kenya Certificate of Secondary Education, an exam done at the end of four years in Secondary Education.

KCPE – This is the Kenya Certificate of Primary Education; an exam done at the end of 8 years primary Education.

Governing Board – Legal body entrusted with the responsibility of managing secondary schools and tertiary institutions in education like teacher colleges.

School – An organized group of pupils pursuing desired studies at desired levels and receiving instruction from one or more teachers frequently with the assistance of other employees and officers e.g. Head teachers and Inspectors.

Teacher – A person employed in an official capacity for purposes of guiding and directly the learning experienced of pupil in an educational institution whether private or pupil.

Attitude – Refers to readiness to react towards or against some situation, a person or thing in a given manner for example with love, hatred or fear or resentment – to a particular degree of intensity.

Literature review

Introduction

The purpose of this chapter was to review literature related to the problem content. In this case, the literature was reviewed from various books and also studies carried out by different researchers both locally and internationally. School based factors affecting girls' performance in Education are many and varied according to the existing literature. They are classified into the following categories.

Cultural Constraints

Several authorities have discussed at varying lengths the cultural constraints as they operate to limit education for girls in the world.

Dale (1969, 1971, and 1974) in his studies noted that girls in mixed schools perform poorly because of societal attitudes where society does not advocate boys and girls living together. Dale however, feels that education should be mixed because according to him, both boys and girls were more satisfied with mixed schools, seeing it as amore "natural" environment and feeling it helped their relationships with the opposite sex. Similarly Hannan &Shortfall (1991) found that male and female ex –students of mixed schools in Ireland were more positive about the personal and social development aspects of their schooling. Dale further argues that if mixed schools are relaxed in giving homework, which leads to poor performance, then boys and girl's performance would be affected. This is however refuted by a research done by Kitetu (1998) who did a research project from 1995 to 1998 in secondary school classrooms in Kenya. The research unearthed, cultural – specific and historically located gendered classroom behaviour and practices. The research showed that girls and boys engaged in different activities within the same lesson, with girls showing minimal involvement in activities requiring physical exertion. There was also teacher's differential treatment of girls and boys, but in this case teachers were harsh on boys and very gentle with the girls. While this has been noted in other research such as 'task demarcations' and teachers' differential treatment by gender, the study was underpinned by society's cultural beliefs. There is a Kenyan cultural belief that boys should not be 'softened'. They are expected to be tough, active and brave while girls are often treated as 'soft'. As such, teachers'

treatment of boys and girls in these classrooms reaffirmed gender in accordance with cultural norms which define masculinity and feminity.

Aseka (1986) in her research, 'A review of literature on factors affecting girls' performance in mixed second schools' says "….in all textbooks …. Whenever portrayed, girls are identified with traditional values and ways of life. It portrays boys as stronger, more incentive, and active, thus developing biased attitudes among the children and leading to consequent withdrawal of girls". In a majority of classrooms observed, art featured more photos and graphics of male authors and heroes than of females. School texts, art and teaching aids that focus on men as being the leaders, thinkers and creative minds can condition girls that are lower than their potential.

This shows the disparity of treatment between boys and girls, something has to be done to create similar ideas Maleche (1972) and Eshiwani (1983) recognize the fact that for students who are not boarders, greater demands are made on girls to assist with household chores e.g. taking care of their younger siblings, fetching firewood and water. The boys are therefore likely to perform better. As Carnoy (1986) aptly says, gender is regulated and policed by rather social norm, but this does not mean they (men and women) are reduced to automate, programmed by early socialization to repeat forever the appropriate gender behaviour. They are conscious agents who may engage in acts of transgression, subversion and resistance. As active producers rather than passive producers of gendered behaviour, men and women may use their awareness of gendered meanings that attach to particular ways of speaking and acting to produce a variety of effects. In short, teachers may be able to encourage their students to resist gender notions that interfere with their learning. Special effort therefore need to be employed to cultivate girls' interest in education and provide an environment that will ensure their full participation and achievement in education. Several authorities have discussed at varying lengths the cultural constraints as they operate to limit education for girls.

Structural Constraints

To understand the nature of structural constraints in the Education system that hinder advancement of women, it is important to understand the place of women in Education as was stipulated by some of the early educators as the present Education systems have borrowed greatly from them.

A historical procedure was set of boys being favoured for school attendance. The trend was supported by the emphasis on early marriage for girls in indigenous Africa Societies and the lack of attentive role models to which girls could aspire. First mission schools were therefore for boys.

These were sentiments raised by Judy Wakhungu- Executive Director of the African Centre for Technology (Acts). She is one of the few women geologists. She says that apart from lack of role models, they lack knowledge on career opportunities. "Many girls find the science classroom chilly and male dominated. With this kind of observation, we can tell then why it is important for the girls to be separated from the boys. The year 2005 has seen the standard magazine 'school and career' highlighting opposition to mixed schools. Principals, school and education boards wanted separate institutions for boys and girls at secondary level. Some reasons are to improve girls' performance. In a special Report – 'Splitting schools' (The standard September 22, 2005). It said separation is the road to liberation of the sexes It further says in most mixed schools girls rarely ever score a grade higher than a B. Many girls in mixed schools have the mentality that University education is the preserve of men and only if they are taught alone would they be confident..

Women are underrepresented in parliament where key decisions are made and account for just 8.3 % of the seats. At the local authorities, the picture is not any rosier.

In 2004, the National Commission on Gender and Development was established through an Act of Parliament to coordinate, implement and boost gender issues and to advice the Government and other organization. This has however not been achieved. If this is the case then a lot has to be done to encourage the girls to do even better, the numbers at the top is still too small to help solve matters. It is therefore clear that although women comprise 51 % of Kenya's population and more than half of the labour force, their efforts are not adequately captured in national accounts. The articles continue to say that it is in education where Gender inequality is most acute. It is not compulsory for children to get early childhood education to quality for primary school, more so for girls. Although gender disparity in enrolment is low, the national average of 35 % is poor and provincial differences glaring with arid and semi-arid areas and slums recoding the lowest. The traditional attitude, which discourages girls from mathematics and sciences, complied with limited facilities for technical subjects in girls' schools are partly to blame for the trend. The Government has appointed women to key positions but they are still relatively few. There are few business leaders or women in higher public office in most particular societies. This is often reflected in gender-biased curriculum therefore, girls may not be aware of the available opportunities or the challenges to success. It is important to note that girls are in particular need of role models and guidance on their choice of studies and careers. In girls' schools, most teachers and administrators are women. These role models may inspire young girls to become change agents and overcome social barriers. Interacting with female role models and receiving personal

encouragement and advice help girls to succeed in life (Lehorer, 2000). In Kenya, as of June 2003, the proportion of women in the Judiciary was at 36.4 % and most in the rank of chief magistrate and below. With political considerations, ethnic balancing and experiences being key determinants to appointment, women lose out even where they merit.

Another structural problem has been the changing orientation of Kenya's Education, system in the 1980's towards a greater emphasis on science, mathematics and technical subjects, combined with the failure to provide girls with access to proper training programmes, but clearly girls have fewer opportunities to benefit from as their subjects are mainly arts. Okonkwo (1983) observes that parents and teachers discourage female students from studying science subjects which they stereotype as masculine and encourage them to study arts subjects instead. He also observes that the tendency for sex-linked polarization of subjects is higher in mixed schools than in single- schools i.e. more girls tend to take sciences in single-sex secondary schools and vice-versa. Some research findings however suggest that girls do better in certain subject areas such as mathematics and science when boys are not in class (Robinson& Gillibrand, 2004). In one of the earlier studies, Jimenez &Lockheed (1989) assessed the performance of 3,265 eighth grades in single sex and mixed schools in Thailand. Girls in girl-only schools scored higher in mathematics. Boys scored higher than girls in mixed schools' mathematics classes. These difference were largely because of peer effects. This is likely to be due to the fact that the boys in class challenge them. Often, students are exposed to syllabi and textbooks that ignore women roles and contribution to society. Obura (1985) observes that in mixed schools, girls under- achieve in every examinable subject as compared to boys. She attributes the phenomenon of under – achievement to withdrawal and non-involvement on the part of the girls as they proceed up the educational scale. This she argues is as a result of the unsuitable learning environment for girls in schools.

It holds that even though boys and girls are exposed to the same curriculum, it portrays boys as stronger, more inventive, more active sex, thus developing biased attitudes among the children and leading to the consequent withdrawal of the girls. Eshiwani (1976) argues that girls under achieve in science and maths because the school through the teachers provides different treatment and experience for boys and girls in science and math's by encouraging the boys to pursue sciences and giving more help to the boys than the girls. This case maybe more serious in mixed schools because singling out the boys under such circumstances maybe more devastating to the girls. This sex role stereotyping sows seeds of differential achievement. However, research shows that in girls' only classrooms, they are engaged in learning mathematics and science most of the time, and they

show cooperative learning behaviors and identify better with their female classmates than when in mixed classrooms. Most teachers of mathematics do not believe that girls can achieve as well as boys in mathematics. The previous research by Eshiwani (1974) shows that in general, girls develop negative attitude and little aspirations towards mathematics and this tends to affect their performance. The culture in mixed schools may discriminate against female teachers and girls' students. This can be the real, although often unintended, impact of education systems that have been shaped and managed largely by men. Without a conscious effort to make the school empowering and valuing of girls, as well as boys, discrimination can hurt girls. It can impair their self-confidence and achievement as well as lower their career and education goals. This is however disputed by other studies which that there are no differences in what girls and boys can learn but there may be different ways to engage and teach girls as compared to boys (Jimenez & Lockhead , 1989).

Critics of single sex education however see things differently. They argue that girls' only schools are unnatural social settings which isolate girls from boys. In well managed mixed schools, boys and girls learn to respect and value each other idea. They learn to listen and communicate with each other. Isolating girls and boys in single-sex schools is considered a barrier to them developing the effective inter-personal skills they will need to function as grownups in their society (Lehrer, 2000).They continue to say that single sex schools can lead boys and girls not to witnessing the ideas, talents and skills of the other sex. This can reinforce the existing gender bias in society. In addition, some contend that creating schools for girls suggests girls have problems and need special attention. This may cause girls to think less positively of themselves.

When the Minister for Education Science and Technology was releasing results for KCSE 2004 (KNEC,2004) he noted that the number of girls taking Physics and vocational subjects except home science was low. In 2002, only 15, 312 girls took Physics compared to those who took Biology (87,141) and Chemistry (87, 725). The total number of girls was 91, 649. In 2003, 16,094 girls took Physics, 91,108 took Biology and 91,108 Chemistry respectively. When releasing the KCSE results for 2005 students (KNEC, 2006) the acting Education Minister Dr. Noah Wekesa said girls performance in English, Kiswahili, Home Science, Art and Design, Woodwork, German, Music and economics was rated as better than of boys. However, boys had better performance than their female colleagues in all the other subjects.

Again in 2006 KCSE (KNEC, 2006) the girls beat the boys in Kiswahili, Biology Science, Home Science and Music. The boys led the rest.

Finally, girls often become victims of circumstances when they fall pregnant. Eshiwani (1985) observes that 10% of female drop – out is due to pregnancy. Education system recommends expulsion of such students and so they are forced to drop out. This is further argued by Education stakeholders (KNEC, 2005). Mrs. Mary Ndegwa, the principal of Kilgoris girls Secondary School says the setting up of Kilgoris Girls School has borne fruit "Pregnancy that was rampant when the girls were in mixed schools has gone down drastically" she says last year, a girl scored B- in KSCE at Kilgoris girls, a feat no girl had ever accomplished in the Districts mixed schools. They maintained that instead of seriously doing academic work, the girls are more concerned with love affairs and consequently perform poorly while boys are not very much affected academically. In school and career. (The Standard, September 15, 2005) several Education stake holders were interviewed on their mixed schools, while some supported the system majority were against it with reference to girls performance. Richard Ouma, the Principal of St. George's Sianda (Kisumu) mixed Secondary admits that love relationships between girls and boys in mixed schools are a destabilizing factor. Student's performance deteriorated if they spend a lot of time on the affairs.

The principal says some girls do not do assignments but instead wait for their lovers to do so and they just copy. How would such a girl perform at the end of four years? He however says that mixed schools can be considered good training ground for girls to be bold and confident.

Eshiwani (1983) in "Who goes to University in Kenya" found out that majority of girls who joined University came from single-sex schools. Ironically most of the girls who become pregnant during their studies were from single-sex schools. Professor Owino Riew – school and career (The standard 15, March 2005) agrees with this he says there is "less thirst" for the opposite sex in mixed schools. He explains that boys and Girls are used to one another unlike in single sex schools". This implies they are less socially developed in single sex schools but further proves that in Secondary schools, single sex schools are academically more superior.

In poorly managed schools, there is the risk of male teachers and boys physically or sexually abusing the girls. There are also other forms of violence, intimidation and embarrassment. It has been argued that male teachers take advantage of their students. This problem is however not a preserve of mixed schools as it also takes place in girls only school. However, in this case the male teachers see the male students as their competitors as they tend to have love affairs with the girls as they can provide the female students with money and other material benefits.

Mixed schools that lack separate toilets for girls or have long lines of latrines without privacy humiliate girls and put them at risk. Day-to-day

harassment, verbal abuse and bullying can build up and destroy girls' ability to concentrate and their joy of coming to school. These are less in girls' schools. According to some studies, in girl-only learning environment girls are more successful female role models. The top students in all academic subjects and the leaders in sport and extra-curricular activities are girls. Building onto this, some research indicates that adolescent girls feel better themselves in many ways when they are educated in girls' schools as opposed to mixed schools (Strabiner, 2000)

School boards cite indiscipline as the reason for their rejection of mixed Schools. School and career (The Standard September 15, 2005) says that Indiscipline cases in mixed school have increased and this has created a lot of fear among the girls in mixed schools. This is because their schoolmates from whom they can seek refuge in times of danger turn out to be their assailants like the case of St. KIZITO in Meru in the early 90's. However indiscipline is not the preserve of mixed schools, single sex schools are equally affected.

Summary

The literature review has tackled cultural constraints affecting girls performance in education e.g. the belief that education can only help ruin the girls from what they are expected to be by society, positive attitude towards boys by the teachers. It further states that girls shy away from doing competitive courses.

The structural constraints can be understood from the point of some of the early educators who had boys favoured for school attendance and recommended early marriage to girls. The concept of women empowerment is yet to be institutionalized and the businesses they dominate have systematically been pushed to the periphery. There has been a general belief that girls can do as well in Maths and Sciences like the boys. The girls have believed this to be true and so look on boys as superior. The reviewed studies have however not investigated the actual social, cultural school based factors which affect girls, academic performance in mixed secondary schools. This is the problem which the current study investigated in mixed secondary schools in Nakuru Municipality.

Research methodoly

This section describes the research methodology that was used in the study. It explains the research design, target population, sampling procedure, sample size, research instruments, validation procedures, data collection and analysis procedures.

Research design

The study adopted a mixed method design an approach to inquiry that combines or associates both qualitative and quantitative forms (Creswell, 2007).It is more than simply collecting and analyzing both kinds of data; it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research (Creswell & Plano Clark, 2007).

Target Population

The target population for this study was 12 public mixed secondary schools within Nakuru Municipality. From the sampled schools, an equal numbers of students were selected from form four classes in each school totaling 160. Sixty (60) teachers were included in the study and six (6) head teachers.

Location

The study was carried out in Nakuru Municipality, of Nakuru District because the problem of girls poor academic performance in KCSE in mixed secondary schools has been phenomenal as evidenced by the poor performance mentioned. Therefore there is a need to carry out study to determine the factors responsible and for this to establish the possible strategies that the secondary schools use to address this challenge.

Sample and Sampling Procedure

A sample is a small proportion of a target population. Sampling means selecting a given number of subjects from a defined population as a representative of that population. Any statement made about the sample should also be true to the populations Prewitt (1980). According to Napa (1997) a research should select a sample large enough to improve the likelihood of obtaining results that are similar to what would be obtained using the entire population. A 50% sample is recommended for populations that run in hundreds for population that runs in thousands, 5% to 20% may be drawn. This was the convenient sample for the study.

The study sample was six (6) schools, six (6) head teachers, sixty (60) subjects teachers, sixty (60) girls. The schools included in the study were selected through simple random sampling techniques, which gave the six (6), head teachers who participated in the study. This technique was used to select these schools because these institutions are of similar characteristics i.e. mixed schools. Purposive sampling technique was used to select the ten (10) subject teachers in every school. The ten (10) subject teachers were those examined in KCSE: Maths, English, Kiswahili, Biology, Chemistry, Physics, History, Geography, Business Studies and Agriculture. The ten (10)

girls from every school that were included in the study were selected by using simple random sampling technique because the performance of such students similar i.e. poor performance with a mean grade of C- in almost all the school in the sample.

The total number of respondents included in the study were as shown in table 1.2 below.

Table 1.1: Total number of respondents

RESPONDENTS	NUMBERS
Schools	6
Head teachers	6
Subject teachers	60
Form four students Female Students (girls)	60

Research Instruments

Two types of instruments were used for the study; questionnaires and interview guide.

Questionnaires

Enables you to collect more information from a big number of people. Most commonly used method when respondents can be reached and are willing to co-operate. Questionnaires were preferred for this study because according to Gay (1981) descriptive date are typically collected through questionnaires to be administered.

Students Questionnaires

Sixty (60) students were issued with questionnaires to answer. The students were form fours so it was appropriate for them to answer the questionnaires.

Teachers Questionnaires

Questionnaires were administered to form four subject teachers. They are conversant with what goes on in class and outside classrooms,

Achola and P. (1987) have outlined the suitability of using questionnaires in a study

a) Large coverage of population can be realized with little time, personnel or cost.

b) Anonymity of the respondents filling the questionnaires may help them to be honest in their answers.

c) Avoid bias due to characteristics of interviews

d) Allows respondents time on answering questions to avoid hasty responses.

NB The questionnaire were to be designed to obtain such information as; school based related to the objective of the study.

Interview

Kathuri (1993) defines an interview schedule as an outline of questions that form a basis for and guide the interviewing process. The schedule provides a structure that aids in obtaining the necessary information efficiently and in a business-like atmosphere. Enables you to gather in-depth information, to counter check/confirm the information obtained through questionnaire.

Head teachers' Interview schedule

The interview guides were used to respond to verbal responses from the head teachers of the six selected schools regarding poor performance of girls. The researcher went for this because the head teachers also teach the students. They are the ones who collect fees so they know the financial problems as they interact with parents personally. They are also directly involved with disciplinary cases involving the students.

Piloting

Once the questionnaire has been constructed, it should be tried out in the field. The questionnaires were pre-tested to a selected sample of four schools outside the selected samples in Nakuru Municipality. Piloting ensures that research instruments are stated clearly and have the same meaning to all respondents (Mugenda and Mugenda 1999; 186).

Validity of the Instruments

Validity of the instrument to be used for data collection was determined through content validity procedure by seeking expert judgment and discussion with the supervisors and other professionals.

Reliability of the instrument

Reliability of the instrument concerns the degree to which a particular measuring procedure instrument gives similar results over a number of repeated trials.

A test – retest or coefficient of stability method was used to estimate the degree to which the same results could be obtained with a repeated measure of accuracy of the same concept in order to determine the reliability of the instrument. It was assumed that responses to the two tests would be very similar because the latter reflects the same thing (content) for respondents.

Score obtained by each respondent on the first and second test was quite close. If they were not then the instruments would have been of low reliability.

In order to test reliability of the instrument in the study, following steps were stipulated

a) The developed questionnaire was given to a few identical subjects for the study in two mixed schools in Naivasha Municipality.

b) The answered questionnaire was scored manually.

c) The same questionnaires were administered to the same group of subjects after a period of two weeks.

d) The questionnaire responses were score manually

e) A comparison between answers obtained in b and d above were made.

A Pearson's product moment formula for the test – retest was employed to compute the correlation coefficient in order to establish the extent to which the contents of the questionnaire are consistent in eliciting the same responses every time the instrument is administered.

Data Collection Techniques

The researcher obtained a research permit from the Ministry of Education headquarters at Jogoo House (Nairobi) to seek for permission to visit schools as they fall under it. From the Ministry, the researcher got permission from the District Education Officer, Nakuru District to visit Schools. The researcher then visited six secondary schools in Nakuru Municipality informing them about this study and organizing with school heads to meet the teachers and students. Lastly, there is the actual visit to schools teachers and students in samples schools and interview session with him. The researcher gave them instructions on how to answer the questions.

Data Analysis

The data collected was subjected to mixed method analysis approach. The sample size was 132 which can allow the generalization of the study. The researcher used wave analysis to determine response bias that is, the researcher examined returns on select items week by week to determine if average responses change (Creswell 2007). Those who returned surveys in the final weeks of the period were considered nearly all non-respondents. Descriptive statistics like mean, mode, frequencies, percentages and charts were used. Data was collected by means of questionnaires and interview schedules.

Data presentation and analysis

The principal guiding factor in that data analysis presented in this chapter was the study objectives highlighted as follows.

a) To determine if there is a relationship between girls' poor performance and school based factors.

b) To determine the possible strategies that can counter the factors, which affect girls' academic performance.

The collected data was analyzed using descriptive statistics. Frequency distribution tables and percentages were used to help in cross tabulation of data. According to Orodho (2004), tables and more so dummy tables describe statistical results more clearly and economically than words.

Demographic Data of Study participants

There were five head teachers out of the six intended who participated in the study. Table 4.1 presents the age, gender, academic and professional qualifications of the head teachers who participated in the study.

Table 4:1Head teacher's frequency

AGE BRACKET	FREQUENCY	PERCENTAGE %
31-40 YRS	3.0	60.0
41-50 YRS	1.0	20.0
50 YRS AND ABOVE	1.0	20.0
TOTAL	5.0	100.0
ACADEMIC QUALIFICATIONS		
Dip	1.0	20.0
BA/BSc With PGDE	1.0	20.0
B.ED	3.0	60.0
TOTAL	5.0	100.0
EXPERIENCE		
6-10 YRS	1.0	20.0
11-15 YRS	1.0	20.0
16 YRS and above	3.0	60.0
TOTAL	5.0	100.0
SCHOOL		
DAY SCHOOL	4.0	80.0
FULL BOARDING	1.0	20.0
TOTAL	5.0	100.0
STREAMS		
SINGLE STREAMED	1.0	20.0
DOUBLE	1.0	20.0
TRIPLE	3.0	60.0
TOTAL	5.0	100.0

Source: Head teacher's questionnaire

Their age and academic qualifications are as given in the table. The table shows most of the head teachers, 60% of them are B.ED holders the

best requirement for secondary education. The years of experience are quite high-16years and above. This makes them better in handling the girls in school having dealt with them for long. Majority of them, 60% are in triple streamed classes a sign that majority deal with big numbers which is likely to lead to neglect of other students, especially girls who may need special attention.

The study also involved subject teachers. 55 teachers out of the initial sixty from the six schools were involved in the study. Their demographic data involved age, academic qualifications and experience. This is given in table 4.2.

Table 4.2 Teachers Frequency

AGE BRACKET	FREQUENCY	PERCENTAGE %
20-30 YRS	4.0	7.3
31-40 YRS	36.0	65.5
41-50 YRS	15.0	27.2
TOTAL	55.0	100.0
QUALIFICATIONS		
DIP	13.0	23.6
BA/BSC with PGD	15.0	27.0
B.ED	22.0	40.0
M.ED	4.0	7.3
MA/MSC	1.0	1.8
TOTAL	55.0	100.0
EXPERIENCE		
BELOW 1 YRS	2.0	3.6
1-5 YRS	2.0	3.6
6-10 YRS	6.0	10.9
11-15 YRS	27.0	49.2
16 YRS and above	18.0	32.7
TOTAL	55.0	100.0
STREAM		
TRIPLE	40.0	72.7
DOUBLE	11.0	20.0
SINGLE	4.0	7.3
TOTAL	55.0	100.0

Source: Teachers Questionnaire

Most of the teachers fell in the age bracket of 31-40 years i.e. 65.5 %. 23.6 % of them were diploma holders, 27.2 % have BA /BSc with PGD while 40 % were B.Ed holders. The remaining 1.8 % had Masters Degree. With majority having B.Ed, this was a good sign as that is what is needed for a secondary education.

Majority of the teachers – 49.1 % have an experience of between 11-15yrs and another 3.6 below 1 years' experience only 32.7 % have an experience of 16 years and above. Most of the teachers therefore have enough experience a good sign that they can help deal with student's problems. 72.7 % of the teachers are in Triple streamed schools, 20 % in double stream while 7.3 in single streams. This is an indicator that the teachers have their hands full. The study also involved 60 girls all from four classes.

Relationship between poor performance and school based factors

The first objective of the study was to find out the relationship between poor performance and the school based factors. Table 4:3:1 shows respondents (teachers) view on the school based factors.

Table Teachers on the school based factors

School Based Factors	No.	Min. Yes	Max. No	Mean	Std. Dev.
SB- Instructional method used same	55	1	2	1	0.136
SB- Who are more indiscipline	55	1	2	1	0.136
SB- All teachers qualified	55	1	2	1	0.189
SB-Boy/girl relationship	55	1	2	1	0.290
SB- Boys have positive attitude towards girls	55	1	2	1	0.317
SB- Equal adequate guidance and counseling	55	1	2	1	0.336
SB- Who perform better in class	55	1	2	1	0.339
SB- Do you have discipline cases	55	1	2	1	0.417
SB- Enough learning facilities	55	1	2	1	0.440
SB- Does mix nature of school bring discipline cases	55	1	2	1	0.458
SB- Female teachers have special relationship with girls	55	1	2	1	0.503
SB- Learning facility lacking	55	1	2	2	0.743
SB- Teaching in single sex	55	1	2	2	0.498
SB- Who are selected with high marks	55	1	2	2	0.938
SB- KCPE pass mark same	55	1	2	2	0.461
SB- Mixed schools bring about socialization	55	1	2	2	0.622
SB- Who are more affected by relationship academically	55	1	2	2	0.404
SB- Boys academically capable	55	1	2	2	1.062
SB- Preferred school	55	1	2	2	0.896

Key

SB – School based

The first column were the school based factors considered in this study, the second column was the sample size of the respondents in the objectives (teachers), the third column represented the minimum of the response which was coded to represent yes, the forth column represented the maximum of the response which was coded to represent No. The fifth column represented the mean between the minimum (yes) and the maximum (No) whereas the last column was the standard deviation.

Out of the teachers interviewed 30% disagree that boys are more capable academically, 16.4 % strongly agree, 23.6 % agree while 29.1 strongly disagree. It therefore comes out clearly that it's not boys who are academically bright but it is girl's circumstances that make them not do well.

In class 87.3 % say boys perform better than girls while only 12.7% support the statement. Instructional methods used in class are the same 98.2 % agree while 1.8% says no. Students are given same teaching methods in mixed schools so one can't say; they don't do well due to different teaching methods.

Only 29.1 % agree that admission for boys and girls is the same as 70.9 say boys go with higher marks. If this is so then there can be no fair competition thus could be done to Ministry of Education lowering cut off for girls.

Boy girl relationship seems to be a factor affecting the girls' performance as 90.0% concur with the fact and only 9.1% disagree. To make matters worse 81.8% say these relationships affect girls more while only 18.2 % boys get affected. Girls are more vulnerable and tend to get wholly involved unlike boys who will still do their schoolwork.

The mixed nature of the school brings discipline cases 70.9 % say so as opposed to 29.1 % yet the boys are more in disciplined with 98.2 % confirming this only 1.8 % say girls are in disciplined therefore cannot be said to attribute to poor performance of girls as they are not in disciplined.

Out of the teachers questionnaires 87.3 % of them say the students are given equal guidance and counseling opportunity while 12.7 say No, so we cannot say girls are denied counseling.

Most schools according to 74.5 % of the teachers have enough learning facilities only 25.5 % say they are not enough. We can therefore not say that in mixed schools lack of learning facilities make girls not perform well. Neither can they claim that the teachers are not well trained – 96.4 % say teachers are well trained only 3.6 % deny this.

It is worth noting that 54.5 % say female teachers have special relationship with the girls as opposed 45.5 %. This should be a motivating factor to the girls as they get confidence and see them as role models.

According to the teachers several school-based factors do affect girls KCSE performance. The head teachers on the other hand responded to the following questions.

a) Have you been a head teacher in a single sex- school?

b) Do you prefer heading boy, girls or mixed schools?

c) Which combinations of schools do you prefer?

d)Are the minimum KCPE intakes for boys and girls the same?

e) Does this intake have any direct results on performance?

f) Are there boy/girl relationships in your school?

g) Do you have discipline cases in the school?

h)Have you had cases of male teachers getting involved with female students?

To respond to the above questions, the researcher arrived at the following responses;

Table 4:3.2

BEEN A HEAD TEACHER IN SINGLE SEX SCHOOL		
RESPONSE	FREQUENCY	PERCENTAGE %
YES	3	60
NO	2	40
TOTAL	5	100
EXPERIENCE BETTER THAN MIXED SCHOOL		
RESPONSE	FREQUENCY	PERCENTAGE %
YES	2	40
NO	3	60
TOTAL	5	100
PREFERENCE OF TYPE OF SCHOOL		
SCHOOL	FREQUENCY	PERCENTAGE %
BOYS	1.0	20.0
GIRLS	1.0	20.0
MIXED	3.0	60.0
TOTAL	5.0	100.0

Source: Head teachers questionnaires

Out of the Head teachers interviewed, 60% of them have headed single sex school as opposed to 40% who have no experience in single sex schools. Again 60% of them agree that experience in mixed schools is better than in single sex schools. An indicator that mixed schools are better and just a lot more should be done. Majority of the head teachers- 60%prefer heading mixed schools. On preference to head different categories of schools table 4:3:3.

Table 4:3:3 preferred combination of school

SCHOOL	FREQUENCY	PERCENTAGE %
MIXED SCHOOL	4	80
NONE	1	20
TOTAL	5	100

Source: Head teachers' questionnaires

KCPE intake for boys and girls same.
NO – 100%

Boys taken with high marks 100%

Most head teachers 80%prefer heading mixed schools while only 20%prefer the single sex school an indicator that mixed schools are popular. The challenge on the KCPE intake for boys and girls was responded to as follows.

100%of teachers interviewed agree that KCPE intake for boys and girls is not the same and concur that boys are taken with higher marks and

the reason for this is indicated in TABLE 4:3:4. This is a sign that boys who are picked to go to high school have high marks than girls.

Table 4:3:4 Reason for boys being taken with high marks

RESPONSE	FREQUENCY	PERCENTAGE %
BOYS DO BETTER THAN GIRLS	1.0	20.0
MORE BOYS ENTRANCE AT KCPE LEVEL	2.0	40.0
GIRL CHILD MAINSTREAMING	2.0	40.0
TOTAL	5.0	100.0

Source: Head teachers' questionnaires

On whether the intake has any direct results on performance, table 4:3:5 shows this. 60% of the head teachers agree that intake has direct result on performance as opposed to 40% who cannot relate them. Indeed those taken with high marks tend to do better.

Again 80% of the head teachers agree that boys tend to do better while only 20% don't agree and on reasons 60% says that the influence is the major cause of this kind performance and 40% say environment.

Table 4:3:5

INTAKE HAS DIRECT RESULTS ON PERFORMANCE.		
RESPONSE	FREQUENCY	PERCENTAGE %
YES	3	60
NO	2	40
TOTAL	5	100
WHO PERFORMS BETTER		
BOYS	4	80
GIRLS	1	20
TOTAL	5	100
REASONS FOR BETTER PERFORMANCE		
ENVIRONMENT	2	40
INFLUENCE	3	60
TOTAL	5	100

Source: Head teachers questionnaires

The challenge on boy\girl relationship table 4:3:6 they agree that this is very rampant and 80% agree while 20%disagree. Again it affects girls' academic performance as opposed to boys. On discipline cases, they do agree that discipline cases exist in schools. According to the head teachers very few male teachers are involved with female students. This could be attributed to the fact that the schools are mixed in nature having seen earlier that boy/girl relationship exists. 80% say that the relationship is not there while 20% says it exists. Where it exists 80% say it is solved through counseling while 20%say that interdiction has been done.

Table 4:3:6

EXISTENCE OF BOY/GIRL RELATIONSHIP.		
RESPONSE	FREQUENCY	PERCENTAGE %
YES	4	80
NO	1	20
TOTAL	5	100
DISCIPLINE CASES 100%		
MALE TEACHERS INVOLVED BY FEMALE STUDENTS.		
YES	1	20
NO	4	80
TOTAL	5	100
WHAT HAS BEEN DONE TO ON THE ABOVE INVOLVEMENT		
INTERDICTION	1	20
COUNSELLING	4	80
TOTAL	5	100

Source: Head teachers questionnaires

On the same challenges, which are school based students were asked the following questions.

a. Was it your choice to go to a mixed school?
b. Mixed schools are better than single sex schools.
c. Boys are academically better than girls.
d. Do you feel free in a class, which has boys?
e. Do you have a boyfriend in your school?
f. Are there love relationship between male teachers and school girls?
g. What academic problems do you encounter in your school?
h. What other problems do you encounter in your school?
i. Are there problems of time wastage in your school?
j. Would you like to transfer from your school to a single sex school?

The students responded as follows on whether it was their choices to go to a mixed school. 66.7 % of the students agree while 33.3 % say they are not in mixed school out of choice. Figure 4:3:7

Table 4:3:7 Students Frequency

CHOOSE TO GO TO MIXED SCHOOLS		
RESPONSE	FREQUENCY	PERCENTAGE %
YES	40	66.7
NO	20	33.3
TOTAL	60	100
WHY CHOOSE MIXED SCHOOLS		
SHARE IDEAS	41	68.3
KNOW BOYS/GIRLS	14	23.3
REPRESENT REAL LIFE	1	1.7
IT IS NEAR	4	6.7
TOTAL	60	100

Source: Students questionnaire

They even give reasons for being in mixed schools. On whether they chose to be in mixed schools the response is as shown in Table 4:3:8. The students 66.7% say they chose to be in mixed schools meaning they are not there by accident. Their reasons for choosing these schools are:

I) They are able to share ideas with the boys as opposed to when they are only girls.

ii) They learn more about the opposite sex instead of believing in here say.

iii) Mixed schools represent real life because both sexes co-exist just as in real life.

iv) The mixed schools are near home as opposed to boarding school where they go far from parents and other family members.

Table 4:3:8

MIXED SCHOOLS ARE BETTER THAN SINGLE SEX SCHOOLS		
RESPONSE	FREQUENCY	PERCENTAGE %
STRONGLY AGREE	28	46.7
AGREE	25	41.7
STRONGLY DISAGREE	2	3.3
DISAGREE	5	8.3
TOTAL	60	100
BOYS ARE BETTER ACADEMICALLY THAN GIRLS		
YES	23	38.3
NO	37	61.7
TOTAL	60	100
FEEL FREE WITH BOYS WHEN IN CLASS		
YES	50	83.3
NO	10	16.7
TOTAL	60	100

Source: Students questionnaire

A bigger percentage 46.7% agreed that mixed schools are better than single sex schools. They however deny that boys are academically better than girls with 61.7 % saying no and only 38.3% say yes. On whether they feel free with boys in school, 83.3% say yes while 16.7% say no. The girls however agree that there is boy/girl relationship in school.

Table 4:3:9 Do you have a boyfriend in school?

Response	Frequency a	Percentage %
Yes	40.0	66.7
No	20.0	33.3
Total	60.0	100.0
For how long?		
Duration	Frequency	%
Months	4.0	21.1
Years	16.0	78.9
Total	20.0	100.0

Source: Students questionnaire

However relationship between male teachers and female students according to the girls is not high as only 41.7 % say they exist, but 58.3 % say they are not there as shown in Table 4:3:10. This can be attributed to the mixed nature of the schools. They see boys every day and even have them as boyfriends. This lowers love relationships between teachers and students.

Table 4:3:10

LOVE RELATIONSHIP BETWEEN THE TEACHERS & THE STUDENTS		
RESPONSE	FREQUENCY	PERCENTAGE %
YES	25	41.7
NO	35	58.3
TOTAL	60	100

Source: Students questionnaire

When asked about their academic problems they responded as follows.

Problems with teachers

a) ***Some teachers favor bright students over the weak ones.*** They do everything for the bright students instead of motivating the weaker ones thus they lose interest.

ii) ***Some teachers have a habit of missing most of their lessons***. This makes students who can't work on their own to decline even more academically.

iii) ***Some teachers don't care about the welfare of the students***. Students especially girls could be undergoing a stage in life or facing various difficulties making them miss school or not perform as expected. The teachers however do not try to find out what could be wrong.

iv) ***Some are not approachable and students find it hard to go to them for consultation.*** Such teachers are not friendly and so students would rather die with their problems than face them.

v) ***Some don't understand the students.*** Some teachers don't bother to find out why students are behaving or doing things in a certain way. Instead they draw their own conclusions about the students.

Problems with administration

i) ***Suspension.*** Sometimes the administration suspends students even for minor offences which can be solved through punishments.

ii) ***Sending students whose parents are not financially stable, home for fees.*** At times the administration knows that even if you go home you will not get money but you are still sent away.

iii) ***Very strict***. The administration is very strict on things like correct school uniform, time for reporting to school, leaving school without

permission. They refuse to understand when you try to explain reasons like say why you are not in correct school uniform.

iv) ***Expulsion***. At times you are expelled from school when a matter has been forwarded to the Board of Governors who will most likely listen to the administration.

Problems with Boys

i) *Sexual harassment.* Boys do harass girls by touching them and writing to them bad letters.

ii) Disrespectful. They make bad comments regarding girls and therefore hurt their feelings.

iii) *They at times answer girls rudely* when they ask questions or inquire about anything.

iv) *They display an arrogant attitude* towards girls.

v) *Destructive.* Sometimes they are given a book to share and instead of taking good care they cut pictures and write on them.

Problems with fellow girls

i) ***Un co-operative***. Some feel proud and don't help fellow girls to co-op with difficult situation.

ii) ***Hatred***. Some girls hate each other and therefore very unfriendly

iii) ***Competition***. They compete on non-academic issues e.g. beauty.

iv) ***Jealousy***. Most girls don't like to see others with things they don't have thus making them permanent enemies.

Most students do agree that there is a lot of time wastage with 75 % agreeing that they do waste a lot of academic hours and only 21.7 % denying this. They however would not like to transfer from their schools. 85 % say they would not like to transfer as they have already settled, 15 % however do not mind transferring.

Findings

Summary of the study findings.

The first objective of this study was how school based factors affect girls academic performance.

The findings are summarized as follows:

a) ***Admission to form one***: When students are being admitted to form one boys are admitted with higher marks than girls. This is usually decided by the Ministry as more often than not even at the KCPE level, the boys still do better in class therefore the girls don't see themselves as capable as boys.

b) ***Boy/girl relationship****:* This seems to be a major factor affecting girls in mixed schools. They develop relationship with classmates and get so

deeply involved as opposed to boys. Even the bright girls who can do well eventually don't make it.

c) ***The mix nature of the school*****:** This was found to contribute greatly to in discipline although girls are not so much involved in indiscipline.

d) ***Girls are affected by personal problems with teachers***: This comes in the form favoritism of bright students by teachers and missing lessons. With the administration they complain of suspension, being sent home for school fees, being very strict.

The girls further complain of sexual harassment by boys, arrogance and disrespect while fellow girls were un co-operative, have jealousy and a lot of competition.

e) Time wastage: The students especially girls admitted that academic time is used for other things other than learning.

f) *Lack of participation class*: Girls find it difficult to participate in class especially when they have boyfriends in the same class. This lowers their performance in class work and exams.

The second objective of the study was to determine the possible strategies that can counter the factors, which affect girls' academic performance.

Generally the respondents gave the following as possible strategies.

i) ***Encourage them to think positively***. They should be made aware that they can successful despite the difficulties they could be facing.

ii)***Invite resource persons to talk to them*** especially former girl-students who excelled academically.

iii) ***Enlighten them*** that they have equal ability and opportunity just like boys to excel

v) ***They should have role models who inspire them***. Girls should be made to identify a person they consider a role model and find out how the person excelled. This can be a great inspiration to them

vi)***Separation of boys and girls during lessons***. So that they don't get intimidated by boys during lessons, girls and boys should be taught separately. This could yield good results.

vii) Giving them leadership roles. Apart from being prefects girls can also be made to lead discussion groups, this will give them confidence.

Discussion

From the findings of the study it was established that most girls in mixed schools did not perform as well as they were supposed to at KCSE level This is not good as investment in Education satisfies a basic human need for knowledge, provides a means of helping to meet other basic needs and helps sustain and accelerate overall development. Investment in human

capital through equitable distribution of education opportunity may be used as a fuel to redistribute income and raise incomes of the poor (Psacharopoulos et al 1985). If both boys and girls from such backgrounds successfully exploit educational opportunities and attains quality grades at KCSE, their lives will improve. Girls have to realize this fact as only education can help reduce gender disparity.

The researcher's observation revealed very glaring factors leading to this poor performance of girls. The study found out that the schools do have well trained teachers and head teachers with a lot of experience so this cannot be the reason for girls' poor performance. They have same learning experience with boys and use similar facilities so it was discovered that there are other factors, which make the girls in a mixed school, not do well.

The issue of Form 1 intake is quite grave in the case of a mixed school, as girls looks at it from the point of view of the boys being better off so they get intimidated because we have seen that boys do come with higher marks. This scenario is not seen in single sex schools with just boys or girls. Usually boys do better than girls even at KCPE so the cut off points for girls are lowered. This intake has direct results on performance.

It was also discovered that as much as girls in mixed schools have proper socialization, the issue of boy/girl relationship is so rampant that they put books aside. This concur with the findings highlighted in the Thursday Magazine in the standard; Sept 15 2005 which says most education stakeholders agree that love relationships between girls and boys in mixed schools are a destabilizing factor. Students especially girls performance deteriorated if they spend a lot of time on the affairs. It is not that girls are not academically capable and this has been said by all the respondents it's their attention that is diverted. The boy does not get involved in the affair at the expense of the books.

Indiscipline is a factor associated with boys in this study but they still do well academically. Girls are involved in indiscipline at a very small %age so in mixed schools we can't say girls are so in disciplined that they can't do better than boys in any case they talk of boys sometimes giving them a hard time. The indiscipline nature of boys indicates girls so they get scared.

There are cases where girls talk of sexual harassment by boys who touch them and sometimes get away with it. This stops the girls from expressing themselves and even not participating in class so that the boys can view them as less competitors.

There is the issue of bursary and again here there is no preference to girls or boys as both are given equally. They even get an equal amount of kshs. 5,000. Another problem, which was coming out, very clearly is the girls' complaint that teachers favour other students especially the bright ones. In case of mixed schools if the boys are more favoured the girls shy

off and don't make any efforts in class at all. The boys mock them and make all forms of comments, under such circumstances the girls can't perform well as they feel intimidated. This factor corresponds with a research done by Kitetu (1998) on secondary school classrooms in Kenya. She confirms that teacher's treatment of the different sexes is a major hindrance to academic performance of girls who are treated as 'soft' and boys 'tough'.

There is the mention of relationship between female teachers and girls in schools. If the students feel close to them as the study has shown they will get role models and be motivated. If the female teacher could make it why can't the girl do better?

Ironically despite the many challenges faced by girls in mixed secondary schools the head teachers, teachers and even students prefer mixed schools to single sex schools. They say mixed schools offer socialization and you learn from both sexes therefore you know how to handle them. Very few students would like to transfer from mixed schools. This leaves us with the fact that mixed schools should not really be done away with in any case, pregnancies are not common and teacher/girl relationships are minimal. It is therefore upon the education stakeholders to deal with the issues in the mixed schools which make girls to do poorly in KCSE not doing away with them altogether.

From the above discussions it comes out that some school-based factors that have hindered the girl in a mixed school to perform well in KCSE in Nakuru Municipality. It is the teachers, other education stakeholders who must work very hard for the perception that girls cannot do well in mixed schools is viewed differently. Girls are not weaker academically compared to boys. For education to be beneficial to both genders, the performance at KCSE must be competitive between both boys and girls.

Conclusion

Through the two objectives of the study, it was established that several school based factors affect girls performance in KCSE in mixed schools i.e. indiscipline, intake marks, relationships and wastage of time .Generally teachers and head teachers cited that several problems that face the girls in mixed schools thus denying them a chance to do well in KCSE. They all gave what they considered a way forward to sort out this problem.

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