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Relationship between Emotional Intelligence and Marital Satisfaction of Male and Female Married Teachers in Anambra State

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Abstract

Marriages a bond between a man and a woman that is supposed to produce a satisfactory relationship whereby the married couple experience marital satisfaction that brings about mental and physical health of the individuals. This study determined the relationship between emotional intelligence and marital satisfaction of married teachers in Anambra state.three research questions were formulated to guide the study while three null hypotheses were tested at 0.05 level of significance. Correlational research design was adopted for the study. A sample size of 1,344 married teachers was drawn from a population of 6,987 married teachers. A multi-stage sampling procedure was followed selecting the sample. Two instruments: Emotional intelligence Scale (EIS) and Index of Marital Satisfaction (IMS) were adopted and used for data collection. The instruments are standardised measures and have the following reliability coefficient; 0.96 for IMS, 0.89 and for EIS. Data was collected through direct delivery approach. Data collected were analysed. Pearson correlation coefficients and regression analysis were used to answer research questions and test the hypotheses. Findings of the study showed among others that there is a significant low relationship existing among married teachers' emotional intelligence and their marital satisfaction. Based on the findings of the study, it was recommended, among others that married teachers should be encouraged by the Counselors involved in marital counselling to pursue habits and attitudes that promote marital satisfaction through periodic seminars and counseling sessions.

Introduction

Marriage is one of the most important stages in the development path of personal and social lives of individuals. It is considered as the most important social unit, which many factors are involved in its stability and strength. Hence, the quality of marriage as described by Khorasani, Hosseini, Matbouei, Khafri, Vasli and Vardanjani (2017) is the most powerful factor predicting the psychological health of married persons. The married peoples' relationship and their satisfaction of marital life according to Khorasani et al. is one of the important factors which determine the fate of their marriage.

The term marriage according to Odebunmi (2007) referred to the union of man and woman as husband and wife, which constitute the basic and essential unit of the society. As a physical as well as a moral union, marriage is recognized by society as the basis of a family. It may be a sacrament and in that way an indissoluble union for this life and hereafter, or a temporary civil contract for a fixed period. Nonetheless, whether a sacrament or a civil contract, the relationship, above sexual satisfaction, include, joining two members of opposite sexes for the procreation of legitimate children. While particular marriages may, of course, be entered into for any number of other reasons as family pleasure, social conveniences, financial considerations and similar motives, basically the prime objects of marriage are usually companionship, sexual intimacy and procreation.

Marriage in whatever form it exists is usually a source of satisfaction and gratification for many individuals in marital relationship. Satisfactory marriage for these people according to Omage (2013) is a shield against mental pressures and negative life events, while unstable and unsatisfactory marriages have negative consequences for both physical and mental health. Thus, healthy marriages need to be composed of a cordial relationship that could lead to marital satisfaction.

Marital satisfaction could be seen as an individual's positive assessment of his/her marital relations. It is a state of satisfaction in marriages which is defined by the intra personal or interpersonal perception. Hence, it is seen as a measure that shows how much a person's feeling and needs are met (Ja'farzadeh, 2011). Moreover, in the context of this study, marital satisfaction refers to an individual's positive assessment of his/her contentment with marital relations in terms of how much the individual's feelings and needs are being met.

A number of determinants are associated with marital satisfaction amongst which are compatibility of personality, educational homogamy, religious homogamy, and income level, level of education, age at marriage, and age of marriage. Thus, in today's society, meeting the needs of partners in marital relationship seems to be becoming a daunting task. The case of married teachers is not different as many seems to be coping with a large number of

problems to get their partners to make a relationship, preserve intimate relationships, and understand each other's emotions. A married teacher in the context of this study is a person (male or female) who is in a legally bound union and is engaged in a school to teach as a profession. For such a person, it is assumed that the significance of marriage in the individual's life has the prospect of affecting other facets of life such as the physical and psychological health.

One being in a satisfactory marriage has consistently been associated with better physical health, mental health, and overall life satisfaction. This assumption is supported by Mohammadimehr and Ayatollah (2017) who noted that satisfactory marriage is a shield against mental pressures and negative life events, while unstable and stressful marriages have negative consequences for physical and mental health. This research evidence thus indicated that some of the marital encounters and problems are related to inabilities for maintaining sincere relationship and misunderstanding between married people; as well as other factors such as economic, cultural, and social factors which tend to provide inappropriate and bad effects in their common life. In similar way, when there is no problem in a marital life, people would likely report a high level of satisfaction in their marriages.

Although marriage could be described as a pleasing bond, Mohammadimehr and Ayatollah (2017) observation on the other hand, shows that there is no perfect marriage, as more than half of the marriages in recent times are likely to lead to disappointment and separation. So, as more married people report lack of satisfaction and some seek for dissolution of their marriages, the concern of scholars has led to many research efforts (such as Lavalekar, Kulkarni & Jagtap, 2010; Ofovwe1, Ofili, Ojetu & Okosun, 2013), which was geared towards figuring out the elements that influence the level of satisfaction and persistency in marital interpersonal relationships.

Lavalekar, Kulkarni and Jagtap, Ofovwe1, Ofili, Ojetu and Okosun (2013) study focused on observable inter and intrapersonal factors in everyday communication of married people that are happy with each other. The researchers observed that factors like emotional awareness, emotional expression, emotional regulation, and sympathy affect the marriage communication and quality, which is perceived as a pointer to marital satisfaction.

From Lavalekar, et al. point of view, an unsatisfactory marriage is a function of many factors. A marriage may be in crisis if one or more of the four purposes of marriage namely childbearing, sexual satisfaction, companionship and economic satisfaction are not satisfactorily achieved. What this means is that marital satisfaction is a sub set of needs, and most of married persons, for different reasons seem not to care about that, while some are believed to be simply naive to basic principles and tenets to a satisfactory

marital life. For instance, some married teachers, due to the nature of their job which involves constant marking of test scripts and recording, tend to extend their work beyond classroom to their homes. When this happens, the time married people should spend together would be taken over by school jobs, hence interfering in their relationship. This may continue over time and may eventually lead to failure to properly identify and meet the needs of a spouse. According to Anghel (2016), happiness, emotional awareness and self-actualization are most strongly related to marital satisfaction. The reason for this perhaps is based on the notion that married peoples' intimate relationship needs communication skills such as: paying attention to the other person's viewpoint, being able to empathize perception with what their partner has experienced, and also being sensitive and aware of the other persons need. Consequently, it becomes clearer that the educational intelligence of teachers alone may not guarantee their marital success in long-term, so other features are necessary for proper human relations and success in life that are referred to as emotional intelligence.

As a kind of capability, emotional intelligence consists of capacity perception and stating, recognizing, applying and managing self-emotions and emotions by others. Emotional intelligence according to Egbule (2009) is the ability to validly reason with emotions and to use emotions to enhance thought. It involves the ability to utilize emotional knowledge to accurately observe, understand, generate, access and assist feelings or emotions so as to promote emotional and intellectual growth. Thus, in the context of this study, emotional intelligence refers to the married teachers' ability to monitor, recognise, understand, each other's feeling and be able to manage their thoughts and emotions and that of their partner.

Furthermore, Salovey and Mayer (1990) theoretical structure of emotional intelligence includes many positive experimental characteristics that researchers relate to the quality of marriage. Even more in particular, by thinking into his own and others' emotions, people can share the emotions and understand and manage the emotional information. Consequently, the more skills married people learn, the more they are likely to improve their communications and insight, thereby enhancing good understanding and proper management of the emotion of each other in the marital union.

Evidence suggests that in today's societies, couples have many pervasive problems establishing and maintaining a friendly relationship and understanding of their spouse's feelings. It is evident that deficits in the emotional and emotional qualities of spouses will have undesirable effects on their marital life, in addition to a number of other factors, such as economic, cultural and social factors). Ilyas and Habib (2014) for instance explored the relationship of marital satisfaction and emotional intelligence among different

professionals. Findings of the study indicated significant relationship between marital satisfaction and emotional intelligence.

Emotional intelligence from the foregoing could thus play a significant role in a happier relationship and a more stable marriage. In life, often faced with difficulties, feelings of failure, humiliation among others, spouses tend to consider feelings and emotions rather than wisdom and reasoning. Recognizing and directing emotions may also make a major contribution to sustaining a marital partnership. While focusing on the effects of emotional intelligence on marital satisfaction does not mean overlooking those other factors, it is essential for the health of couples' emotional and social communication, family mental health and many basic family issues. Consideration needs to be given to the attributes in order to foster emotional maturity in order to achieve a better process of marital relationship.

One of the factors that is related to, and can play a role in the marital satisfaction is the demographic factor which focuses on the couple's gender. Gender plays an important role in many aspects of life and the relationship between a woman and man. Women and men have different views about marital satisfaction. In a women's view, communication, understanding, family relationships, agreement, and income by both spouses are effective factors in marital satisfaction, while in a man's opinion, spouse's education, income by both spouses, understanding, agreement, family relationships, and communication are effective factors in creating satisfaction.

There is a growing body of research findings indicating that gender is a functional component of emotional intelligence in management of the emotion in the marital union. For instance, Brackett, Warner and Bosco (2005) in their study observed that women's scores in emotional intelligence scales has more meaningful relationship with the quality of communication, as compared to those of the men. On the other hand, Agha, Mokhtaree, Sayadi, Nazer and Mosavi (2012) asserted that there was no meaningful difference between men and women's emotional intelligence.

Consequently, the deficiencies in emotional and affection competence of married teachers would likely have unpleasant effects on their matrimonial life. Some of these deficiencies according to Khorasani et al. (2017) include inability in self-consciousness, lack of self-control, lack of sympathy and the inability to sympathize with each other, and in general, deficiency in establishing a fruitful relationship. Since emotional quotient and self-efficacy are total of an individual's personality, management of emotions, understanding others, making a correlation between emotional intelligence, self-efficacy and marital satisfaction is quite meaningful.

Moreover, studies such as Gharahhajlou, Mirzaian, Hassanzadeh (2015) investigated the relationship between emotional intelligence and marital satisfaction among high school English teachers. Zadeh and Tabrizi

(2014) also studies indicated a positive relationship between emotional intelligence and marital satisfaction of the teachers while Tamaren (2010) observe a dependency and a correlation between the dimensions of emotional intelligence and satisfaction. These studies though related to the current study were however done outside the shores of Nigeria. Research in this area of study is needed in Nigeria, especially here in Anambra State, and would help give better clarification on the relationship between emotional intelligence and marital satisfaction of married secondary school teachers. This will add to the knowledge of what contributes to marital satisfaction and happiness of married secondary school teachers in the state. This therefore instigated the need for this study.

Purpose of the Study

The main purpose of this study is to determine the relationship between emotional intelligence and marital satisfaction of married teachers in Anambra state. Specifically, the study intends to determine:

1. The relationship between the emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools.
2. The relationship between the emotional intelligence and marital satisfaction of married male and female teachers in Anambra State secondary schools.

Significance of the Study

Findings from this study will be beneficial to the married couples, Guidance Counsellors, singles intending to get married, parents, government, and future researchers. More importantly the findings, of the study will help increase married peoples' belief in their abilities to solve daily and communicational problems. Also, belief in their abilities can improve the quality of marriage relationship thereby leading to more satisfaction experience of marriage relationship among the married people. The findings of the study will further encourage married people to put their emotional intelligence to use in addressing persisting issues together when disagreements and problems occur.

Furthermore, findings of this study will benefit the Guidance Counsellors, psychologists and therapists. Through the findings of this study, they will likely be equipped with the knowledge of the relationship between the variables; emotional intelligence and marital satisfaction. The knowledge of the relationship between these variables will help the guidance counsellors in understanding how these factors interplay in fostering existence of mutual understanding between married couples. Thereby enabling the guidance counsellors to be in position to give emphasis on openness and trust among

the married people, and the need to initiate an effective communication to enhance friendliness.

Research Questions
The following research questions guided the study.
1. What type of relationship exists between emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools?
2. What type of relationship exists between emotional intelligence and marital satisfaction of married male teachers in Anambra State secondary schools?
3. What type of relationship exists between emotional intelligence and marital satisfaction of married female teachers in Anambra State secondary schools?

Hypotheses
The following null hypotheses were formulated to guide the study and were tested at 0.05 level of significance.
1. The type of relationship existing between emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools is not significant.
2. The type of relationship existing between emotional intelligence and marital satisfaction of married male teachers in Anambra State secondary schools is not significant.
3. The type of relationship existing between emotional intelligence and marital satisfaction of married female teachers in Anambra State secondary schools is not significant.

Method:
Research Design
　　　The study was conducted using a correlational research design. The design was used because it sought to establish the relationship that exists between variables; emotional intelligence and marital satisfaction of married teachers in Anambra State.

Participants
　　　A total 1,344 married public secondary school teachers, made up of 144 male teachers and 1,200 female teachers from both public secondary schools in Anambra State made up the sample for this study. In selecting the sample for the study, A multi-stage sampling approach was used.

Instrument for Data Collection

Two research instruments were used in this study to elicit information from the married school teachers. The instruments include: Emotional intelligence Scale (EIS) and Index of Marital Satisfaction (IMS). The Emotional Intelligence scale is a modified version of the emotional intelligence scale developed and standardized by Singh (2002) and was used to assess the emotional balance of the married teachers in dealing with issues related to their marriage. The instrument measures the self-awareness, self-regulation, self-motivation and social skills of the married teachers. Index of Marital Satisfaction (IMS) is a standardised instrument designed by Walter W. Hudson (1982) adapted in this study for Nigerian use. The Index of Marital Satisfaction (IMS), scale was designed to measure the degree, severity, or magnitude of the problem a spouse or partner has in a partner relationship. The IMS measures the magnitude of marital discord or dissatisfaction that is felt or perceived by one partner. The two instruments have all been subjected to internal consistency reliability test using Cronbach Alpha. The outcome yielded a coefficient Alpha of 0.89. for EIS and 0.96. for IMS..

Data Collection and Analysis

All the participants for the study were administered the two research instruments through direct delivery approach. The data collected for the research questions were analysed using Pearson Product Moment Correlation Coefficient (Pearson *r*), while t-test was used to test the null hypothesis.

Findings:

In this section, the data collected from the field for this study were analysed and the summaries presented in tables and charts to highlight the findings as follows:

Research Question 1

What type of relationship exists between emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools?

Table 1: Pearson r on emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools

Source of Variation	N	Emotional Intelligence r	Marital Satisfaction r	Remark
Emotional Intelligence	1322	1.00	0.20	Low Positive Relationship
Marital Satisfaction	1322	0.20	1.00	

In table 1, it was observed that low positive relationship of 0.20 exists between married teachers' Emotional Intelligence and their marital satisfaction.

Research Question 2

What type of relationship exists between emotional intelligence and marital satisfaction of married male teachers in Anambra State secondary schools?

Table 2: Pearson r on emotional intelligence and marital satisfaction of married male teachers in Anambra State secondary schools

Source of Variation	N	Emotional Intelligence r	Marital Satisfaction r	Remark
Emotional Intelligence	143	1.00	0.26	Low Positive Relationship
Marital Satisfaction	143	0.26	1.00	

In table 2, it was observed that low positive relationship of 0.26 exists between married male teachers' Emotional Intelligence and their marital satisfaction.

Research Question 3

What type of relationship exists between emotional intelligence and marital satisfaction of married female teachers in Anambra State secondary schools?

Table 3: Pearson r on emotional intelligence and marital satisfaction of married female teachers in Anambra State secondary schools

Source of Variation	N	Emotional Intelligence r	Marital Satisfaction r	Remark
Emotional Intelligence	1179	1.00	0.18	Very Low Positive Relationship
Marital Satisfaction	1179	0.18	1.00	

Table 3 reveals that very low positive relationship of 0.18 exists between married female teachers' Emotional Intelligence and their marital satisfaction.

Testing the Null Hypotheses

Null Hypothesis 1

The type of relationship existing between emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools is not significant.

Table 4: t-test on the relationship existing between emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools

N	cal.r	df	Cal.t	Pvalue	Remark
1322	0.22	1320	2.81	0.006	S

S = Significant

Table 4 indicates that at 0.05 level of significance and 1320df, the calculated t 2.81 with Pvalue 0.006 which is less than 0.05, the first null hypothesis is rejected. The relationship existing between emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools is significant.

Null Hypothesis 2

The type of relationship existing between emotional intelligence and marital satisfaction of married male teachers in Anambra State secondary schools is not significant.

Table 5: t-test on the relationship existing between emotional intelligence and marital satisfaction of married male teachers in Anambra State secondary schools

N	Cal.r	df	Cal.t	Pvalue	Remark
143	0.26	141	4.58	0.000	S

S = Significant

Table 5 reveals that at 0.05 level of significance and 141df, the calculated t 4.58 with Pvalue 0.000 which is less than 0.05, the third null hypothesis is rejected. The relationship existing between emotional intelligence and marital satisfaction of married male teachers in Anambra State secondary schools is significant.

Null Hypothesis 3

The type of relationship existing between emotional intelligence and marital satisfaction of married female teachers in Anambra State secondary schools is not significant.

Table 6: t-test on the relationship existing between emotional intelligence and marital satisfaction of married female teachers in Anambra State secondary schools

N	Cal.r	df	Cal.t	Pvalue	Remark
1179	0.18	1177	4.95	0.000	S

S = Significant

In table 6, it was observed that at 0.05 level of significance and 1177df, the calculated t 4.95 with Pvalue 0.000 which is less than 0.05, the fourth null hypothesis is rejected. The relationship existing between emotional intelligence and marital satisfaction of married female teachers in Anambra State secondary schools is significant.

Discussions
Findings of the study are discussed under the following sub-themes:

The Relationship between the Emotional Intelligence and Marital Satisfaction of Married Teachers in Anambra State

Findings of the study revealed that there is low positive relationship existing between married teachers' Emotional Intelligence and their marital satisfaction. The finding also indicated that the relationship existing between emotional intelligence and marital satisfaction of married teachers in Anambra State secondary schools is significant. The low positive relationship observed in the study indicates that with an increase in the married teachers' emotional intelligence, there would be a corresponding slight increase their marital satisfaction and the relationship is substantial. The finding is consistent with the findings of previous studies such as Ilyas and Habib (2014), Gharahhajlou, Mirzaian, Hassanzadeh (2015) and Dalvand, Makvandi and Khoshli (2014).

Ilyas and Habib (2014) study explored the relationship of marital satisfaction and emotional intelligence among different professional teachers. The findings indicated significant relationship between marital satisfaction and emotional intelligence. The findings implies that married teachers with higher emotional intelligence will displayed better marital quality and is much likely to obtain marital satisfaction. Gharahhajlou, Mirzaian, Hassanzadeh (2015) investigated the relationship between emotional intelligence and marital satisfaction among high school English teachers. The results indicated a positive relationship between emotional intelligence with marital satisfaction of the teachers.

Similarly, Dalvand, Makvandi and Khoshli (2014) studied the correlation between marital satisfaction, and emotional intelligence of married university staff. The findings also indicated that there is a positive and significant correlation between marital satisfaction and emotional intelligence of the married teachers. The possible reasons behind the observed satisfying marital relation among these married teachers could be diverse. Research for instance has pointed out many associated benefits to a happy marriage, including emotional and physical health and longevity. The individual may marry for several reasons including legal, social emotional, financial, spiritual and religious purposes. There marital satisfaction however would likely depend largely on their emotional state which would reflect the perceived benefits and costs of marriage to a particular person.

Research has shown that one of the qualities common in couples who report a high degree of marital satisfaction is that they tend to consider emotionally connected to their spouse. They experience that their partner legitimately cares about them and is normally kind in their relations. Emotionally intelligent couples are conscious of what is going on in their

partners' world and demonstrates care for that world. They are open and answer to things their mate may want from them such as a kind word, a listening ear, a gentle touch, a sensual encounter, or warm reassurance.

Research carried out by Cohen and Waldinger (2012) for instance confirmed the vital importance of emotional astuteness when he noted that the success of happiness will to some degree depend on the emotional intelligence of both the wife and the husband to gauge the emotional intimation of each partner. The reason perhaps is linked to the notion that Emotional intelligence involves the ability to reason using emotions, the ability to understand emotion and the ability to manage emotions. From Cohen and Waldinger''s study, one could deduce that a satisfying marriage does not require living happy-ever, rather, it takes being able to intelligently process each other's emotional clue and talk together cooperatively about situations that may have created negative feelings.

The findings of this study is also in agreement with Anghel (2016) whose study showed significant correlations between marital satisfaction and the subcomponents of emotional intelligence like balancing personal emotions and balancing emotions of others. Therefore, being able to manage emotions would likely be helpful to play a significant role in the feelings of people about their spouse.

The Relationship between the Emotional Intelligence and Marital Satisfaction of Married Male and Female Teachers in Anambra State

Furthermore, the findings of the study revealed that there is low positive relationship existing between married male teachers' Emotional Intelligence and their marital satisfaction and a very low positive relationship of existing between married female teachers' Emotional Intelligence and their marital satisfaction. The findings further indicated that the relationship existing between emotional intelligence and marital satisfaction of married male and female teachers in Anambra State secondary schools is significant. These findings showed that an increase in the emotional intelligence of the married teachers will likely lead to a corresponding increase in the marital satisfaction of both the male and female teachers, however, the magnitude of the relationship differed significantly such that while that of male is low, that of female is very low.

These findings are consistent with findings of previous studies such as Veshki, et al. (2012) whose study noted that women with higher emotional intelligence manage their marital conflicts efficiently. The findings of the study also agreed with the finding of Anghel (2016) whose study showed that there are significant differences between married men and women satisfaction in marriage. The reason for this finding could be attributed to factors of emotionality that tend to manipulate marital satisfaction as highlighted by

Levalekar, Kulkarni and Jagtap (2010). The study indicated that emotional management, social relationship skills and emotional sensitivity skills have significant effect in satisfaction. It was also found that in most circumstances, the level of male Emotional intelligence was responsible for couple's marital satisfaction. It is therefore possible that males possess more ability to process these seemingly complex factors of emotionality than the females.

Similarly, the study conducted by Lavalekar Kulkarni and Jagtap (2010) examined and compared the marital satisfaction and emotional intelligence of people between ages 25-65. The findings conclude a considerable gender difference on different areas of emotional intelligence, for instance; openness to criticism, self-management and empathy. A significant gender difference was also observed on two areas of marital satisfaction, sexual relations and sharing household responsibilities, that can be traced to the socio-cultural impact. The research findings thus helped in understanding the correlation of gender with core qualities of one's emotional intelligence that can affect the satisfactory marital relations.

On the other hand, the findings differed from study conducted by Agha, Mokhtaree, Sayadi, Nazer and Mosavi (2012) whose finding indicated that Overall, emotional intelligence and marital satisfaction were not linked to the variables of gender. Agha, et al. nevertheless noted that, of many aspects of marital satisfaction, interpersonal and empathy aspects were meaningfully related to the variable of gender. Also, of many aspects of emotional intelligence, the one for responsibility between men and women was only meaningfully different but the total score of emotional intelligence and marital satisfaction was not meaningfully linked to gender.

The findings of the study also varied with Hans, Mubeen, and Al Rabani (2013) whose study scores suggested that there is no significant difference between male and female teachers in Oman based on descriptive statistics. Additionally, Ilyas and Habib (2014) based on their study findings rejected the hypothesis that working men have better marital satisfaction as compared to married working women; no significance difference was found between both genders on marital satisfaction. The reasons for these contradicting findings could be linked to cultural differences and some other factors which may not have been covered in this study.

Conclusions

The following conclusions are made based on the findings of this study:

The study concludes that there is a significant low positive relationship existing between married teachers' Emotional Intelligence and their marital satisfaction. Also, the relationship existing between emotional intelligence and marital satisfaction of married male and female teachers in Anambra State secondary schools is significant.This is an indication that emotional intelligence could be endowed with constructive information on couples marital relations, and that each couples ability to manage his or her emotions may likely help to play a significant role in the feelings of the married teachers about their spouse.

Implications of the Study

The findings of this study implied that emotional intelligence in marriage is one of the keys to a life-long, associated, and satisfying connection. Couples marriage could be strengthened when both a wife and a husband are eagerly conscious of their individual emotions and are able to handle those emotions in a healthy way. This also implies that there is need to prioritize marital counselling whereby the Guidance counsellors working with married people could give quality time to couples on issues regarding their marriage. Couples that are satisfied in their marriages would be guided to remain united while the couples that are dissatisfied would be assisted in their relationship.

Seminars bothering on building the emotional intelligence of both the married and intending couples could be organised by the counsellor. Moreover, married teachers who attend premarital counselling will likely have the opportunity to discuss issues that most couples argue about and most often lead to divorce or separation. Marital counselling can help the individuals address hot issues before they arise and assist them in discovering what the other person believes about the issue so that they may come to an agreement before they walk down the aisle.

Recommendations

The following recommendations were made based on the findings:

1. Married teachers should be encouraged by the Counselors involved in marital counselling to pursue habits and attitudes that promote marital satisfaction through periodic seminars and counseling sessions.
2. Government and Non-governmental organisations working in partnership with the school Guidance Counsellors should organize seminars, conference, workshops and enlightenment programmes for both intended and married teachers focusing on building emotional intelligence of the couples for satisfactory marital union.

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Psychological Safety and Work Engagement of Senior High School Teachers: Moderating Role of Psychological Flexibility

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Abstract

There is a dearth of research that investigated how and the mechanism through which psychology safety perceptions and work engagement are related among employees in the education setting, especially in Africa. The present paper investigated how senior high school teachers' perception of their psychological safety in their schools predicted their work engagement and the moderating role of psychological flexibility. The cross-sectional survey design was employed to collect data from a sample of 263 public senior high school teachers in the Tamale Metropolis in the Northern region of Ghana. Adapted standardised questionnaires were used to collect the data. Regression analysis, including the PROCESS procedure for testing of moderating effect, was the main analytical tool employed to test the hypotheses. Both psychological flexibility and perception of psychological safety were significant positive predictors of senior high school teachers' work engagement. Also, psychological flexibility significantly moderated the effect of psychological safety on work engagement. The study concluded that psychological safety is an important determinant of both the perception of psychological safety and work engagement. The paper therefore, recommends, among others, that management of educational institutions and other work settings provide interventions that would enhance psychological flexibility and the feeling of psychological safety among employees.

Introduction

The availability of work is a basic requirement that ensures the survival of individuals in society. There is a positive association between work and quality of lives of individuals because people who are engaged in meaningful economic activities can fulfil their personal needs such as food, clothing, shelter, health care as well as financial security (Wanless, 2016). This has paved the way for the establishment of numerous job opportunities in organisations all over the world and individuals who are memberships in these organisations spend time at the workplace order to earn a living (Leiter & Bakker, 2010). It should be pointed out that while working in these organisations, the worker has to be committed, dedicated as well as emotionally stable to be productive at the workplace. It also implies that the worker should be fully engaged in the work he or she does (Gill, 2008).

Leiter and Bakker (2010) observed that work engagement can be attributed to a positive, fulfilling and affective-motivational state of work-related wellbeing that contributes to the performance and job satisfaction of employees. This implies that employees who exhibit high levels of work engagement have high levels of energy and motivation, and they are enthusiastically involved in the work they do. The concept of work engagement denotes the ability of employees to bring their full potentials to solving organisational problems, connect with people and develop innovative ways of achieving set goals and objectives (Bakker & Schaufeli, 2008).

To boost the work engagement of employees at the workplace, it is important to take into consideration the psychological safety perceptions and flexibility of employees. This is evident because of the need to maintain sufficient flexibility in the work environment to accommodate a variety of approaches to achieving organisational goals (Leiter & Bakker, 2010). Work engagement is a critical work outcome because it has a lot of implications for employees' job performance. Hence, engaged employees find their work more enjoyable (Fredrickson, 2013). Schaufeli (2013) indicated that in ensuring employees' work engagement, their psychological safety and flexibility are crucial. Psychological safety and psychological flexibility of employees enable them to engage, connect, change and learn new ways of executing their tasks and contributing their quota to the development of the organisation.

In educational institutions, work engagement is not solely a concern for management. Every employee, therefore, shares responsibility to develop a vibrant and engaging work environment. In the school settings, for instance, it is important to create a room for workers' commitment, involvement, passion, enthusiasm, dedication and energy toward work (Schaufeli, 2013).

Psychological safety and work engagement

Psychological safety is a key variable that drives the success of any organisation. According to Wanless (2016), psychological safety is used to describe a situation when employees have the feeling that taking an interpersonal risk will not result in embarrassment, shame or ridicule. Psychological safety, therefore, enables employees to engage, connect, change and learn new ways of executing their tasks and contributing their quota to the development of the organisation without any fear of being punished or victimised.

Psychological safety has been found to affect employees' work engagement. For example, Ariani (2015) in a study in Indonesia reported a strong positive association between psychological safety and employees' work engagement. Similarly, Nelson (2015) found that a psychologically safe environment improved employees' work engagement. The results of these studies point to the fact that in organisations where employees are psychologically safe, they become focused on accomplishing the goals despite the discomforts that inevitably come along with new experiences and ideas (Wanless, 2016).

It should be noted that in the school settings, employees' psychological safety is particularly relevant because it enables them to be dedicated and committed to influence the achievement of intended learning outcomes. May, Gilson and Harter (2004) reported that psychological safety mediated employees' job commitment and engagement. Psychological safety, therefore, brings a shared belief held by employees of a team that makes that team safe for interpersonal risk-taking. Similarly, Edmondson (1999) in a study concluded that psychological safety is associated with the learning behaviour of workers which consequently affects the job performance of employees. According to Stander and Rothmann (2010), interventions at the workplace that focus on the psychological safety and empowerment of employees would contribute to their work engagement, as the feeling of psychological safety allows employees to show much concern, vigour and dedication.

Organisational practitioners observed that when individuals do not feel psychologically safe, their willingness to engage in experiences that would facilitate their development and work engagement is hampered. The foregoing discussion suggests that psychological safety perception tends to influence the work engagement of employees. Given the relevance of psychological safety perception at the workplace, the present study investigated it a predictor of the work engagement of senior high school teachers.

Psychological flexibility and work engagement

According to Onwezen, Van Veldhoven and Biron (2012), the functional processes of psychological flexibility are best grouped under acceptance and commitment, which are highly interactive and reinforce one another. Acceptance denotes the willingness to experience thoughts, feelings, and sensations without having to control or determine one's future (Bond & Bunce, 2003). Commitment, on the other hand, refers to the process of persisting and changing behaviour towards values as well as goals; and remaining persisted in achieving those goals (Hayes et al., 2004). Psychological flexibility, therefore, encompasses an individual's ability to contact the present moment while embracing internal experiences without attempting to control them and depending upon what the situation affords, persist with or change one's behaviour in the pursuit of one's chosen goals or values.

Empirical studies suggest that psychological flexibility predicts employees' work engagement and performance. For example, Bond and Bunce (2000) reported that psychological flexibility was a strong predictor of the mental health of employees which consequently affected their work engagement. Baer (2003) also observed that psychologically flexible workers are less likely to exhaust resources such as energy and attention. They tend to have more resources available to effectively respond to changing job demands in their organisations (Hayes et al., 2004).

Psychological flexibility has been found to have a positive effect on work performance and commitment of employees as flexibility tends to facilitate goal-directed behaviour (Bond & Hayes, 2002). Bond and Hayes indicated that highly flexible workers are more sensitive to performance-related contingencies of reinforcement in their work environment which promote their engagement and job performance. This implies that highly flexible employees in any organisation at any given time are more likely to engage in goal-directed behaviour even when they are confronted with negative or difficult thoughts, emotions and sensations.

Ruiz (2017) in a study in Columbia on the predictive role of psychological flexibility in the development of job burnout reported that the relationship between exhaustion and cynicism was higher among participants with low levels of work-related psychological flexibility as compared to participants with high levels of psychological flexibility. Similarly, Bond, Lloyd, and Guenole (2013) reported that psychological flexibility was an individual characteristic that is an important determinant of mental health and behavioural effectiveness at the workplace.

Indeed, psychological flexibility, as a key psychological construct, tends to influence the relationships among other variables which include work engagement and even factors that ensure the safety of employees at the

workplace. Ruiz (2017) observed among a sample of 209 Spanish workers that psychological flexibility accounted for additional variance in burnout symptoms. From the moderating effect analysis by Ruiz, it was concluded that the relationship between exhaustion and cynicism was higher among participants with low levels of work-related psychological flexibility as compared to participants with higher levels of psychological flexibility. Similarly, Boatemaa, Asante and Agyemang (2019) in a study with Ghanaian sample, found that psychological flexibility moderated the relationship between organisational commitment and corporate entrepreneurship among information technology workers. The findings point to the fact that psychologically flexible individuals are more likely to show withstand workplace challenges and exhibit a good work attitude.

Careful analysis of the relevant literature suggests that while studies on psychological safety and work engagement are common the corporate business and industrial settings, there is a dearth of such research among employees in the education setting. Also, psychological flexibility has been largely explored in clinical psychology research, with only a few cited in corporate and educational research. Furthermore, it has been observed that most of the studies involving these variables (e.g. Ariani, 2015; Stander & Rothmann, 2010; Wanless, 2016) treated these variables in isolation without taking into consideration how they interact to influence employees' work engagement. Similarly, there are some inconsistencies in the findings of these studies which call for further work to be done to have a comprehensive appreciation of these phenomena at the workplace. It should be pointed out that looking at the necessity of employees' safety and flexibility in predicting their work engagement; it appears that very limited information can be found on the topic in the educational settings in the case of Ghana. It is against this background that the current study investigated the effects of psychological safety and psychological flexibility on work engagement among educational workers to fill this research gap.

Hypotheses
The following hypotheses were formulated based on the purpose and review of the pertinent literature:
H_1: Senior high school teachers' perceived psychological safety will predict their work engagement.
H_2: Senior high school teachers' level of psychological flexibility will predict their work engagement
H_3: Psychological flexibility and perceived psychological safety of senior high school teachers will be positively related.
H_4: Psychological flexibility will moderate the relationship between perceived psychological safety and work engagement of senior high school teachers.

Research Methods:
Research design

The design employed for this study is the cross-sectional survey. The study obtained self-report data from a sample of senior high school teachers from the Tamale Metropolis in the Northern region of Ghana. The teachers reported their perceived psychological safety, work engagement and levels of psychological flexibility.

Population

There were seven public senior high schools in the Tamale Metropolis, and the total number of teachers in all the school was 561. This included 462 males and 98 females (Education Management Information System, EMIS, 2018).

Sample and sampling procedure

Given that the female teachers were relatively few, we targeted all of them, but 83 of them gave their consent for their study. The systematic random sampling procedure was used to proportionately sample 255 male teachers across the schools. However, only 248 consented to take part in the study. The total number of teachers that agreed to complete the questionnaire, therefore, was 331. Two hundred and seventy-five were returned (return rate of 83.01%). Twelve of the cases were later excluded because some were not fully completed and other due to *influential cases*, leaving 263 for the final analysis. This is made up of 197 male teachers (74.9%) and 66 female teachers (25.1%). The average age of the teachers in the study was 39 years, and on the average, they had taught for 13 years at the time of the study. All the teachers had at least First (Bachelor's) degree, and most were married, with only a few being divorced/widowed (see Table 1).

Table 1: Demographic Characteristics of Respondents (n= 263)

Educational level	Percent	Marital Status	Percent
First degree	75	Married	75
Master's degree	24	Never married	22
Others	1	Divorced/Widowed	3

Research Instrument:
Work engagement scale

The work engagement of teachers was measured with the three-dimensional Utrecht Work Engagement Scale (UWES: Schaufeli & Bakker, 2003). The UWES describes work engagement as constituting three aspects: vigour, dedication, and absorption. This measure is a 17-item scale which is rated on a 7-point Likert-type scale from 0 (never) to 6 (always).

Vigour is characterised by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties, and was measured with six items. A sample item is: "*At my work, I feel bursting with energy*".

The dedication dimension was assessed with five items that refer to deriving a sense of significance from one's work, feeling enthusiastic and proud about one's job, and feeling inspired and challenged by one's work. Sample items are: *"I find the work that I do full of meaning and purpose",* and *"I am enthusiastic about my job"*.

The third dimension, absorption is a six-item measure that assesses the degree to which an individual is being totally and happily immersed in his/her work and finding it difficult to be detached from the work. Sample items are: "*Time flies when I'm working";* and *"I feel happy when I am working intensely*." The reliability alpha coefficient for this sample was .72.

Psychological safety scale

Perceived psychological safety was measured with an adapted form of the six-item psychological safety scale by Edmondson and Wooley (2003). The scale is unidimensional and was rated on five-point Likert type of scale from 1(strongly disagree) to 5 (strongly agree). Three items were reversed-scored, and previous studies indicated good reliability coefficients for the scale. Reported reliability coefficients were above .80. For instance, Bresman and Zellmer-Bruhn (2013) reported alpha reliability coefficient of .87, and we obtained .89 in the present study. A sample item is: *It is difficult to ask others in this school for help*.

Psychological flexibility scale

The level of psychological flexibility of the teachers in the study was measured with the seven-item unidimensional scale by Bond, Lloyd and Guenole (2013). This scale measures psychological flexibility related to the work setting. The current paper used a 7-point scale, from 0 (never true) to 6 (always true). The possible score range on the scale in our study, therefore, ranged from 0 to 42, with higher scores denoting more flexibility. Bond et al. reported a reliability alpha coefficient of .84. Sample items are: "*I can perform*

as required no matter how I feel", and "I can work effectively, even when I doubt myself."

Pilot testing of research instruments

Three standardized scales were adapted for the present study and were pilot tested with a sample of 43 teachers, comprising 27 males and 16 females in Upper West Region (a region next to the northern region where the study was conducted) to ensure that the wording of the items was appropriate for the school environment and the Ghanaian context.

Minor modifications were made to the original wordings of the items to reflect the school settings. For instance, the word "organisation" was replaced with "school" in some cases before the pilot testing was done. All the scales and their subscales showed good psychometric properties and were deemed appropriate and reliable for the current study. The Cronbach's alpha reliability was used for all scale and the coefficients obtained were: .87 for psychological flexibility, .86 for psychological safety, and .79 for the work engagement scale. All the scales were deemed acceptable for the present study as the coefficients were higher than the often-cited acceptable level of .70 (George & James, 1993).

Data collection procedure

We sought written approval from the headmasters of the schools, and then distributed the questionnaires to teachers who had given their consent to take part in the study. The purpose of the study was explained to the teachers individually and they were assured of confidentiality of the data. Respondents were not required to write their names on the questionnaires, and there was no attempt to identify individual respondents. This means there was no threat to the safety of any respondent in the study. Teachers who were free at the time of the distribution completed their questionnaires and were taken immediately they had finished. It took between 25 to 35 minutes to complete a set of questionnaires.

Results

Table 2 presents the descriptive statistics of the three main variables, together with the three dimensions of work engagement. The skewness and kurtosis statistics were all below 1.0, indicating that there were no issues of serious concern with the data regarding the normality of the distribution. Table 3 also presents the possible score ranges of the three main variables, including the criteria for low, moderate and high levels of scores on the measures. The mean of 30.11 ($SD = 6.81$) for psychological flexibility falls within the high criterion of flexibility among the teachers. Thus, on average, the teachers reported a high level of psychological flexibility. The results also suggest that

the teachers perceived moderately psychologically safe ($M = 19.84$, $SD = 4.96$), and demonstrated a high level of work engagement ($M = 73.83$, $SD = 15.66$).

Table 2: Descriptive statistics of the two main variables and the dimensions of work engagement

	Mean	Std. Deviation	Skewness		Kurtosis	
Vigour	26.23	5.54	-.434	.150	-.200	.299
Dedication	22.75	5.33	-.684	.150	.262	.299
Absorption	24.85	6.27	-.139	.150	-.957	.299
Flexibility	30.11	6.81	-.289	.150	-.903	.299
Psyc. Safety	19.84	4.96	-.091	.150	-.728	.299
Work Engagement	73.83	15.66	-.329	.150	-.589	.299

The possible score ranges and low, moderate and high criteria for the main variables are presented in Table 3. For instance, for psychological flexibility, the possible scores range from zero (0 x 7) to 42 (6 x 7). This is because the scale consists of 7 items and rated on a seven-point Likert type scale, from never (0) to always (6).

Table 3: Possible score ranges and criteria for low, moderate and high levels of the measures

Variable	Score range	Low	Moderate	High
Flexibility	0-42	0-14	15-28	29-42
Psyc safety	0-36	0-12	13-24	25-36
Work engagement	0-102	0-34	35-68	69-102

The results (see Table 4) further indicated that most of the teachers scored moderate to high on the psychological flexibility measure, with the majority exhibiting high flexibility. Concerning psychological safety, most of the teachers reported a moderate level of perceived safety, while the majority reported a high level of work engagement.

Table 4: Frequencies and percentages of teachers who fall within low, moderate and high categories on the main variables measured

Variable	Low	Moderate	High
Flexibility	2 (.8%)	103 (39.2%)	158 (60.15%)
Psyc safety	20 (7.6%)	204 (77.6%)	39 (14.8%)
Work engagement	2 (.8%)	97 (36.9%)	146 (62.4%)

H_1: Senior high school teachers' perceived psychological safety will predict their work engagement.
H_2: Senior high school teachers' level of psychological flexibility will predict their work engagement.

The standard linear multiple regression analysis was used to test hypotheses 1 and 2. Preliminary analysis of the data indicated that there were no violations of the assumptions of normality, linearity and multicollinearity. The results presented in Table 5 showed that the model was significant (R^2 = .142, $F_{(2, 260)}$ = 21.73, p < .001). Both psychological flexibility (β = .298, p < .001) and psychological safety (β = .141, p = .026) significantly predicted work engagement of the senior high school teachers. Psychological flexibility was a stronger predictor of work engagement than psychological safety, with both relating positively with work engagement.

Table 5: Results of work engagement regressed on psychological flexibility (flex) and psychological safety (PSafety)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	44.394	4.604		9.642	.000		
	Flex	.685	.145	.298	4.725	.000	.830	1.205
	PSafety	.445	.199	.141	2.235	.026	.830	1.205

Dependent Variable: Work Engagement
H3: Psychological flexibility and perceived psychological safety of senior high school teachers will be positively related.

Pearson's Product Moment correlation was used to test hypothesis 3. The results showed a significant moderate positive relationship between psychological safety and psychological flexibility (r = .413, r^2 = .170, p < .001). Thus, the two variables shared variance of 17.0%. This result indicates

that psychologically flexible teachers were more likely to feel psychologically safe in their schools.

H4: Psychological flexibility will moderate the relationship between perceived psychological safety and work engagement of senior high school teachers.

The PROCESS procedure (Hayes, 2018) was used to test the moderating effect of psychological flexibility on the effect of psychological safety on work engagement of the teachers. Psychological safety was categorised into low, moderate and high, while psychological flexibility was categorised into low and high (*given that only 2 respondents fell into the low category when the low, moderate and high criteria were used for psychological flexibility*). Table 6 presents the estimated conditional means of work engagement. This shows teachers' work engagement mean scores at different levels of psychological safety and psychological flexibility.

Table 6: Estimated conditional work engagement means being compared at different levels of psychological safety and psychological flexibility

Variables	Mean work engagement scores at:	
Psyc safety levels	*Low Psyc flex*	*High Psyc flex*
Low	80.44	66.36
Moderate	65.72	77.69
High	80.14	81.88

At the low level of psychological flexibility, low perception of psychological safety had a mean work engagement of 80.44; work engagement mean of 65.72 for the moderate level of psychological safety and 80.14 for a high level of psychological safety. There seemed to be a curve-linear relationship between psychological safety and work engagement at the low level of psychological flexibility. At the high level of psychological flexibility, work engagement scores increased as psychological safety perception increased.

Figure 1 presents the interaction plot for visualizing the conditional effect of psychological safety at low and high levels of psychological safety.
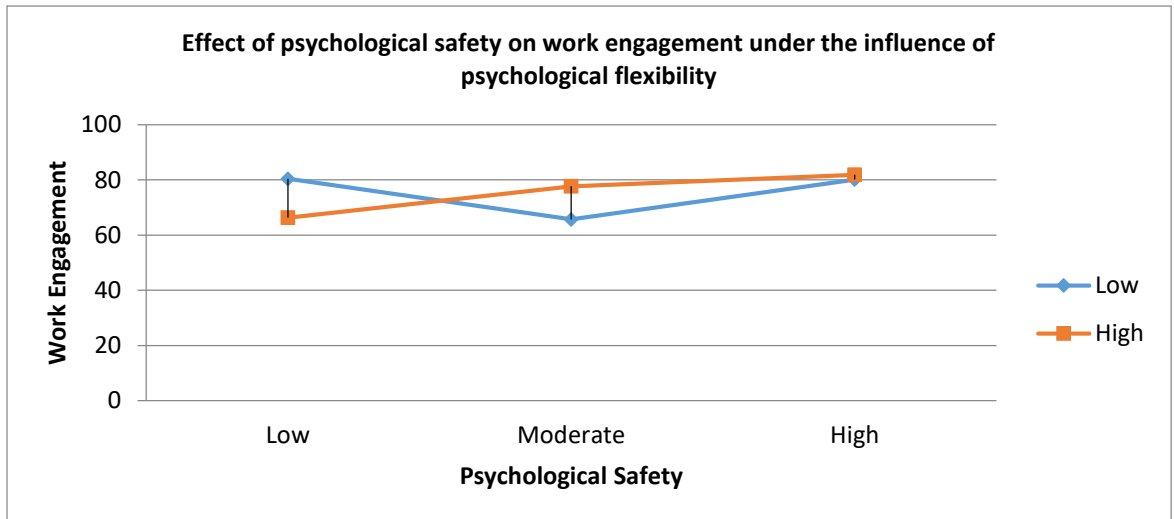
Figure 1: Interaction plot depicting the mean work engagement at different levels of psychological safety and psychological flexibility

The results show that teachers who reported moderate psychological safety exhibited significantly lower work engagement than those who reported low levels of psychological safety (β = -14.73, p = .004; CI: -24.65, -4.81). Those who reported high psychological safety, however, did not significantly differ from those who reported low levels of safety (β = -.302, p = .967; CI: -14.59, 13.99).

The psychological flexibility and work engagement analysis also depict that teachers who reported high levels of psychological flexibility exhibited significantly lower work engagement than those who reported low levels of psychological flexibility (β = -14.08, p = .031; CI: -26.83, -1.34).

The regression model summary indicated that the model was significant (R = .412, R^2 = .170, p < .001). Thus, the psychological safety and psychological flexibility were significant predictors of work engagement of senior high school teachers in our sample, accounting for a variance of 17.0%. Table 7 presents the regression coefficients for the direct and interaction effects in the model.

Table 7: Results of direct and interaction effect analysis of psychological safety and psychological flexibility on work engagement

Variable	Coefficient	SE	t	P	LLCI	ULCI
Constant	80.44	4.80	16.76	.000	70.99	89.90
X1	-14.73	5.04	-2.92	.004	-24.65	-4.81
X2	-.302	7.26	-.042	.967	-14.59	13.99
W1	-14.08	6.47	-2.18	.031	-26.83	-1.34
Int_1	26.05	6.78	3.84	.000	12.69	39.41
Int_2	15.81	8.83	1.79	.075	-1.58	33.21

Int_1 : X1 x W1
Int_2 : X2 x W1

The interaction effect (Int_1) at the moderate level of psychological safety was statistically significant ($\beta = 26.05$, $p < .001$; CI: 12.69, 39.41), while that at the high level was not significant ($\beta = 15.81$, $p = .075$; CI: -1.58, 33.21).The unconditional (overall: X*W) interaction showed a significant effect (R^2-change = .053, $F_{(2, 257)} = 8.15$, $p < .001$). This indicates that, overall, there was a significant moderating effect of psychological flexibility on the relationship between psychological safety and work engagement.

Further analysis of the conditional effects of the focal predictor (psychological safety) at specific values of the moderator (psychological flexibility) was done. The results indicated that, at the low level of psychological flexibility, the effect of psychological safety on work engagement was significant and positive, $F_{(2, 257)} = 4.75$, $p = .009$. The test of equality of conditional means indicated that, at the low level of psychological flexibility, the mean work engagement difference between teachers who had moderate and low perceptions of psychological safety ($B = 11.32$, $p = .013$, CI: 2.37, 20.27), and between those who perceived high and low ($B = 15.51$, $p = .002$, CI: 5.60, 25.42) were significant.

Also, at the high level of psychological flexibility, there was a significant positive effect of psychological safety on work engagement, $F_{(2, 257)} = 6.53$, $p = .002$. The difference in work engagement between teachers who perceived moderate psychological safety and low ($B = 37.37$, $p < .001$, CI: 16.91, 57.84), and between high and low ($B = 31$, $p = .012$, CI: 6.89, 55.76).

Discussion

The results of the study show that both psychological safety and psychological flexibility significantly predicted work engagement of senior high school teachers in the Tamale Metropolis. This finding is well-grounded in the literature. For example, researchers such as (Leiter & Bakker, 2010; Schaufeli, 2013) underscored the significance of psychological safety and psychological flexibility in predicting work engagement of employees. The findings of our study point to the fact that psychological safety and psychological flexibility as significant predictors of work engagement of teachers in the Tamale Metropolis enables them to connect change and also learn new ways of executing their tasks as educators.

Fredrickson (2013) argues that in instances where employees feel psychologically safe and flexible, they tend to exhibit a high sense of commitment and dedication at the workplace. Our findings further give prominence to the view that in educational institutions, both psychological safety and psychological flexibility of teachers are functional pre-conditions for ensuring effective teaching and learning. This is because teachers who are psychologically safe and flexible are more likely to use their abilities to make informed choices that would eventually positively influence the learning outcomes of their students.

Further, our findings show that psychological flexibility was a stronger predictor of work engagement than psychological safety, with both relating positively with work engagement. This aligns with earlier studies by (Bond & Bunce, 2000; Edmondson, 1999; Stander & Rothman, 2010). These researchers concluded that there existed a nexus between both psychological safety and psychological flexibility, and work engagement. Specifically, Bond and Bunce (2000) reported that psychological flexibility is a strong predictor of the mental health of employees which eventually affects their work engagement. Similarly, Edmondson (1999) concluded that psychological safety is positively associated with the learning behaviour of workers which influences their work engagement. Stander and Rothman (2010) argued that psychological safety and psychological flexibility contribute significantly to employees' work engagement. The results of the present study give the impression that when teachers are psychologically flexible, they tend to easily adapt to changing circumstances within their psycho-social work environment.

The results again showed that psychological flexibility significantly moderated the effect of psychological safety on work engagement of teachers in the Tamale Metropolis. The implication of this finding reinforces the concerns of psychological flexibility in organisational behaviour. Specifically, the finding of our study is consistent with a growing body of evidence that demonstrates the ability of psychological flexibility interacting with

psychological safety to influence work engagement of employees (Onwezen, Veldhoven & Biron, 2012; Ruiz, 2017). This implies that if teachers with greater psychological flexibility are given more job control in the school settings, they are more likely to identify opportunities to pursue goal-oriented actions which presumably involve making their work rewarding. This is in line with the works of Bond and Bunce (2003) who in their longitudinal study reported that employees with higher psychological flexibility benefited from higher levels of job control which also corroborates the assertion of Onwezen et al. (2012) that workers with greater psychological flexibility possess higher goal-oriented and context-sensitivity with an increased capacity to learn new skills at the workplace.

Finally, in contextualising the moderating effect of psychological flexibility on psychological safety and work engagement of senior high school teachers in this paper, it is important to state that teachers as agents of socialisation in the schools in particular and the society as a whole deal with students from diverse socio-cultural backgrounds. As Egan (2012) noted, the crux of every educational system is the quest for teachers to initiate young people into the knowledge, skills, values and attitudes that are common to the older generation of society. Therefore, teachers as agents of socialisation need to be psychologically safe and flexible in the school settings to ensure that young people effectively learn and gain the requisite knowledge, skills, values and attitudes that defined and sustained the lives in a particular society at any given time. The results of this study further point to the fact that psychological flexible teachers are more likely to be sensitive to performance-related contingencies in their schools. This, therefore, promotes their job performance and work engagement (Maccy & Schnerder, 2008).

Conclusion and Recommendations:

The results of the current study provide evidence to conclude that psychological flexibility plays a key role in employees' perception of psychological safety, as well as work engagement. More importantly, psychological flexibility is a key determinant in the perception of psychological safety at the workplace. Also, our study provides considerable evidence to support the idea that a climate of psychological safety and psychological flexibility can mitigate the interpersonal risks inherent in learning hierarchies of employees in organisations, particularly among senior high school teachers. In line with the findings of this study, it can be concluded that, with the increasing numbers of collaborative relationships and complex interdependencies in the workplace, especially in second cycle educational institutions, psychological safety and psychological flexibility are likely to remain significant factors for predicting work engagement of employees.

Based on the findings, the following recommendations are worthy of note in ensuring an improved psychosocial work environment in senior high schools. Firstly, Bond et al. (2013) indicated that even though psychological flexibility is usually considered an individual characteristic because it tends to be stable over time, effective interventions can also enhance it among individual. Given that our findings indicated the crucial role psychological flexibility plays in the perception of safety at work and work engagement, we recommend that the Ghana Education Service specifically, and other corporate organisations take steps to provide interventions for employees to boost their flexibility. Being psychologically flexible has enormous benefits for mental health and behavioural effectiveness in various settings, including the workplace (Bond et al., 2013).

Also, given that employees who perceived the workplace to be psychologically safe are more likely to put in more efforts and be immersed in their work, we recommend that educational institutions and other work settings should ensure transparency, fairness in the application of corporate rules and put measures in place to enhance interpersonal trust and solidarity among workers. Management must show genuine concern and care for the social and psychological wellbeing of their workers. When these recommendations are implemented, the institution would be the ultimate beneficiary, and the benefit would trickle down to the employees, in terms of their social, economic and psychological well-being and enhanced work experience.

Limitations of the Study

The study was conducted among senior high school teachers. For this reason, the findings must be applied to workers at other levels of education, as well as other work settings with caution. We, therefore, recommend further studies of this nature at other levels of education and other work settings to get a comprehensive picture of the issue under discussion.

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Examining the Relationship between Metacognitive Awareness and Success Orientations of Physical Education and Sports Teacher Candidates

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Abstract

The present study aims to investigate the relationship between metacognitive awareness and success orientations of physical education and sports teacher candidates. The population of the research consisted of 240 teacher candidates studying in the third and fourth grades in physical education and sports teaching departments at Bozok, Erciyes, and Mehmet Akif Ersoy Universities, and 142 students who were selected with random sampling method consisted the sample group. In the collection of the data, the Personal Information Form, Metacognitive Awareness Inventory and Success Orientation were used. The obtained data were analyzed in the computer environment. Number, percentage, average, and standard deviation were used as descriptive statistical methods in the evaluation of the data. Pearson correlation analysis was used between the continuous variables of the study.

As a result, it was determined that the metacognitive awareness of the physical education teacher candidates was low, the learning orientation and the tendency for performance from the sub-headings of success orientation were high and medium, respectively, and the avoid of performance tendency was medium, and there was a low negative relationship between the metacognitive awareness and the avoid of performance tendency which is among the sub-headings of success orientation. It can be stated that this situation originates from the fact that the physical education teacher candidates possess certain levels of sports skills, knowledge and achievements in the sportive life that started and/or still continue before the university education, and from the thoughts of avoiding negative judgments by performing their skills as well as learning new skills.

Keywords: Students, Physical Education, Sports, Metacognitive Awareness, Success Orientation.

Introduction

Technological developments from past to present cause important innovations in human history (Karakuş & Köse, 2018) and constantly lead people to reach more perfection (Karakuş, 2012). Accordingly, the educational qualifications required for the development of individuals change as well. Darling-Hammond (2000) stated that educational research focuses on acquiring high-level mental qualities such as accessing information, obtaining information, and managing their own mental processes, rather than conveying existing information to individuals. In this sense, when it is considered that students are responsible for their self-learning, the concept of metacognitive emerges. In general terms, metacognitive is not only important in terms of acquisition efficiency, understanding, remembering, and practicing what has been learned, but also effective in the acquisition of effective learning, critical thinking, and problem-solving skills (Hartman 1998). Metacognitive awareness (Çakıroğlu, 2007) is defined as "cognition of knowing" in its simplest sense. In this respect, metacognitive awareness is one of the most important variables in predicting learning and increasing success (Okoza, Aluede, & Owens-Sogolo, 2013).

Metacognitive control is the individual's review of his own learning process and learning products at the end of the monitoring process, and conscious or unconscious decisions made depending on the result (Schwartz & Perfect, 2002: 6). In other words, it is the ability to strategically use metacognitive knowledge to achieve cognitive goals (Demircioğlu, 2008). Metacognitive control strategies include the conscious control of learning by the individual, planning, strategy selection, monitoring the learning process, correcting errors, analyzing the effectiveness of learning strategies, and changing cognitive strategies when necessary (Ridley et al., 1992). An individual who can control his / her learning process with metacognitive control strategies can reach the goal determined at the beginning of the process in the most appropriate way and in the shortest time. Because the individual will continuously monitor and evaluate the learning process with metacognitive control strategies and will be able to change the strategies used when necessary.

Success is a concept that describes achieving the previously set targets or to what extent the goal would be achieved. Accordingly, success orientation implies that individuals tend to be determined to use their time and energy to achieve their goals (Küçükoğlu, Kaya, & Turan, 2010).

According to success tendencies approach that were conceptualized by Dweck et al. (Ames, 1992; Dweck & Legget, 1988; Nicholls, 1984); in all kinds of learning environment, there are 3 main academic targets that lead students' attitudes and behaviors to materials and academic duties that should be learnt: learning tendency approach, tendency for performance and

avoidance of performance tendency. The main aim of students with learning tendency approach is to learn the related content and obtain the related knowledge and abilities. The main aim of students with tendency for performance is to approve their academic superiority and sufficiency levels compared to others as showing a higher success level related to the material that must be learnt. On the other hand, avoidance of performance tendency is defined with such behaviors as trying to finish responsibilities related to learning as obtaining an acceptable pass score with minimum effort (Özgüngör, 2014). Will of students in schools of physical education and sports teaching to be more successful in terms of sports, starting from their childhood periods, their families' and societies' parallel will in this subject positively affect students' success tendencies due to they do not have any conflicts in this subject (Pepe 2015).

In an environment focusing on metacognitive abilities, it is important to acknowledge the situation of teacher candidates' success orientation in terms of guiding teacher training policies and raising successful students in the following years.

According to the literature review made by the author, there are studies examining metacognitive awareness (Akın, 2006; Zorlu, Zorlu, & Dinç, 2019; Karakelle, 2012; Bakioğlu et al., 2015) and success orientation (Koç, & Gözler, 2019; Pepe, 2015; Özgüngör, 2014; Turan, Karaoğlu, & Koç, 2017). However, there were not any studies examining the metacognitive awareness and success orientation of physical education and sports teacher candidates. The present study aims to investigate the relationship between the metacognitive awareness levels and success orientations of physical education and sports teacher candidates.

Method
Research Model
This study was designed with a descriptive and correlational survey model. These survey models can be defined as "research models aiming to determine the presence and/or degree of covariance between two and more variables" (Karasar, 2007).

Forming the Voluntary Groups: The population of the research consisted of 240 teacher candidates studying in the third and fourth grades in physical education and sports teaching departments at Bozok, Erciyes, and Mehmet Akif Ersoy Universities, and 142 students who were selected with random sampling method (Çıngı, 1994) consisted the sample group.

Data Collection Techniques: Personal information form prepared by the researcher, metacognitive awareness, and success orientation scales were used in order to collect data in the study.

Personal information form: The scale includes five questions in order to obtain information about the participants' gender, age, education university, cumulative grade point average, and weekly studying duration.

Metacognitive Awareness Scale: It is a five-point Likert-type scale consisting of 52 items and developed by Schraw and Sperling-Dennison (1994) and adapted to Turkish by Akın, Abacı, and Çetin (2007). It was reported that the Cronbach's Alpha internal consistency coefficient of the whole scale was 0.95. The scale is also evaluated as sub-headings or as the total score. The lowest score that can be obtained from the scale is 52 and the highest score is 260. A conclusion can be reached about the level of metacognitive awareness of the individuals by dividing the total score obtained from the scale to the number of items.

Success Orientation Scale: "Success Tendencies Scale" that was developed by Midgley et al., and adapted to Turkish by Akın and Çetin (2007) was used as a data collection tool in this research. The original form of Success Tendencies Scale is composed of 18 questions and the first 6 questions are related to learning tendencies, the following six questions are related to tendency for performance and the last six questions are related to avoidance of performance tendencies. On the other hand, the Success Tendencies Scale that was used in this research is composed of 17 items. These 17 items in Success Tendencies Scale are distributed as follows; 1-6 items are about learning tendencies, 7-12 items are about tendency for performance and 13-17 questions are about avoidance of performance tendency. The scale employs 5-item Likert type evaluation format as "1=Never", "2 =Rarely", "3=Often", "4 =Generally" and "5 =Always".

Statistical Results

The application of the Shapiro-Wilk test is just one of the methods used to examine the normality. According to the statistics of the obtained data, skewness and kurtosis distributions are given in Table 1.

Table 1. Skewness-Kurtosis and Shapiro-Wilk Test Level of Significance Results of Participants' Scale Scores

	N	Skewness	Kurtosis
Metacognitive Awareness	142	.567	-.042
Learning Tendency	142	-.723	-.235
Tendency for Performance	142	-.777	.457
Avoid of Performance Tendency	142	.076	-.788

When the Shapiro-Wilk Test results are analyzed, it was observed that the deviation from the normality of the scores obtained by the participants

from metacognitive awareness and success orientation scales was at significant levels (Table. 1). When the normal distribution curves were examined, it was observed that there were no excessive deviations from normality. In the literature, George and Mallery (2016) stated that skewness and kurtosis values are ideally acceptable for values between ± 1. Accordingly, it was decided to use parametric statistical analysis tests. The obtained data were analyzed in the computer environment. Number, percentage, average, and standard deviation were used as descriptive statistical methods in the evaluation of the data. Pearson correlation analysis was used between the continuous variables of the study.

Findings

Table 2: The Demographical Features of the Participants

	Variables	**N**	**%**
Gender	Male	85	59.9
	Female	57	40.1
	Total	**142**	**100**
Age	18-21	65	45.8
	22 and above	77	54.2
	Total	**142**	**100**
University	MAKÜ	45	31.7
	Erciyes	44	31.0
	Bozok	53	37.3
	Total	**142**	**100**
Cumulative Grade Point Average	1.25-1.99 (Low)	17	12.0
	2.00-2.99 (Medium)	69	48.6
	3.00-4.00 (High)	56	39.4
	Total	**142**	**100**
Weekly Study Hours	1-10	94	66.2
	11 and above	48	33.8
	Total	**142**	**100**

When Table 2 is examined, it was determined that 59.9% of the participants were male and 40.1% of them were female, 45.8% of them were between the age of 18-21 years old and 54.2% of them were 22 and above years old, %31.7% of them were studying at Mehmet Akif Ersoy University, 31% of them were studying at Erciyes, 37.3% of them were studying at Bozok University, 12% of them had low CGPA, 48.6% of them had medium CGPA, 39.4% of them had high CGPA, and 66.2% of them were studying 1-10 hours a week and 33.8% of them were studying 11 and more hours a week.

Table 3: Descriptive Statistics of the Scores Obtained from the Scales

	N	Min	Max	X±Sd
Metacognitive Awareness	142	1.69	3.46	2.44±.37
Learning Tendency	142	3.00	5.00	4.34±.49
Tendency for Performance	142	1.67	5.00	4.07±.72
Avoid of Performance Tendency	142	1.00	5.00	3.00±.96

When Table 3 is analyzed, it was determined that the metacognitive awareness of the physical education and sports teacher candidates who participated in the study was 2.44±.37, their Learning Tendency score was 4.34±.49, Tendency for performance score was 4.07±.72, and Avoid of Performance Tendency was 3.00±.96.

Table 4: The Relationship between the Metacognitive Awareness and Success Orientation of the Participants

		1.	2	3	4
1. Metacognitive Awareness	**r**	1			
	p				
	n	142			
2. Learning Tendency	**r**	-.029	1		
	p	.731			
	n	142	142		
3. Tendency for Performance	**r**	-.017	.146	1	
	p	.837	.084		
	n	142	142	142	
4. Avoid of Performance Tendency	**r**	-.197	.167	.217	1
	p	.019	.047	.010	
	n	142	142	142	142

When Table 4 is examined, a negative and low relationship was determined between the metacognitive awareness and avoid of performance tendency from the sub-headings of success orientation of the physical education and sports teacher candidates.

Discussion and Conclusion

Today, sports are used as a powerful educational tool in the solution of social problems by broadening the area of interest in order to meet the various expectations of individuals (Akıncı, 2019). The participation of students to the sports based physical activities increased their quality of life and socialization, and had a positive effect on their academic success (Yıldırım, & Bayrak, 2019).In this context, it is important to acknowledge how the physical education and sports teacher candidates are in a learning environment with a focus on the metacognitive abilities, to create a quality teaching-learning process, and transfer the future generations when they start their professional life in the future.

It was determined that the metacognitive awareness of the physical education and sports teacher candidates was low, and the learning tendency and tendency for performance were higher and avoid of performance tendency was medium. Akın, Abacı and Çetin (2007) reported that metacognitive awareness was low for individuals who had an average score below 2.5 and high for those who had higher than 2.5.

When the literature is examined, there are studies reporting that the metacognitive awareness of teacher candidates (Zorlu, Zorlu, & Dinç, 2019), preschool teachers (Baba Öztürk, & Güral, 2016), and classroom and science teachers (Bakioğlu et al., 2015) are high. . In another study, Şahin and Küçüksüleymanoğlu (2015) reported that classroom, physical education and sports, Turkish, counseling and psychological counseling, foreign language, music, science, social studies, and mathematics teacher candidates had high metacognitive awareness levels and preschool teacher candidates had low metacognitive awareness levels. In the present study, it was unexpected that metacognitive awareness levels of physical education teacher candidates would be low. This situation is considered to originate from the socio-cultural characteristics of the sample group participating in the study or individual differences that may be among the participants in other studies in the literature.

When the success orientation of the physical education and sports teacher candidates are examine as a whole, it was observed that their learning orientation was quite high, and the least adopted orientation is avoid of performance tendency. When the studies examining the success orientation in the literature are examined, there are studies on teacher candidates (Arslan 2011, Gözler, Bozgeyikli and Avcı, 2017), Aydın, 2014) and students (Koç, & Gözler, 2019; Pepe, 2015; Turan, Karaoğlu, & Koç, 2017) that support the findings in this study. It can be stated that the participation of physical education and sports teacher candidates to the activities may originate from the idea of learning new information as well as appearing more successful and talented and avoiding negative attitudes that would be directed towards them.

There was a low negative correlation between the metacognitive awareness of physical education and sports teacher candidates and avoid of performance tendency which is one of the sub-headings of success orientation (Table 4). When the literature is examined, there are studies indicating that metacognitive awareness has a positive relationship with readiness to self-regulated learning (Şahin, & Küçüksüleymanoğlu, 2015), attitude towards technology (Bakioğlu et al., 2015), life skills (Zorlu, Zorlu, & Dinç, 2019), negative relationship with personal problem-solving perception (Karakelle, 2012), and no relationship with self-respect (Koç, & Gözler, 2019).

The aim of education is to provide students with the knowledge and skills they can use in daily life. The ability of students to benefit from teaching activities depends on many factors, however, it is also related to their desire to learn the material and for what purpose they want to learn (Arslan, 2011). Mental processes such as metacognitive awareness, high-level thinking, knowledge of own cognitions, developing self-evaluation skills, determining the strategies that cause success or failure (Schraw and Dennison, 1994) and it is accepted as an element of learning skill and information effectively (Çetinkaya, & Erktin, 2002). Success orientation refers to mental processes and activities resulting from the desire to achieve goals (DeShon, & Gillespie, 2005). According to the theory of success, it is the result of the tendency to approach and avoid failure or the conflict between the hope of success and fear of failure (Küçükoğlu, Kaya, & Turan, 2010). Individuals with a high motivation for success are people who study to learn, set common goals, have developed feelings of competence, undertake effort, and try to overcome difficulties when they encounter. Individuals with low motivation, on the other hand, are people who try to appear that they have learned, set goals that they can easily reach or cannot reach, do not have developed feelings of competence, use external factors as excuses, and get frustrated when faced with difficulties. Upbringing, former successes and failures have great importance in the emergence of the motivation for success. People who had the opportunity to try and discover their talents and enjoy the success of their childhood will also have high motivation for success (Açıkgöz, 2000).

In conclusion, the relationship between the metacognitive awareness levels and avoid of performance tendency, which is one of the sub-headings of success orientation, in physical education teacher candidates may derive from the fact that students try to avoid negative judgments by performing their skills as well as learning new skills in educational processes and possessing a certain level of sportive skills, knowledge, and achievements in their athletics life started before the university and/or still continues.

Recommendations
 I.   Training and studies can be increased to determine the metacognitive awareness levels of teacher candidates in physical education and sports teacher education programs.
 II. In the curriculum programs, teacher candidates in physical education and sports teaching programs can be taught to increase their metacognitive awareness levels.
 III. A comparison can be made with the results of this research by conducting a study with the teacher candidates in physical education and sports teacher education programs at different universities.

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Development of The Stem Career Interest Scale for High School Students

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Abstract
        In this study, it is aimed to develop a scale to be used to determine the STEM career interest of high school students. Because, when STEM career studies in the literature are examined, the lack of STEM career scale for high school students is remarkable. In this research, developing STEM Career Interest Scale for high school students is important for literature. The scale development principles specified by DeVellis were taken into consideration during the development of the scale. 25-items STEM career interest scale trial form was applied to 462 high school students in their 2016-2017 academic year in Kayseri in Turkey. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) was performed for the construct validity through the data set obtained from the study group. SPSS 22 and AMOS 24 package programs were used to analyze the data. According to the results of Exploratory Factor Analysis (EFA), it was determined that the scale consisted of 20 items and 3 sub-dimensions. Scale sub-dimensions were named as: interest, self-efficacy, outcome expectations. It was determined that the three-factor structure related to the scale explained 71% of the total variance. The Cronbach alpha coefficient was 0.96 for the whole scale. STEM Career Interest Scale developed for high school students can be used in experimental studies or descriptive studies. Validity and reliability studies can be performed by applying the scale to different education levels and it can be used in the studies.

Keywords: STEM career, STEM career interest, social career cognitive theory.

Introduction

The 21st century is the beginning of the digital age. At this age, technology has improved and knowledge has increased (Beers, n.d.). The advances in technology and the increase in knowledge have caused some changes in the society. With this change, individuals required some skills to be successful in our century and society (Akgunduz, 2016). These skills are generally called 21st century skills.

21st century skills are classified in different ways. Partnership for 21st Century Learning has divided its 21st century skills into three groups as follows; learning and innovation skills, information-media and technology skills, life, and career skills (P21, 2016).

In the report published by the World Economic Forum, 16 skills were specified. These skills are as follows; Literacy, arithmetic, information, and communication technology literacy, scientific literacy, financial literacy, cultural and citizenship literacy, critical thinking / problem solving, creativity, communication, cooperation, curiosity, initiative, resilience, adaptation, leadership, social, and cultural awareness (World Economic Forum, 2015).

21st century skills are collected under four main titles by The Assessment and Teaching of 21st Century Skills (ATC21S). These skills are as follows; ways of thinking (creativity and innovation, critical thinking, problem solving, learning to learn, metacognition ...), ways of working (communication, collaboration), working tools (literacy, information, and communication technology literacy), life in the world (citizenship, life and career, individual responsibility, social responsibility) (ATC21S, n.d.; Griffin & Care, 2015).

When different classifications of 21st century skills are examined, it is seen that creativity and innovation, critical thinking and problem solving, communication, cooperation, information management, effective use of technology, career and life skills, and cultural awareness skills are common in most of them (Beers, n.d.). Schools today need to provide training to acquire these skills. These schools should aim for students who are researching, learning and entrepreneurs. Schools should pay attention to individual differences, contain flexible lessons, and include a system that enables the interaction of multiple disciplines. Therefore, today education programs are changing from one discipline-based education with a teaching that includes several disciplines. The first examples of this can be seen in STAEM (Science, Technology, Art, Engineering and Mathematics) education (Yavuz, 2016).

STEM education, which today focuses on the interdisciplinary integration of science, technology, engineering and mathematics disciplines, was introduced by the National Science Foundation (NSF) as an acronym in the 1990s (Bybee, 2013; Dugger, 2010). STEM education has many goals for students. These goals are aimed at providing students with 21st century skills

and getting students ready for the needs of the age. For this reason, the aims of STEM education for students include STEM literacy, 21st century skills, preparation for STEM workforce, interest and participation, and the ability to link STEM disciplines. Some results of STEM education for these purposes are as follows; 21st century skills, STEM related career choice, STEM interest (Honey et al., 2014).

Relevant Literature

Today, it is very important for students focusing on STEM fields. Especially professionals in the field of STEM are indispensable for the innovation and economic growth of countries and today's needs (Carnevale et al., n.d.). Considering the needs of the future, it is thought that STEM professionals will be important and new STEM professions will emerge. For this reason, many countries focus on increasing the number of students who prefer STEM fields and the number of STEM professionals.

Targets related to STEM fields are included in the STEM Education Strategic Plan of North Carolina (USA). The goals included in the plan include the following; Increasing student interest in STEM fields, increasing the proportion of students graduating from STEM programs (Public Schools of North Carolina, n.d.). In the "National STEM School Education Strategy 2016-2026" report approved by the Austrian Ministry of Education in 2015, the main topics determined for national action include the increase of STEM participation of students (Education Council, 2015). The Netherlands has developed a STEM education strategy since 2004 aimed at promoting science and technology education to increase the talented employees of the future. This strategy aimed to overcome the shortage of scientists and engineers in the country (Kearney, 2016). In Ireland, research projects are carried out in schools for students to choose their science, engineering and technology career areas (European Commission/EACEA/Eurydice, 2010). In Turkey, the Ministry of National Education (MONE), even where the strategic plan in the STEM teaching strategies, there are some studies about STEM. The first pilot studies related to STEM began to be implemented in Kayseri in Turkey. Through the applications, it is aimed to increase the interest of students in mathematics and science in schools (Kayseri Provincial Directorate of National Education, 2013). In the following years, MONE and various universities introduced strategies and actions related to STEM.

The activities of countries regarding STEM education and career have shown their effect in the studies in the literature. In the literature, researches related to STEM career have been conducted. In the study of Sadler, Sonnert, Hazari and Tai (2012), how students' STEM career interests changed during high school was examined. It was determined that men show interest in engineering fields, women show interest in health and medicine. In the

research conducted by Christensen, Knezek and Tyler-Wood (2015), the factors affecting students' STEM careers and STEM interest were investigated. It was determined that a student's self-motivation, parent support, high quality motivating teacher factors were effective on students' STEM careers. In the study of Brown, Concannon, Marx, Donaldson, and Black (2016), the interests of middle school students in STEM, their beliefs in STEM, and possible gender differences in STEM self-efficacy were investigated. In a study carried out by Korkut-Owen and Mutlu (2016), the number of students' placement in higher education between 1999-2003 was examined and their tendency to choose STEM fields was evaluated. As a result of the evaluation, it was determined that women generally prefer natural sciences, mathematics and statistics, and men generally prefer computer and engineering. In a study conducted by Yerdelen, Kahraman and Tas (2016), low socio-economic secondary school students' STEM career interests and attitudes towards STEM fields were investigated. As a result of the research, it was determined that the students had positive emotions in having a STEM career. Bolds (2017) examined STEM career development of high school students in his doctoral thesis. Within the framework of Social Cognitive Career Theory, it was determined that students' mathematics and science self-efficacy, outcome expectation and interest were important determinants on STEM career intent and STEM field selection. In a study carried out by Christensen and Knezek (2017), they examined the relationship of middle school students to STEM and their intentions to pursue a career in STEM. In the study, it was concluded that male students have a higher intention to pursue a career in STEM fields and show more interest in STEM fields. In a study conducted by Sellami, El-Kassem, Al-Qassass and El-Rakeb (2017), the factors that help estimate students' interests in the STEM field were investigated. Korkut Owen and Eraslan Capan (2018) revealed the reasons for secondary school students to think and not think about choosing STEM areas. In the literature, it was seen that there are some scale development studies related to STEM careers.

Tyler-Wood, Knezek and Christensen (2010) created two measurement tools that can be used to evaluate students' STEM disciplines and career perceptions. Kier, Blanchard, Osborne and Albert (2013), a scale of STEM career interest was developed in a study. The scale was applied in the sample of secondary school students. Social cognitive career theory constituted the theoretical basis of the scale. Oh, Jia, Lorentson and LaBanca (2013) developed a measurement tool that measures the education and career interests of high school students in STEM. Guzey, Harwell and Moore (2014), a tool was developed to measure students' (4-6th grade) attitudes towards STEM and STEM careers. Milner, Horan and Tracey (2014) have developed measurement tools that can be used to determine students' STEM interests and

self-efficacy. Unfried, Faber, Stanhope and Wiebe (2015) have developed two measurement tools suitable for two samples (grades 4-5 and grades 6-12) that measure students' attitudes towards STEM and their interest in STEM careers. Koyunlu Unlu, Dokme and Unlu (2016) in their study, they adapted a STEM career interest scale in the relevant literature to Turkish in the sample of secondary school students.

Research Focus and Research Aim

When STEM career studies in the literature are examined, the lack of STEM career scale for high school students is remarkable. In this research, developing STEM Career Interest Scale for high school students is important for literature.

In this research, it was aimed to develop a scale that can be used to measure the STEM career interest of high school students.

Research Methodology
Participants

The group in which the results in a study are valid is called the universe. The part of the universe where data is collected is called a sample (Buyukozturk, Kilic Cakmak, Akgun, Karadeniz & Demirel, 2012). In this research, STEM career interest of students will be investigated. For this reason, the universe of the research has been determined as the age range of 14-16 years, which is the age of orientation towards the profession or career (Telman, 2006). Because the first years of the 14-18 age range is the period when individuals recognize their own interests and abilities (Cakir, 2011). Therefore, students in high schools in Kayseri in Turkey were chosen as the research universe. 462 students determined by the proportional stratified sampling method were selected. These students formed the sample of the research (Johnson & Christensen, 2014). The number of samples in the study was determined according to the formula recommended by Cochran (1962; as cited in Balci, 2011). According to the formula, the size of the sample to be selected from the research universe should be at least 381.

The scale was applied in the academic year of 2016-2017. The scales have been implemented in four high schools in Kayseri in Turkey. A total of 462 students participated in the study. Information about the students is given in Table 1.

Table 1
Distribution of students according to schools and gender

Schools	Grade	Male	Female	Total
High School 1	9	43	7	50
	10	28	22	50
	11	17	-	17
	12	21	19	40
	Total	109	48	157
High School 2	9	8	-	8
	10	8	2	10
	11	5	3	8
	12	5	3	8
	Total	26	8	34
High School 3	9	16	19	35
	10	16	24	40
	11	10	10	20
	12	10	8	18
	Total	52	61	113
High School 4	9	18	22	40
	10	13	27	40
	11	19	39	58
	12	9	11	20
	Total	59	99	158
Total		246	216	462

Instrument and procedures
In this research, the STEM career interest scale was developed for high school students. The scale development principles specified by DeVellis (2014) were taken into consideration during the development of the scale (Figure 1).
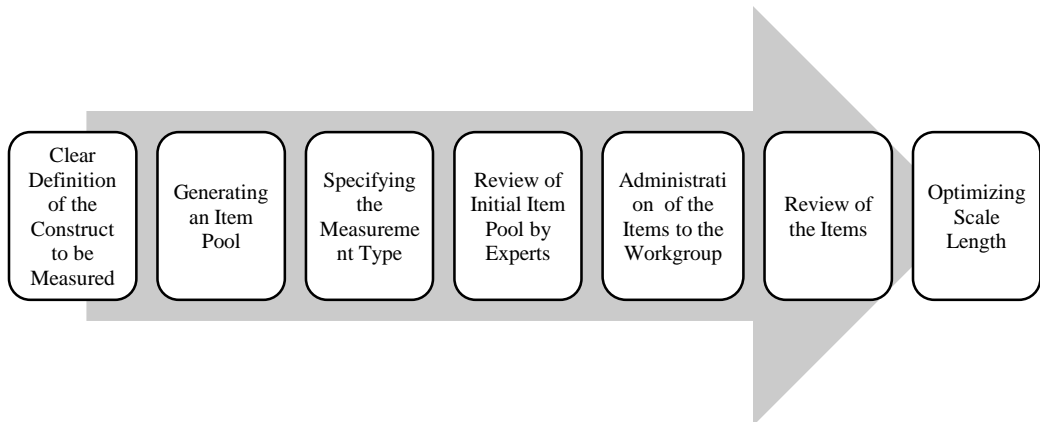
Fig. 1
Scale development principles (DeVellis, 2014)

Step 1: Clear definition of the construct to be measured

When developing a scale, the relevant literature should be examined to determine the structural features of the examined case and to base the scale on a theory (DeVellis, 2014; Ozdamar, 2016). For this reason, in the research, the theoretical framework of the scale was determined by examining the studies related to STEM careers. As a result of the examinations, it was decided to base the STEM Career Interest Scale on Social Cognitive Career Theory (SCCT) (Lent, Brown & Hackett, 1994). Because, although SCCT has many common features with other theories, it is a newer theory (Unsal, 2014). This theory was explained by Lent in 1994. According to the researchers, career development is divided into three models; model of the development of interest, career choice model and performance model. There is a connection between self-efficacy, outcome expectation and interest in the model of development of interest (Lent et al., 1994). While developing STEM Career Interest Scale, these three concepts were determined as sub-dimensions.

Step 2: Generating an Item Pool

In the study, a pool of 38 items was prepared for the STEM Career Interest Scale.

Step 3: Specifying the Measurement Type

In this study, the answers given by high school students to STEM Career Interest Scale indicate the level of approval of the students. For this reason, the Likert scale type, which is an answer option used to show the level of approval in the research, was used (DeVellis, 2014).

Step 4: Review of Initial Item Pool by Experts

Expert evaluation form was prepared to present the item pool to the expert opinion. In the form, there are options and suggestions about whether each item is suitable or not. This form has been submitted to the opinion of six experts. Information about the experts is given in Table 2.

Table 2
Information about the experts

Degree of the Experts	Expert's fields of study
Professor	STEM education, technology of education
Assoc. Prof.	STEM education, technology of education
Assoc. Prof.	STEM education
Asst. Prof.	STEM education
Asst. Prof.	Assessment and evaluation, statistics
Dr.	Self-efficacy

In accordance with the opinions of experts, each item in the scale was re-examined and corrected. A scale containing 25 positive items was prepared.

Step 5: Review of the Items and Giving the Appropriate Form

Examples of the 25 items in the scale and the resources used when writing the items are presented in Table 3. Some items were written by researchers.

Table 3
Examples of items in the item pool and resources used in writing items

No	Items	Science	Technology	Engineering	Mathematics	Sub-dimensions	Resources
1							George, 2012; Maskan, 2010
2							Ekici, 2009
3							Ekici, 2009
4	I am sure that I will be successful in ………					Self-efficacy	Brown et al., 2016; George, 2012; Kier et al., 2013
5							
6							

7			
8			Christensen et al., 2014; Christensen & Knezek, 2017
9			
10			Kier et al., 2013
11			
12			
13	If I work in a profession in ………, I would be happy.	Outcome expectation	Christensen et al., 2014
14			
15			
16			
17			Kier et al., 2013
18			Christensen et al., 2014; Christensen & Knezek, 2017; Ertas Kilic & Keles, 2017; Kier et al., 2013; Kurbanoglu & Arslan, 2015; Oh et al., 2013
19			Brown et al., 2016
20	Professions in …… interest me.		Kier et al., 2013
21			
22			
23			
24		Interest	Christensen et al., 2014; Christensen & Knezek, 2017; Ertas Kilic & Keles, 2017; Kier et al., 2013; Kurbanoglu & Arslan, 2015; Oh et al., 2013
25			

For the items in the scale, students were asked to answer the gaps by filling them with science, technology, engineering and mathematics, respectively. Then, the scores that students gave to science, mathematics, engineering and technology for each item were summed up and divided into four. In this way, the scores of the students in each item vary between 1-5. There are reasons why the word STEM is not used when writing items instead of science, technology, engineering and mathematics disciplines. One of the reasons is the lack of STEM higher education department in Turkey. Also, STEM education in Turkey is not very old. Therefore, STEM may not make sense for any of the students. Some experts also suggested that the word STEM should not be used.

Data analysis

The scale was finalized by making exploratory factor analysis to STEM Career Interest Scale. Then, confirmatory factor analysis, reliability analysis, item variances, the 27% difference between upper and lower groups were calculated. SPSS 22 and AMOS 24 package programs were used to analyze the data.

Results
Exploratory factor analysis

Kaiser-Meyer-Olkin (KMO) value of the scale was found to be .96. Bartlett's test of the scale was found to be significant ($p<.05$).

Items 9 and 10 were removed from the scale because of overlapping. After removing the item, varimax techniques, was used. The overlapping items 8 and 13 were removed from the scale and factor analysis was repeated using "varimax" technique. As a result of the analysis, it was found that all items except item 16 was distributed according to theoretical background. After reviewing this item, it was decided to remove them from the scale. The total variance table explained as a result of factor analysis is given in Table 4.

According to Table 4, the scale consisted of three factors explaining 71% of the analyzed construct. "Scree Plot" graph of the scale is given in Figure 1. Regarding Figure 1, the number of factors was found to be three.
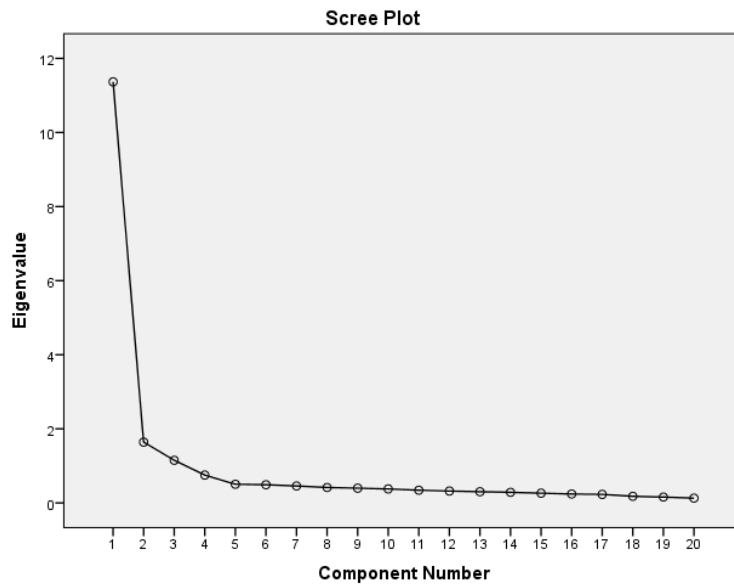
Fig. 2
"Scree Plot" graph of STEM career interest scale

Table 4
STEM career interest scale – Total variance table

Components	Initial Eigenvalues		
	Total	Variance Percentage	Cumulative Percentage
1	11.366	56.83	56.83
2	1.641	8.21	65.04
3	1.152	5.76	70.80
4	.751	3.76	74.55
5	.504	2.52	77.07
6	.490	2.45	79.52
7	.457	2.28	81.81
8	.416	2.08	83.89
9	.398	1.99	85.88
10	.377	1.88	87.76
11	.344	1.72	89.48
12	.320	1.60	91.08
13	.303	1.51	92.59
14	.286	1.43	94.02
15	.263	1.32	95.34
16	.240	1.20	96.54
17	.229	1.15	97.69
18	.178	.89	98.58

| 19 | .157 | .78 | 99.36 |
| 20 | .128 | .64 | 100.000 |

According to the results, the scale consists of 20 items, under three sub-dimensions/factors in Table 5.

Factor 1: Interest (Items 17, 18, 19, 20, 21, 22, 23, 24, 25)

Factor 2: Self-efficacy (Items 1, 2, 3, 4, 5, 6, 7)

Factor 3: Outcome expectation (Items 11, 12, 14, 15)

Table 5

Rotated component matrix of STEM career interest scale

Items	Factors		
	1	2	3
kar22	.80		
kar21	.79		
kar23	.75		
kar24	.73		
kar20	.73		
kar25	.72		
kar19	.70		
kar18	.67		
kar17	.66		
kar2		.80	
kar4		.80	
kar1		.80	
kar5		.71	
kar6		.70	
kar3		.69	
kar7		.67	
kar15			.85
kar12			.76
kar14			.71
kar11			.69

Confirmatory factor analysis

In the confirmatory factor analysis, χ^2/sd value was found to be 4.06. CFI value in the analysis was calculated as .93 in the analysis. RMSEA value was found to be .08. The confirmatory factor analysis is given in Figure 2.

The factor loads ranged between .77-.88 for interest sub-dimension; .70-.88 for self-efficacy sub-dimension; .75-.83 for outcome expectation sub-dimension. Since $p<.05$ for these values, the items were appropriately assigned

to the factors. The following strong relationships were revealed between the factors.
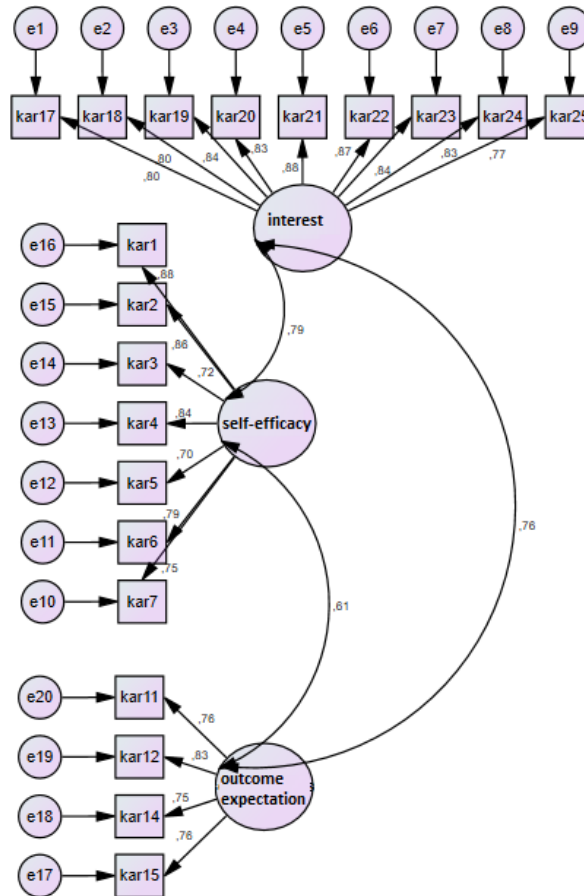
Fig. 3
STEM career interest scale - Path diagram

Reliability analysis

The Cronbach Alpha coefficients are given in Table 6. STEM Career Interest Scale has high reliability.

Table 6
Cronbach's alpha coefficients of the STEM Career Interest Scale

Sub-dimensions	Number of Items	Cronbach Alpha coefficient (α)
Self-efficacy	7	.92
Outcome expectation	4	.86
Interest	9	.95
Scale	20	.96

Item variances

The variances of the items of the STEM Career Interest Scale are given in Table 7. According to Table 7, the variance statistics for the items are higher than .73.

Table 7
STEM Career Interest Scale – Item variances

Items	Variance Statistics	Items	Variance Statistics
kar1	.78	kar15	.93
kar2	.73	kar17	.77
kar3	.79	kar18	.82
kar4	.83	kar19	.91
kar5	.84	kar20	.83
kar6	.89	kar21	.89
kar7	.90	kar22	.96
kar11	.98	kar23	.91
kar12	.94	kar24	.83
kar14	.84	kar25	.85

Difference between the Lower and Upper Groups of 27%
T-test results of the scale between the lower and upper groups are given in Table 8.

Table 8
Independent groups t-test results between lower and upper students

Groups	N	Mean	Ss	t	df	p
Lower Group	125	49.34	10.95	-28.531	202.187	.0001
Upper Group	125	81.87	6.53			

As p <.05 in Table 8, there is a significant difference between the lower and upper. The mean score of the upper group was 81.87. The mean score of the

lower group was 49.34. The scale can measure the distinction between students with low and high scores.

As a result of the factor analyzes, item analyzes and reliability analyzes described above, a valid and reliable 20-item and three-factor STEM Career Interest Scale was developed.

Discussion

In the research, STEM Career Interest Scale was developed for high school students in Turkey. While developing the scale in the research, the scale development steps suggested by DeVellis (2014) were followed. These steps were followed in many scales developed in the literature.

The first step in developing the scale is "Clear Definition of the Construct to be Measured". In the research, it was decided to base the STEM Career Interest Scale on SCCT (Lent et al., 1994). Because the same theoretical background has been included in many studies in the literature. The theoretical foundation of the STEM career interest scale developed by Kier et al. (2013) for secondary school students is based on the SCCT (Lent et al.,1994). Moakler and Kim (2014) included at SCCT as a conceptual framework in their study in STEM career choice. In a study by Nugent, Barker, Welch, Grandgenett, Wu & Nelson (2015), SCCT was included as a theoretical basis. Bahar and Adiguzel (2016) based the SCCT on the theoretical background of their research in which high school students examine their STEM career choice. Sahin, Ekmekci and Waxman (2017) also determined this theory as a theoretical framework in their studies in which high school students researched future STEM career plans. In addition, although SCCT has many common features with other theories, it is a newer theory (Unsal, 2014).

SCCT was explained by Lent in 1994. There is a connection between self-efficacy, outcome expectation and interest in the model of development of interest (Lent et al., 1994). While developing STEM Career Interest Scale, these three concepts were determined as sub-dimensions. Self-efficacy is about how individuals perceive their own abilities. Self-efficacy is the total belief of individuals regarding a particular field of activity (Koc, 2003; Unsal, 2014). For this reason, items such as "I am sure that I will be successful in ………." were included in the preparation of items in the sub-dimension of self-efficacy. Outcome expectation includes material and moral rewards that individuals will achieve at the end of a behavior (Unsal, 2014). For this reason, the items in the outcome expectation sub-dimension included expressions such as "If I work in a profession in ………, I would be happy". Interest refers to things that are important to the individual in the current time period (Telman, 2006). Therefore, while preparing items in this sub-dimension, expressions such as "Professions in …… interest me" were included.

The scale was finalized by making exploratory factor analysis to STEM Career Interest Scale. Then, confirmatory factor analysis, reliability analysis, item variances, item averages, corrected item total correlations, the 27% difference between upper and lower groups were calculated.

When developing a measurement tool, factor analysis is used to get information about the structure of the scale (Tavsancil, 2010). This method is used to determine how many factors the items in the draft scales combine and the type of relationship between the factors (Sonmez & Alacapinar, 2016). For this purpose, factor analysis was conducted.

There are some conditions for starting factor analysis. One of these conditions is that the sample size is sufficient. The general idea in factor analysis is that the sample size of 300 people is sufficient. Or it is enough to reach at least 5 times the number of items (Secer, 2013). In this study, the sample size was limited to 462 people. This number is over 300 and more than 5 times the item pool. Another condition for factor analysis is the KMO value. This value gives information about the adequacy of the sample size. If the KMO value is 0.7 and above, it can be said that the sample size is good. Another condition for factor analysis is Barlett's test. This test is used to determine whether the data come from normal distribution and the value should be meaningful (Can, 2014; Secer, 2013). In the study, the KMO value of the scale was found to be 0.961 and Bartlett's test was found to be significant ($p <.05$). Based on these results, it was decided that it was appropriate to continue factor analysis.

In factor analysis, the load value of each item in the factor shows how the item is related to the conceptual structure measured by the factor. If the factor load value of an item is low, that item is not related to the structure measured by the factor. According to Sencan (2005), this value should be at least 0.30. In this study, the limit value for factor load values was determined as 0.30. After factor analysis, factor load values of the items were examined. As a result of the examination, it was determined that there was no item with a load value below 0.30. Whether each item is overlapping or not is checked. Since items 9 and 10 are overlapping items, these items have been removed from the scale. Then, varimax technique was used in repeated factor analysis. "Varimax" technique is used to reveal more than one sub-dimension (Sencan, 2005). After the application of this technique, the "rotated component matrix" table was examined and it was determined that there were two contiguous items. Items 8 and 13 were removed from the scale and the varimax technique was used again. As a result of the analysis, it was determined that all items except item 16 fit the theoretical background. Item 16 has been re-evaluated. As a result of the evaluation, it was decided to exclude item 16 from the scale. After the items were removed from the scale, the scale consisted of 20 items. Finally, factor analysis was applied to the scale again by using "varimax"

technique. After the analysis was applied, it was determined that the scale explained 71% of the examined structure and consisted of three factors with at least 1 eigenvalue. In a factor analysis, the eigenvalue of each factor must be at least 1. Factors meeting this condition are named as sub-dimensions. The total variance table alone is not sufficient to determine how many factors a scale consists of. For this reason, the "Scree Plot" graphic can also be examined (Secer, 2013). As a result of all examinations, it was determined that the scale consists of 20 items. The scale consists of interest, outcome expectation and self-efficacy sub-dimensions. When similar scales in the literature are examined, it is seen that the same sub-dimension names are used. In addition, in some studies related to STEM careers, it is seen that the theoretical background is based on SCCT and interest, self-efficacy and outcome expectations (Garriott et al., 2017; Mau et al., 2019; Mohtar et al., 2019; Nugent et al., 2015; Roller et al., 2018; Silva Cardoso et al., 2013).

In this study, confirmatory factor analysis was applied to the scale to examine the accuracy of the structure determined by exploratory factor analysis (Karagoz, 2016). In the analysis results, fit indices and factor loads-regression coefficients were examined. In this research, some fit indices are examined. χ^2 / sd value was found to be 4.064. The acceptable limit value of the χ^2 / sd value is 5. A value greater than 5 indicates incompatibility. CFI value was calculated as 0.932. It is acceptable for the CFI value to be greater than 0.90. In the research, the RMSEA value was found to be 082. It is an acceptable result that this value is less than 0.1 (Ozdamar, 2016). When the fit indexes were examined, it was determined that the scale structure was acceptable. In the research, factor loads of the sub-dimensions of the scale were also examined. Factor loads in the interest sub-dimension ranged between 0.77-0.88. Factor loads in the self-efficacy sub-dimension ranged from 0.70 to 0.88. The factor loads in the outcome expectation sub-dimension ranged between 0.75-0.83. Since p <.05, it is meaningful that the items are loaded on the factors. In other words, it can be said that the items are loaded correctly on the factors (Karagoz, 2016).

In the study, the reliability coefficient of the scale was calculated. Cronbach Alpha is a method used to determine the reliability of classified and ranked scales (Sonmez & Alacapinar, 2016). This method is based on the compatibility of the items in one scale. The calculated coefficient must be at least 0.70 (Secer, 2013). In this study, the reliability coefficient of the scale was calculated as 0.96.

It is important that the items of a scale have high variance. This will show that the people who answered the scale did not answer that item in the same way (DeVellis, 2014). In the study, it was determined that the variance statistic of all items in the scale was greater than 0.728.

It is important that the average of the scores on a scale is close to the center of the possible score range (DeVellis, 2014). In this study, item scores are in the range of 1-5. The average of the items is close to 3.

Items on a scale should be largely related to the community of items outside of it (DeVellis, 2014). This relationship is expressed by the correlation coefficient. The value of the coefficient must be greater than 0.20 (Tavsancil, 2010). Corrected item total correlation of all items in the study is greater than 0.563.

It is important to examine the discrimination of the scale items between individuals with high and low scores. According to the scale scores, the student with the highest score is ranked from the lowest to the lowest. The difference in score between the top 27% group and the bottom 27% group is tested (Tavsancil, 2010). In this study, it can be said that the scale can measure the difference between the students with low and high scores.

Conclusions and Implications

As a result of this research, STEM Career Interest Scale was developed by the researchers. As a result of exploratory factor analysis, a factor structure that consists of 20 items and 3 factors was formed. The "interest" factor consisted of 9 items; the "self-efficacy" factor consisted of 7 items; the "outcome expectation" factor consisted of 4 items. The determined factor structure of the scale was confirmed by Confirmatory Factor Analysis. The Cronbach's alpha value of the whole scale was 0.96. It is believed that the scale will contribute to the literature as a valid and reliable measuring scale for determining high school students' interest in STEM career.

STEM Career Interest Scale developed for high school students can be used in experimental studies or descriptive studies. Validity and reliability studies can be performed by applying the scale to different education levels and it can be used in the studies.

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Sports Expertise as a Predisposing Factor to Decisional Process Among Physical Education Teachers: A Case Study

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Abstract
        This paper focuses on evaluating the impact of sports expertise as the embodied experience in a sports activity on the decisional process of an expert physical education teacher. Both qualitative and quantitative studies were applied within a mixed-approach using a single case study. A clinical didactics methodology was employed with three important tenses of the teaching practice (already-there, test, after-work). To understand the internal determinants that monitor the teaching practice of our participant, semi-structured interview was used, *in situ* filmed observation and content analysis. Results indicate that personal determinants, the experiential and embodied "already-there" related to sports expertise, have a significant impact on the "personal" relationship to knowledge and the bodily awareness. This can be noticed by the way knowledge is delivered through a high recurrence to direct physical ostension demonstration by the teacher's body. Sport expertise is a

major determinant of teacher's pedagogical and didactical conducts resulting from a subjective decisional process.

Keywords: Clinical didactic, ostension, relationship to body, embodied expertise, case study.

Introduction

According to Freud (1939), teaching is an "impossible" job. It is related to "something" that is out of the control of the teacher, which affects the way he acts and is determined by the nature of those acts. This expression, inspired from the psychoanalysis field which refers to Freud (Op. Cit.) and Lacan (1977), finds its roots in the teaching practice analysis. This questions all the intern and extern elements related to the teaching process. In order to understand this particular characteristic of teaching work, the teacher must be taken into account as a singular "subject" who has his own personal path, which may have an impact on the teaching practice.

Altet (2002) and Perrenoud (1996) stated that teachers are mostly obliged to act quickly in an uncertain and unpredictable environment with a certain degree of efficacy to "face the impossible mission of transmitting the integrity of knowledge" (Terrisse, 1998). However, *in situ* teaching practice takes place "in a constraint and a choices system in a tensions game, which implements contradictory and paradoxical aspects, dilemmas to manage" (Altet, 2002). It is also known as "know-how constructed through the concrete, the experience and the intern construction of the teacher, in order to act in the immediacy to make decisions in singular class situations" (Noël, 1997). As a result, teachers have to mobilise all their resources in order to make efficient decisions as a matter of urgency.

This survey is interested mostly in the subjective elements which interfere and affect the teaching process of PE[1] teachers. Hence, it seeks to reveal the intimate part of the teacher's personality behind all his unconscious conducts in the classroom and the way he transmits knowledge and know-how (Ben Jomâa, Sghaier, Mami, Chihi & Kpzaï, 2017) [details removed for peer review]. This intimate part includes the "relationship to knowledge" and the "relationship to the body" which seems to be affected by a certain dimension of PE teachers known as "sport expertise". It is about understanding how this "sport expertise" may have an impact on teacher's "relationship to knowledge" and "relationship to the body" and how these personal determinants of teacher's personality affect the way knowledge is transmitted.

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1 Physical Education

The conceptual framework is implemented in both PE didactics and clinical didactics epistemological fields. This combination has proved its efficacy in teaching-practice analysis through many previous papers dealing with this subject. Thus, the aim is to study expert PE teacher's "relationship to knowledge" and "relationship to the body" developed from their embodied expertise and its eventual impact on their didactical decisions and actions, especially the ostension procedures they use to transmit knowledge.

Conceptual Review

Sport Expertise

For PE teachers, sport expertise is considered as an inescapable determinant of the analysis of teaching practice (Ben Jomâa, 2009; Buznic-Bourgeacq, 2009; Touboul, 2011). The term "expertise" refers to "a particular aspect of physical education teacher's expertise, of his competence as a specialist of a particular discipline" (Piéron & Carreiro Da Costa, 1995). Carnus (2001) opined that it is about the personal dimension of an expert from a "sporting point of view" determined through a long extracurricular practice (in sports clubs, sports associations, etc.) and personal profound theoretical and practical knowledge of particular sports activity. During PE lessons, PE teachers usually transmit consciously or unconsciously personal knowledge originating from their practical personal experience and their singular embodied adventure as players and/or trainers (Bodergat & Buznic-Bourgeacq, 2015; Vigarello, 1982). It is about delivering "expert teachers' knowledge" (Tsangaridou, 2006) embodied in their sporting body. Thus, the first statement can be made that PE teachers are not able to transmit knowledge that is vacated from their body substance.

To reveal the implicit determinants of teachers' embodied sports expertise and its impact on their teaching practice, it is necessary to dig into their decisional already-there, i.e., their experiential and embodied already-there.

Decisional Already-there

Teachers' didactical actions in class are the result of a complex implicit process which is affected by numerous intern singular determinants. The historical path of the subject developed through many years of personal and professional experiences is one of the most important determinants. It emerges in the shape of conscious or unconscious acts which form different didactical phenomena. Carnus (2015) stated that in order to access the deepest layers of the subject's history, it is inescapable to resort to the "decisional already-there" as a clinical didactic concept which studies the subjective and personal determinants as an upstream for every decision made by the teacher. This "already-there applies a constant and latent influence on the decisional approaches of the PE teacher […] and clarifies as well the transition from the

intensions to the decisions" (Carnus, 2003). Some recent surveys (Carnus, 2015; Mothes, 2016) have proved that the decisional already-there has a notable impact on the different "relationships to" especially the "relationship to knowledge" and the "relationship to the body" of the teacher.

Relationship to Knowledge

The concept of the "relationship to knowledge" has emerged in educational sciences domain by psychanalysts (Beillerot, Blanchard-Laville & Mosconi, 1996) and in PE didactics by Heuser (2009), Ben Jomâa (Op.cit.), Touboul (2011), and Carnus (2015). It is considered as the "amount of images, expectations, and judgments about the sense and social function of knowledge and school, about the taught discipline, about learning situation and oneself" (Charlot, 1982). In this study, the "relationship to knowledge" is considered as a key concept to describe, to analyse, and to understand teachers' practice.

Furthermore, three types of relationship to knowledge were developed by Chevallard (1989). The first one is the "personal" relationship to knowledge which refers to the use of personal knowledge by the teacher based on his personal experiences. The second type is the "official" relationship to knowledge. It emerges when the teacher uses official knowledge originating from official texts and documents. The last type is the "institutional" relationship to knowledge which refers to the institutional subjugations and constraints that pressure on the teacher when he is attached to a particular institution.

Relationship to the Body

In PE setting, the physical and praxeological aspect of sports practice leads to the use of the concept of the "relationship to the body" (Jourdan, 2006; Ben Jomâa, Abdelkafi, Chtara, Chihi & Kpazaï, 2018) as another major determinant of teaching practice. This clinical concept refers to "the emotive and subjective perception that has someone regarding to his own and other's body known as an implicit me-body relationship" (Ben Jomâa et al., op. cit.). This unobservable relationship is constructed through the multiple embodied experiences of a lived teacher's body as a human being, previous student and sports player, and as a teacher. In other words, it refers to the bodily dimension of the "already-there" of the didactic subject as a form of the embodied expertise which may affect his didactical actions in class. In fact, this relationship emerges implicitly through his "doings" and his "sayings" while teaching act. Consequently, teacher's body is seen as "a lived body, professionally devoted in teaching-apprenticeship act, simultaneously a mediator and a tool, an action's author and a holder of meaning" (Jourdan,

2006). It is implicated especially in delivering knowledge non-verbally through non-verbal knowledge and know-how ostension (Robert & Carnus, 2013).

Ostension

In order to deliver knowledge and know-how efficiently to the students, PE teachers make use of several types of ostension including both verbal and non-verbal ones. The notion of "ostension" has firstly emerged in mathematics didactics setting in order to identify "knowledge communication practices in which the teacher provides all the constitutive elements of the targeted notion" (Ratsimba-Rajohn, 1977). In 2002, Salin's works made this notion more operational by creating an ostension procedures scale containing five types of verbal and non-verbal ostension forms (Table 1). In PE setting, Robert (2012) have adapted this notion in PE context and developed a new ostension scale inspired by Salin. In this survey, the ostension scale has been adapted based on research requirements. The new scale, which will be described in detail later, is inspired by both scales described previously in addition to the ostension scale from the work of Touboul (2011). Thus, the main purpose of studying the ostension forms used by the teacher is to see the preference of the use of one or another type of ostension based on his sports expertise.

Materials and Method

Questioning the subjective elements that interfere in teaching practice requires the use of qualitative case study which ensures a "detailed" and "in-depth" (Van Der Maren, 1995) analysis of *in situ* teaching practice. Indeed, the survey adopts the perspective of Passeron and Revel (2005) who opt for the "rehabilitation" of the case study. For these two researchers, case studies "does not proceed without raising the question". Various studies (Op. cit.) consider that "sciences of the case have ensured the convergence between the descriptive value of clinical method and the methodological value of contextualized observation for the production of evidence". Therefore, the use of clinical didactic methodology framework in our context is quite efficient due to its authentic concepts, original data collection, and data analysis tools inspired by the Freudian and Lacanian psychoanalysis.

Research Participants

This study is about a singular case named "Nadine". "Nadine" is a PE teacher teaching in a high school in the region of Sfax in Tunisia. She is a

handball expert as she has played for almost sixteen years and still playing with a senior female local team as a captain team until now. She played also with the Tunisian national team for ten years in different categories and participated in several international championships and world cups. This teacher has voluntarily accepted to participate in this survey and taught five PE lessons for the same ninth-grade class, including one lesson with a theme of her choice. This is in a bid to get her and the students familiar with the digital equipment and to test our experimental protocol, two lessons of gymnastics and two other lessons of handball. All the five lessons were integrally filmed.

Data Collection

The originality of this methodology lies in the use of studies of "case by case, one by one" (Terrisse, 2000). In doing so, a research ternary data collection was temporality deployed. It takes into account the didactical subject *a priori* and *a posteriori* while following his singular history and his personal experiences. It is based on three different but complementary tenses: the already-there, the test, and the after-work (see Figure 1).
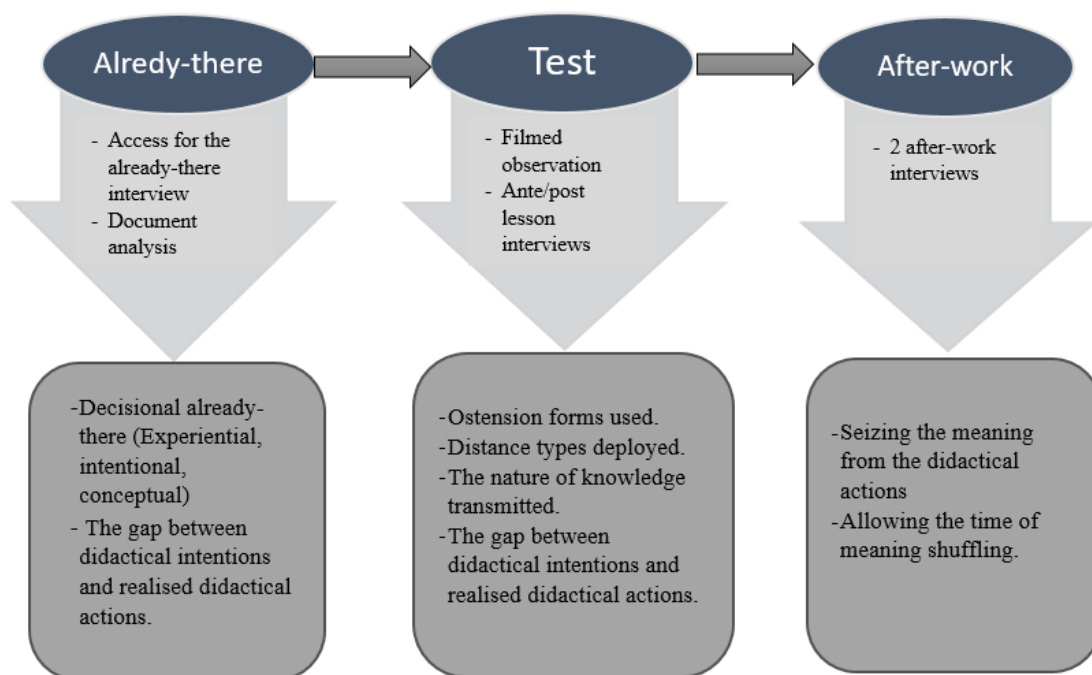

Figure 1. The three tenses of the clinical didactics methodology

For the already-there, it seeks to encompass the "inherited filters" (Loizon, 2009) of his personal, familial, and professional singular history. The

latter is able to emerge unconsciously in the *insu* of the teacher subject while teaching, and it affects his decisions and his way of delivering the knowledge. These elements constitute the "decisional already-there" (Carnus & Pédèches, 2017) which is split into three instances: the "experiential already-there", the "conceptual already-there", and the "intentional already-there". To reveal this intimate part of the subject's history, the already-there access semi-structured interview (Carnus, 2015) has been used. It is composed of different semi-opened questions which allow one to dig into the deepest layers of the teacher's personality and follow his hidden history thread.

As for the second tense, the "test", it reveals the moment of the truth for the teacher when faced with the complex and contingent reality of the class context. *In situ* observation of four PE lessons was conducted in order to seize all the "doing" and the "saying" of the teacher in the teaching-learning process. The ethnographical observation was made using two cameras: a fixed camera to capture the integrity of the area and a mobile one focused on the teacher and follows him in all his movements and interactions. In addition to qualitative data, the filming allowed us to collect quantitative data as well. It is about the quantification of different types of ostension procedures (Salin, 2002). In this respect, data collection relies on the classification of ostensive forms (see Table 1) which is inspired by Salin's (2002) original works and is based on different recent researches in PE clinical didactic such as Buznic-Bourgeacq (2009), Touboul (2011), and Robert (2012). All the *verbatim* mentioned by the teacher during these lessons was recorded using a micro-lavaliere to see the knowledge communicated in didactical interactions with his students. Two types of interviews were made with the participant through the test tense: an *ante*-lesson interview and a *post*-lesson interview. This allowed the capturing of the gap between his didactical intention, his real conducts, and the feed-back he makes regarding the lesson taught.

Finally, the last tense of our clinical methodology seeks to provide the time for sense shuffling. It concerns two after-work semi-structured interviews in order to have some extra explications for the teacher's practice and to extract the meaning behind some phenomena observed in the lessons filmed. It is noted that all interviews were totally recorded and transcribed by the researcher as faithful as possible to make the data treatment and analysis easier and more efficient.

Ostensive forms	Codes		Comments
Verbal Direct Ostension	**(VDO)**		Knowledge is explained by PE teacher who does not have the technical abilities or does not want to demonstrate it.
Private Physical Ostension (manipulation)	**Total**	**(TPPO)**	Knowledge is transmitted to the student through the manipulation of his body. This manipulation may be either total (from the beginning until the end of the movement) or partial (a part of the movement).
	Partial	**(PPPO)**	
Physical Direct Ostension (demonstration by the teacher)	**Total**	**(TPDO)**	Knowledge is physically demonstrated by the teacher's body. This demonstration may be total or partial.
	Partial	**(PPDO)**	
Physical Indirect ostension (demonstration by a student)	**(PIO)**		Knowledge is physically shown by the means of the demonstration of other students.
Disguised Ostension	**(DO)**		Knowledge is shown through either showcasing objects from the "environment", or questioning students about these relevant objects. (Linked mostly to verbal direct ostension)
No Ostension	**(NO)**		The teacher does not use any form of ostension.

Table 1. The ostension forms retained for the survey

Data Analysis

The case study allows for a deeper analysis through the most intimate determinants that affect in one way or the other the subject's *in situ* practice. Based on a clinical didactic methodology, the data analysis follows the same temporality as the data collection (already-there, test, after-work). Two types of analysis were combined: a qualitative analysis using the content analysis (Van Der Marin, 1995; Bardin, 1996) known as the "most objective and trustworthy" (Berelson, 1952) method to analyse all the *verbatim* extracted

from the different interviews and the lesson preparation sheets of the teacher using premade analysis grids which contain all the analysers chosen for the survey. Qualitative video analysis was made using significant screenshots of the teacher's practice as well as emerging didactical phenomena during the filmed lessons. The quantitative analysis proceeded through a data analysis software "Sphinx iQ2", which helps in making different statistics. Finally, in order to ensure better credibility and legitimacy to the results, it is important to proceed with a data triangulation method (Huberman, Miles & De Backer, 1991). This will help to cross the findings from the three research tenses for the first time and both qualitative and qualitative analysis for the second time.

Results

The results presented are arising from both qualitative and quantitative studies. They depend on the three analysis tenses of clinical didactic methodology framework (the already-there, the test and the after-work) followed by the data triangulation and crossing in order to provide clear evidence of PE teacher's expertise effects on teaching practice.

The Analysis of the Decisional Already-there of "Nadine"

The qualitative analysis of the already-there interview (ATI) allowed the capturing of some significant elements of "Nadine's" personality and to accede to her decisional already-there. In the next paragraphs, three instances of "Nadine's" already-there will be presented with some significant extracts[2] from her *verbatim* during the recorded interviews.

The Experiential Already-there: The "Bodily Already-there"

The experiential already-there of teacher "Nadine" is characterised by a long and fruitful sports experience as an international professional handball player. Her extra-curricular confrontation with this sports activity, her profound knowledge, and her higher studies of handball as a specialist during her initial training have clearly proved her handball expertise. This expertise has marked her obvious dependence on sports in general and on handball in particular, as she explained: "*handball is a part of me, of my daily routine, of my whole life"*. She added: *"I cannot live without practising sports especially handball*" (ATI). She considers practising handball as a source of "*pleasure*" and self-approval. Sports have overwhelmed her life as a teacher. Also, she is a person who has clearly marked her rich "bodily already-there" garnished with high-level physical practice. Whereas, Nadine does not have any practical experience in gymnastics besides the lessons she took in high school and university.

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2 All the *verbatim* extract from all the interviews are mentioned in the text in the *italic* format.

The Conceptual Already-there

Nadine's long handball path has affected her conceptions regarding teaching in PE in general and handball teaching in particular. Indeed, she is not convinced by the official texts of PE discipline like they are presented by the minister of youth and sports of Tunisia and refuses to apply them. "*Official texts are so incoherent with the reality of the class*" (ATI). She seems to be divided between what she desires to teach and what she is asked to teach (Loizon & Carnus, 2012). She admits: "*I think that the official instructions don't match what I want to teach, they severely limit my options*" (ATI). As for the gymnastics context, teaching this type of sports activities presents for Nadine a source of fear and sufferance at the same time. Subsequently, her pain and insecurity feelings were clear when she claimed: "*I am afraid of teaching gymnastics… it is a sports activity where there are too much risks and this tires me a lot*" (ATI). In addition, she admits that she applies all the elements mentioned in the official texts in her gymnastics teaching: "*in gymnastics, I mostly refer to the official instructions, I applicate what is demanded*". This shows her official teaching conception regarding knowledge related to gymnastics unlike her personal teaching conception in handball.

The Intentional Already-there

Teaching conceptions of Nadine have obviously affected her didactical intentions, especially her conception of teaching collective sports activities. Thus, she believes that handball must be taught using an "analytical" teaching method like in extracurricular training context rather the global method proposed in the official texts of PE. She explains: "*I want to teach them many technical elements of handball, but it cannot be happened using a global teaching method based on games… they play games and then what? They will not learn anything*" (ATI). These explanations also prove that the teacher has the intention to deliver personal knowledge originating from her handball expertise which is not mentioned in the official instructions. Otherwise, she intends to transmit official knowledge related to gymnastics: "*I follow what is mentioned in the official instructions*" (ATI). In addition, she admits that her fear and insecurity feelings in gymnastics teaching are behind her didactical intentions of doing aid and parade by herself. Hence, she cannot rely on her students to do so: "*in gymnastics … I do all the aids and parades for my students… they are still young I cannot trust them… I am afraid of accidents*" (ATI). For both sports activities, Nadine claims that she prefers the method of demonstration to transmit knowledge and know-how as long as she masters all of them perfectly.

The Analysis of the "Test"

In the teaching test analysis, two types of data analysis were combined: quantitative analysis through the study of the ostension procedures and qualitative analysis by seizing the meaning behind these ostension forms and the interpretation of the *verbatim* of both *ante* and *post*-lesson interviews.

The Analysis of the Ostension Forms

To ensure better credibility of the results, a quantitative analysis of the ostension forms was deployed in all four lessons[3] taught by Nadine. This allowed having a flat sorting including all the percentages of the ostension procedures used in both handball and gymnastics lessons (Figure 2).
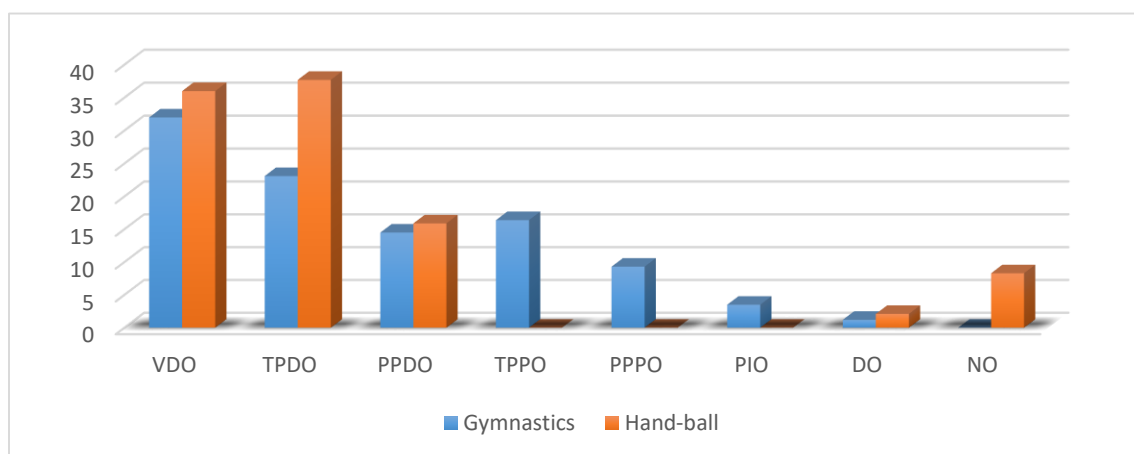
Figure 2. Ostension forms deployed in handball and gymnastics teaching (Sphinx iQ2)

These percentages show that the recurrence of Nadine for ostension forms is clearly divergent in both sports activities, especially in the use of total and partial physical direct ostension (PDO). In handball teaching, statistics show massive use of the PDO as a bodily dimension of different technical gesture's demonstration by 53.6% of all ostension forms including 37.7% of total demonstration (TPDO) and 15.9% of partial demonstration (PPDO). This preference of total and partial PDO shows the high implication of the teacher's body in her didactical actions. Otherwise, her use of private physical ostension (PPO) is more important in gymnastics teaching by 25.7% including 16.4% total (TPPO) and 9.3% partial (PPPO) than handball which is 0%. In addition, Nadine makes remarkable use of the non-ostension form (8.3%) in handball

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3As noted above, Nadine has taught two lessons of gymnastics and two lessons of handball which were integrally filmed and analysed.

teaching as proof of the didactical devolution of knowledge. As for the use of PIO, it is more important in gymnastics with 3.5% than in handball 0%. This explains that Nadine uses the body of the students as a didactic support to deliver knowledge through the indirect demonstration (Screenshot 3) when she is not able to make a demonstration by herself. In handball, her high knowledge of its technical elements permits her to get in charge of the mission of knowledge transmission through TPDO and PPDO.

The Relationship to Knowledge

Nadine's teaching shows the use of different types of knowledge. In handball teaching, the knowledge transmitted was mostly personal originating from her personal experience as a professional handball player. She believes that the knowledge mentioned in the official instructions is "*not sufficient for the students to learn handball*" (ATI). This shows her "personal" relationship to knowledge in handball. Nevertheless, Nadine teaches gymnastics using "official" knowledge figuring in the teachers' official instructions. Her lack of knowledge in gymnastics leads her to stick to the texts as the only source and reference of knowledge in gymnastics which proves her official relationship to knowledge.

The Relationship to the Body

In this context, studying the relationship to the body of PE teachers is inescapable. A PE teacher is asked to operate on and for students' bodies by the means of his own body. Thus, Nadine supports the idea that:

Teacher's body is very useful, especially in gesture demonstrations, also for the physical appearance of PE teacher it is very important, I mean having a sporting body including his morphology, his movements, his look, his voice loudness, they play a major role in teaching actions. (ATI)

This idea was reinforced in her didactical acts notably in her massive use of gesture demonstration by the TPDO and the PPDO in both sports activities taught with remarkable preference in handball teaching (Screenshot 1). These elements prove that Nadine has an intimate relationship with her body, which is an expert sporting body with a very rich "bodily already-there". She admits: "*I totally invest my body in my teaching actions, I am always on the move, I do demonstrations a lot, I also participate with my students in the games, for me it is pure pleasure*" (AWI, 2). Despite her non-expertise in gymnastics, Nadine also uses her body either in PDO by demonstrating (Screenshot 2) or in PPO on one of the students who makes PIO (Screenshot 3).

Screenshot 1		Screenshot 2		Screenshot 3	
L: hand-ball n°1 **t**: 13'17" **O**: TPDO	Nadine is showing-off her expert body by doing a total demonstration in a narcissist way	**L**: gymnastics n°1 **t**: 12'23" **O**: TPDO	Nadine is using total demonstration to transmit the know-how to her students	**L**: gymnastics n°1 **t**: 19'58" **O**: TPPO/ PIO	Nadine is using other student's body to transmit the know-how
➔ An intimate link to a narcissist body which loves to be exhibited in public and admired by others.		➔ A utilitarian link to a professional body which is used as a pedagogical and a didactical visual support to knowledge transmission.		➔ An intimate link to students' body used as a pedagogical and didactical tool in case of teacher's incapacity to do the demonstration correctly by her-self.	

T: Teacher; L: Lesson; t: time; O: Ostension

The Analysis of the After-work

The purpose of the after-work tense is to make a return on the teacher's mostly unconscious didactical actions and to understand the hidden causes behind them. In the after-work interviews (AWI), Nadine was not completely satisfied with her handball teaching despite her high level of expertise:

In handball lessons, I am not a 100% satisfied and I will never be… I am used to be trained in a very high level so that I cannot support teaching simple thing to debutant student who knows nothing, it drives me crazy! (AWI, 1).

This explains her high resistance to teach the knowledge mentioned in the official instruction and her recurrence to personal knowledge originating from her personal and mostly embodied experience in handball practice. Furthermore, her long bodily confrontation with this sports activity has clearly marked her way to deliver knowledge and know-how. She used the physical (bodily) demonstration of the different individual technical elements in the form of direct and partial physical direct ostension. As she explained: "*it is via the bodily demonstration made by the teacher that the students can see the right gesture, know the errors and how to avoid these errors… it is a visual support to them*" (AWI, 2). When she was asked why she did not demonstrate in gymnastics lessons as much as in handball, she responded:

I cannot demonstrate a gesture that I do not master perfectly… I would rather explain how it can be done verbally with a demonstration of some parts

to clarify more the gesture or I let a student do the demonstration in front of their colleagues. (AWI, 1)

Discussion

Data triangulation method helps in confronting different types of data coming from different types of studies (qualitative and quantitative) and from different sources (Interviews, *in situ* observation, filming, preparation sheets, etc.). Results show that the bodily already-there of Nadine, especially in handball, have a huge impact on her relationship to knowledge, her relationship to the body, and as a result on her way to transmit knowledge and know-how by her use of ostension forms. As she admitted in the already-there interview, she considers the demonstration as the most efficient and direct way to deliver knowledge in both sports activities that she taught. However, this was proved subsequently in the quantitative study of the ostension forms that she used. Nevertheless, her use of demonstration is obviously more important in handball teaching due to her bodily expertise in this sports activity (Abdelkafi, Ben Jomâa & Kpazaï, 2018). In fact, she tries to show her handball skills in front of her student by showing-off her expert body in a narcissist way through demonstrating very complicated gestures in public (Touboul, 2011). As for her teaching conceptions, she believes that the "structural" teaching conception (Bayer, 1979) that she is asked to use is not convincing and she prefers the "analytical" method (Parlebas, 1976; Grehaigne, 1994) for teaching the individual technical element related to non-scholar handball. This proves her "technicity conception" (Brau-Anthony, 2001) in collective sports activities teaching. She explained:

Inspectors always tell me that I am not training handball like in an extracurricular context and that I must stick to the instructions proposed in the official texts, but if I don't deliver new things to my students, why am I teaching in the first place? (ATI)

She seems to be affected by her handball expertise as her habitual way to be trained like she is used to in extra-scholar context and the use of personal knowledge in teaching.

Conclusion

In this survey, teacher's sports expertise is considered as a major determinant of teaching practice in PE setting. For Nadine, her handball expertise seems to have a huge impact on her didactical conducts, especially while teaching her sports speciality: handball. Thus, the study tried to reveal this influence by studying both implicit and explicit elements (Buznic-Bourgeacq, 2015) that interfere in the didactic action before, during, and after the teaching test. Sports expertise has a notable impact on Nadine's use of knowledge type in handball teaching. Also, she prefers using personal

knowledge originating from her previous embodied practice. Her personal teaching conception indicates her "personal" relationship to knowledge through her choice of delivering personal knowledge. Therefore, in her gymnastics teaching, her lack of some knowledge and physical skills related to this sports activity led her to develop an official teaching conception and relationship to knowledge as she delivers official knowledge type coming from official texts of PE teaching.

Contrary to study expectations, for Nadine, sports and bodily expertise seems to be a double-edged sword with two contradictory faces. In fact, interviews analysis show that Nadine is subjected by the institutional requirements as she seems to be divided between what she wants to teach and what she is requested and sometimes obliged to teach. This paradox creates in her a notable pain and suffering feelings especially when it comes to the teaching of her sports speciality (handball). In addition, this division feeling also affects her relationship to the body. Thus, she seems to oscillate between a sporting expert body which is still attached to a high-level competition context where it can show-off its skills and ego, and a body of a PE teacher which is often used as a didactical and pedagogical tool for knowledge and know-how transmission. Finally, the long and rich bodily practice of Nadine has created implicit traces which emerge unwittingly during her ordinary teaching practice in class. Hence, this has affected her didactical and pedagogical conducts.

Research Limitations

Studies based on case studies have never intended to make results generalisation. It is more about bringing new elements and significant results attached to the teaching practice analysis in PE context. The main purpose is to describe, to analyse, and to understand *in situ* teaching practice. However, the cumulativeness of different surveys allows probably to make general and contextualized profiles in PE setting as the statement that "the most singular of personal experience may testify from the universal of all human condition" (Terrisse, 2000). From the "transferable" theoretical analysers such as the "experiential already-there" and the evaluative "after-work", the teacher's training may be enriched within new perspectives.

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The Internship Practicum and Guidebooks in Teacher Training: A Social Studies Teaching Model

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Abstract

The purpose of this research is to determine the opinions of academicians teaching the internship practicum course at different universities and to examine the guidebooks used by universities according to set criteria. The sample consists of 17 academicians at 17 state universities. The data were collected using the qualitative research method and analysed with descriptive analysis. The results of the research have indicated that the academicians do not follow the pre-service teachers weekly and evaluate them according to the internship files and the opinions of their mentors. It has been also determined that the guidebooks used in the internship practicum are not field-specific.

Keywords: School experience, teaching practice, guidebook, academician.

Introduction

As an occupation that implements teaching and education, the teaching profession has priority among services of education and training. The teaching practice education received by pre-service teachers is an important component of pre-service education, for in pre-service, student teachers obtain an opportunity to put into practice in real classroom environments what they have learned, thereby applying their theoretical knowledge (Akyüz, 2001; Mtika, 2008; Nonis & Jernice, 2011; Aglazor, 2017; Çelik, 2008; Carpenter & Balance, 2007; Allen & Wright, 2014; Alemdağ & Özdemir Şimşek, 2017; Eryaman, 2007).

When information about the significance of teaching practice at different universities across the world is examined, it is seen that similar importance is attached to it. According to National University Commission (NUC, 2007) and Benchmark National Commission for Colleges of Education (NCCE, 2015), the internship experience in teaching provides pre-service teachers with the opportunity to apply what they have learned in real life, to discover their strengths and weaknesses, thereby enabling them to acquire

professional skills, competence and experience, and to benefit from the education they have received by taking a favourable attitude towards the teaching profession. At the same time, the feedbacks, responsibilities, acquisition of different roles, and cooperation with academicians and teachers provided by the teaching practice promote pre-service teachers' professional competence and help them socialize (cited in Aglazor, 2017; Assimonye, 2014; Riedler & Eryaman, 2016; Clarke et al., 2014).

When the significance attached to teaching practicum in Turkey is examined, it is seen that expectations from the teaching practicum are expressed in similar terms in the general objectives of MNE: "It regulates the procedures and principles regarding the practice activities by enabling pre-service teachers to acquire the competence to better prepare for the teaching profession, and use the general knowledge, as well as information, skills, attitudes and habits they have acquired with regard to their special fields of education and the teaching profession in a real education and training environment" (MNE, 2018, p. 1).

Established by the 1982 Constitution in Turkey, the Council of Higher Education (CHE) in Turkey became a center for planning and management when education institutions (2 and 3-year teacher training schools) were integrated into universities. In order to reform this program, a "Pre-Service Teacher Training Project" was implemented in 1998 and 1999 in cooperation with CHE and the World Bank. New departments such as social studies, mathematics, science, Turkish and form teaching were established as a result of this reform. In spite of all the regulations made, it has been observed that universities and the Ministry of National Education act independently of each other. Although internship programs were offered to preservice teachers with an agreement between these two institutions, these internship programs could not go beyond being regarded as ordinary courses and caused school experience and teaching practice classes to be considered insignificant and inefficient by academicians, pre-service teachers and teachers (Akdemir, 2013; YÖK, 1998; Atanur Başkan et al., 2006; Şişman & Acat, 2003).

It should be noted that the guidance provided by both teachers and academicians has become an important part of the teaching practice, for pre-service teachers perform their internship education together with experienced and knowledgeable teachers and academicians during the internship programs. However, faculty stakeholders and the cooperating school where the internship education is held also have an important part to play in organizing an efficient internship program for pre-service teachers. The availability of participating schools for internship, the cost of the program and availability of qualified teachers/mentors are some of these roles. Considering that each stakeholder is important in its own right, presence of a clear, understandable and well-prepared internship guidebook where tasks and responsibilities have

been properly laid out is the cornerstone of an internship program. Essential points such as assessment procedures and responsibilities for academicians and the others involved, the number of students under their supervision and their cooperation with the teacher at the internship school should be stated clearly; likewise, information about what practices should be implemented in what order during the process should also be stated clearly. In this way, assessments made during the internship practice will eliminate certain problems and thus render the practice better equipped (Schwille, 2008; Cain, 2009; Hudson, 2013; Izadinia, 2016; Maynard, 2000; Hobson, 2002; Jones, 2001; Ekizer, 2006; Zeichner, 2002; Aglazor, 2017; Ekpo, 2019).

The internship guidebooks should be prepared to serve as a functional tool for the purposes specified for each teaching practice unit. Internship guidebooks should play a significant role in the internship practice by systematizing the collaboration between mentors and academicians and allow for an effective evaluation of pre-service teachers by providing constant guidance to them, for while according to an academician or a teacher what an intern can investigate during the internship is clear, it may become more complicated and inextricable for pre-service teachers doing their internship (Assimonye, 2014; Kessels & Korthagen, 1996).

When the relevant literature is examined, it is seen that there is ample research investigating school experience and teaching practicum (Riedler & Eryaman, 2016; Clarke et al., 2014; Akdemir, 2013; Izadinia, 2016; Maynard, 2000; Hobson, 2002; Jones, 2001; Ekizer, 2006; Yılmaz & Kab, 2013; Seçer et al., 2010; Yılmaz, 2019; Hurioğlu, 2016; Aytaçlı, 2012; Göktaş & Şad, 2014; Özkılıç et al., 2008; Baştürk, 2009; Oğuz & Avcı, 2014; Sünkür Çakmak, 2019), but the number of studies aimed at assessing feasibility of internship guidebooks, which serve as useful and important guides, their suitability for the sample and the department as well as their functionality is limited (Şahin & Özkılıç, 2005; Asmimonye, 2014; Kessels & Korthagen, 1996; Ergüneş, 2005). It is also observed that the aforementioned research is limited in terms of generalizability and that they attempt to determine the state of the field only through a single university. Therefore, interviews were made with academicians serving as advisers at school experience and teaching practice at 17 universities in Turkey and topics such as what they did during the internship practices, whether or not they followed a guidebook and functionality of those guidebooks were tried to be determined from the perspective of academicians. Moreover, the official guidebooks used by these universities were examined and an attempt was made to determine issues such as functionality of these guidebooks, their fitness for purpose and their currency.

Method

Basic qualitative research method was used in this study. Basic qualitative studies focus on how individuals construct realities/facts as a consequence of their interaction with their social worlds. Therefore, in basic qualitative research, researchers are concerned with what kind of meaning people attach to experiences, how they construct their worlds and interpret their lives (Merriam, 2018).

The Sample

The sample of the study consists of academicians teaching the school experience and teaching practice course at 17 state universities in Turkey. An attempt was made to increase reliability of the study by reaching state universities in different regions of Turkey in determining the sample of the study. Participation in the study was on a voluntary basis and it consisted of 8 female and 9 male academicians employed at 17 universities, which were deemed to be easily accessible. The school experience and teaching practice guidebooks investigated in the study, on the other hand, were requested from the academicians working at the said universities. The guidebooks that could not be obtained via academicians were reached through the websites of the universities.

Data Collection and Analysis

The data of the study were collected by e-mail. A questionnaire consisting of five semi-structured open-ended questions was administered to the participants. E-mail helps conduct in-depth interviews without the need for synchronization and one can engage in multiple online e-mail exchanges (Creswell, 2018; Meho, 2006; Kazmer & Xie, 2008). As for the measurement tool of the study, first relevant literature was reviewed and expert opinions were taken. Then, expert opinions were taken again by the researchers about the open-ended questions in accordance with the purpose of the study and finally 5 questions were determined. These 5 questions had their own sub-dimensions. This measurement tool was administered to 8 academicians not included in the sample. After these academicians checked items such as the scope of the topic, comprehensibility and manner of expression and provided positive feedback with regard to them, the questionnaire form was accepted as the measurement tool. An introduction was added to the beginning of this questionnaire form, specifying the purpose and content of the study. It was guaranteed that no information would be revealed about the participating university and the academicians. Then, a list was prepared of the e-mails of the academicians at the social studies teaching departments of the education faculties of universities. The questionnaire forms were sent to the e-mails list, which had been prepared taking into account almost all geographical regions

of Turkey. It was ensured that the forms were sent to 2 academicians from each university. It was guaranteed in the e-mails sent that participation was on a voluntary basis and that information about identity and institution would be kept confidential. There were responses to 24 of the e-mails sent. 17 of these e-mail responses were accepted as study data whereas the remaining 7 data were excluded from the study on the grounds that they were incomplete, contained short answers in the form of yes and no, or no explanations were made concerning the answers.

Other sources of data used in the study are teaching practice guidebooks. These guidebooks were requested from the academicians who had been contacted via e-mail. These academicians were asked to send the guidebooks they had been using and 12 of these academicians sent the guidebooks they used via e-mail again. The other 5 academicians, on the other hand, did not send their guidebooks, stating that they did not have them in computer environment. These 5 guides were obtained from the internet page of the relevant university and since they were based on CHE and MNE, they were used directly for purposes of the study.

The data obtained as a result of the correspondence with the academics and the documents reached were examined and analysed descriptively. In detailed descriptive analysis, authors systematically interpret what they see, providing a natural environment in the context of identifying a person's location or event (Creswell, 2018). The document analysis technique was used in the examination of the guidebooks of the universities. The document review also includes the process of obtaining permission for their use after determining the materials in remote locations (Creswell, 2018).

The data obtained as a result of the study were tested for validity and reliability but this was undertaken by two experts in the field in order to increase the validity and reliability of the study. According to calculations made using Miles and Huberman's formula of (1994) R (Reliability) = [Na (Agreement 117) / Na (Agreement 117) + Nd (Disagreement 12)] x 100, reliability was at the level of 90 % and the study was proven to be reliable. Moreover, the findings of the study were supported through direct quotations from the participants (U1: University 1, U5: University 5 etc.).

Findings
1. Findings about the academicians' views regarding whether there is a directive determined by the faculty concerning school experience and if there is one, whether or not they are following it

When the academicians in the sample were asked about their opinions regarding whether there was a directive determined by the relevant faculty about school experience, 9 of them answered yes, 5 responded no and 3 stated that they used the guidebook after some revision. When asked whether they

followed the guidebook found in their faculty, 10 of them said they used the guidebook prepared by the faculty, 1 by CHE, 1 by MNE and 1 said they used a blend of CHE and Faculty guidebooks. Some of the responses given by the academicians are as follows: "There is a directive determined by our faculty. I am trying to follow this directive" (U 7), "Yes, there is. I don't follow much. It has become a routine" (U 8), "No, there isn't. We follow the old directive by CHE and the World Bank" (U 13), "Yes, there is. I use only practicum headlines as models. I don't follow the directive" (U 17), "Yes, there is. Though we comply with the overall rules, we usually stretch those rules for school experience within the school's own conditions" (U 12), "There is no directive. Therefore, I do not follow one" (U 4).

1.a. Findings about academicians' opinions concerning preparation before class and what they do in this regard

When asked about their opinions as to whether they made preparations before the school experience class, 9 of the academicians in the sample answered yes whereas 7 answered no. When the academicians were asked about their opinions concerning what they did in this course, it transpired that 6 talked to the school administration/mentor in charge, 2 conducted theoretical classes, 1 examined directives of different faculties, 1 cooperated with the faculty and CHE, 1 held meetings with the students and 1 collected information about the school. Some of the answers given by the academicians are as follows:

"I examine directives of different schools. I create my own syllabus by following the instructions of the faculty and directives prepared in cooperation with CHE and the faculty" (U 1), No, I don't" (U 4). No, I don't, but in the years when I first began to teach this course, I made additions to and eliminations from the activities in the directive, for there could be activities that could not be performed due to the physical conditions of the school or other circumstances. (U11). At the beginning of the semester, I go to internship schools and I meet school administrators and mentors at the school. I take a look at the directive before the class so that I can give information to students (U 10).

1.b. Findings about the opinions of the academicians concerning whether they follow their students weekly, and if their response is positive, what they do in this regard

When the academicians in the sample were asked about whether they supervised their students on a weekly basis, 9 responded no and 8 responded yes. 7 of those who responded yes stated that they exchanged ideas, 6 received feedback regarding what was done, 2 introduced/evaluated the process, 1 assessed the reports, 1 received feedback via messaging and introduction to

the school/teacher and 1 received information about attendance. Responses of some of the academicians are as follows:

"We meet at least once every week and evaluate the reports of the pre-service teachers concerning the activities of the relevant week" (U 14), I conduct a follow-up not every week but once a month to get information about the status of the activities the students have performed (U 11), "No, I don't. I don't follow them every week. I make a general assessment in the last week" (U4), "We communicate via whatsapp every week for sure. I answer their questions about the work they do. They may ask about points in the directive that have not been quite understood" (U 13), "It is not possible for me to follow every week due to my tight schedule" (U 7).

1.c. Findings about the views of the academicians concerning how they make the final general evaluation of the students in the school experienc

When the academicians in the sample were asked about their opinions regarding how they conducted the final general evaluation of the students in the school experience, it was found that 11 evaluated via the files the students prepared, 10 via assessments made by the mentors, 7 on the basis of their attendance, 2 on the basis of performance, 1 based on an assessment scale prepared by himself/herself, 1 from the way they taught classes, 1 in terms of professional qualities of social studies and 1 as a result of observations s/he made. Some of the responses given by the academics are as follows:

"It is predominantly performance-based. Participation in the practice and assessment of the mentors are also very important of course" (U 5), "I make my evaluation according to the internship files, notably views of the mentors at the internship school and observation notes" (U 13), "I make my evaluation according to a grading scale which I have created for the files the students have prepared and a different grading scale which I have prepared for the evaluation of the mentor" (U1), " I examine their files. I evaluate them by checking their attendance and sometimes by contacting their mentors (U 8).

In general, I consider my students to be competent. Our students prepare a report for each week during the 14-week program (one day of the student, one day of the teacher, preparing examination questions etc.). I evaluate my students according to these reports (U 15).

2. Findings about the academicians' views regarding whether there is a directive prepared by the relevant faculty with respect to the teaching practice and if there is one, whether they follow this guidebook or not

When the academicians in the sample were asked about their opinions concerning whether there was a directive determined by the faculty or not, 13 responded yes while 4 responded no. When it was asked whether they followed the guidebook in the faculty or not, 7 it was found that 7 followed the directive of the faculty, 2 followed the directive of the Ministry of National Education, whereas 2 said there was a directive but they did not follow it and 1 stated that s/he acted in line with their own opinion every week. Some of the responses given by the academicians are as follows:

"No, there isn't. I follow the old directive prepared by CHE and World Bank" (M13), "Our faculty demands that we follow the directive requested by MNE. I score my students by going to the school every three months and listening to my students" (T15).

2.a Findings about the academicians' opinions concerning whether they make preparations before the teaching practice and if they do, what kind of preparations they make

When the academicians in the sample were asked whether or not they made preparations before the teaching practicum, 10 of them responded yes while 4 responded no. When the academicians were asked what kind of preparations they made before the practicum, it was found that 4 of them checked the plans every week, 4 worked in collaboration with the school, 4 held seminars with the students, 3 made a plan after examining the latest regulations and 1 held interviews with the students every week. Some of the responses given by the academicians are as follows:

"I give the weekly plans to be implemented in the practicum and then check" (U 2). Yes, I do. First of all, I contact the administrator and guidance and counselling teacher of the school where my student group will go and we decide on the day we will go to the school to meet each other. I prepare beforehand the documents that the students will be required to complete during the practicum. (U6)

I hold a meeting like a seminar on the importance of the course, the teaching profession, taking notes during the practice, and going to the school in a manner suited to the requirements of the teaching profession. Also, I provide detailed information about what they are supposed to do during the school experience. (U 7)

2.b. Findings about the academicians' opinions concerning whether they follow the students every week in the teaching practicum or not and if yes, what they do

When the academicians in the sample were asked about whether they supervised the students every week during the teaching practicum or not, 7 of them responded yes and 4 responded no**.** When they were asked how they supervised the students, it was found that 4 held seminars with them every week, 1 gave feedback to the students every week, 1 exchanged views with the mentor at the beginning of the semester, while 1 provided feedback via social media. Some of the responses given by the academicians are as follows:

"We make a point of corresponding via whatsapp every week for sure. I answer questions about their work. We talk online about class observations and the presentations they will make" (U 13), "I go to listen to and watch the students once every semester. I ask them to submit to me their files. I do not check them every week, but since they come to theoretical classes with their files ready, I am informed of their files" (U 10), "I go to the practice school every week and meet the mentors and my students. I give feedback to the students I have observed regarding their classes" (U 1).

2.c. Findings about the academicians' views concerning whether or not they make observations at the students' schools during the teaching practice, and if yes, what kind of things they do

When the academicians in the sample were asked about their opinions concerning whether or not they made observations at the students' schools, they stated that they made observations. On the other hand, when they were asked what they did in their observations during the teaching practice, 9 responded "other", 8 "my overall opinion", 4 "the guide", and 4 "my own conclusions". Some of the responses given by the academicians are as follows:

"I make my evaluations using the class observation forms included in our guide book" (U 14), "By listening and saying my opinion. I score my students by listening. I have my own criteria of 15 items. I apply the same criteria here as I do in my special teaching methods course" (U 15), "I observe my students. I make general evaluations, making use of MNE's pre-service teacher assessment criteria. I have not been fully able to use them effectively but active use of these criteria in each observation will lead to healthier evaluations" (U 1).

2.d. Findings about the academicians' views concerning how the students' final general evaluations are made in the teaching practice

When their views were asked about how they evaluated the students in the practicum, it was found that 11 of the academicians evaluated according to the opinions of the mentor, 6 as a result of portfolio assessments, 4

according to the course system created by MNE, 2 according to their own evaluation system, 2 according to student attendance and 1 according to students' enthusiasm. Some of the responses given by the academicians are as follows:

"I make a general evaluation on the basis of the mentors' opinions, my observation notes, the way the files were prepared, the students' attendance to classes, and their participation in the theoretical classes" (U9), "I make my evaluations by taking the opinion of the mentor at the practice school" (U7), "By taking the average of mentor assessment, class observation forms and my evaluation of the files they have prepared." (U14), "I base my assessment on the score obtained from the evaluations of the mentor and the academician, drawing on the evaluation system created by MNE" (U10).

3. Findings about the academicians' opinions and suggestions concerning how to make the school experience and teaching practice course more efficient

When the academicians in the sample were asked about their opinions regarding how to make the school experience and teaching practice course more effective, 6 referred to assigning students to counsellors specialized in their fields, 5 changing the semester when the internship practice was performed, 5 failure in ensuring cooperation between MNE and academician, 3 paying attention to feasibility, 3 importance attached to attendance, 2 the issue of conducting classes, 1 adding KPSS (public personnel selection examination) score to internship evaluation and 1 providing effective mentorship. Some of the responses given by the academicians are as follows: "When determining the criteria for the school experience and practicum classes, it should be ensured that they are realistic and feasible" (U 6).

It should not be implemented in the present academic semester; pre-service teachers should not be bothered with other courses. Like internships at other faculties, for example. A whole semester should be reserved for this course only, because the academicians' schedules are not suitable to supervise and watch/listen to the students constantly. (U 4)

…The changes MNE has been implementing in recent years within the scope of teaching practice and the announcements about them usually remain within the confines of MNE. For example, I learn the changes made to the evaluation system from the mentors. They, in turn, wait for guidance from me but I don't know about them in the first place. (U 1)

4. Findings about the examination of the school experience and teaching guidebooks in terms of their field-specific nature and the masthead

When the school experience and teaching practice guidebooks were examined, it was found that none of the 17 universities had a guidebook unique to the field of social studies teaching. It is seen that the existing guidebooks were created for the field of teaching in general by preparing explanations/examples for activities without making any distinction among numerical, verbal, foreign language or psychomotor fields. When the masthead information for these guidebooks were examined, it was found that 7 of the universities used a guidebook prepared according to a decree law passed in 2011 in line with MNE Law no. 1973, 7 used a guidebook prepared within the scope of CHE/World Bank National Education Development Project Pre-Service Teacher Education dated 1998, 2 used a guidebook prepared in cooperation with MNE and CHE, and 1 used a guidebook prepared in cooperation with MNE and the faculty.

5. Findings about determination of duties and responsibilities of stakeholders (faculty administration, faculty practice coordinator, department practice coordinator, practice instructor, pre-service teacher, directorate of national education etc.) in the school experience and teaching practice guidebook

When the school experience and teaching practice guidebooks are examined, it is seen that the guidebooks of 10 universities out of 17 list the duties and responsibilities of the stakeholders separately, whereas the guidebooks of 7 universities contain no information about the duties and responsibilities of the stakeholders. In the guidebooks of these 10 universities, where information is given about duties and responsibilities, some duties of education faculties are listed as "preparation and supervision of pre-service teachers, determination of academicians responsible for practicum, and organization of seminars and courses"; the duties of the faculty practice coordination office are listed as "preparation of a list of practice schools, holding meetings with mentors and academicians about possible problems, and organization of practice activities in accordance with laws and regulations"; whereas the duties and responsibilities of the department practice coordinator are listed as "informing the academicians about forms, observations and assessment criteria, and ensuring coordination between the department and the faculty".

Discussion, Conclusion and Suggestions

Based on a general evaluation of the results of this study, which aimed to determine some points such as what the academicians teaching the school experience and teaching practice course at state universities in Turkey did in

the internship practices, whether they stuck to the guidebooks or not and the functionality and guiding quality of these guidebooks, it can be said that there were directives created by faculties for the implementation of the school experience and teaching practice course and they followed these directives. It could also be said that the academicians generally came to school experience and teaching practice classes by preparing appropriately beforehand, but they did not supervise their students every week in the school experience and teaching practice classes. It was also found that the reports prepared by students, their attendance, mentor opinions and MNE assessment criteria were used as a basis in both school experience and teaching practice classes and that academicians observed their students at internship schools and made evaluations according to their own assessment criteria. It was suggested suggested that in order to make school experience and practicum classes more efficient, experts in the field should be appointed as mentors, internship semesters should be changed, and a more solid coordination should be ensured between MNE and academicians. It was seen that none of the guidebooks used were specific to the field of social sciences and that generally guidebooks prepared by a MNE decree law and those prepared in cooperation with CHE and the World Bank were used. It was determined that the guidebooks used generally specified the duties and responsibilities of stakeholders.

In the examination of the sub-dimensions, first, the academicians were asked whether there was a directive determined by the relevant faculty concerning school experience and a large majority of the academicians responded that they had a directive. However, it was determined that the number of academicians who stated that they did not have a directive or used the current directive after a revision was close to the number of academicians who said they had a directive. When the state of following the current directive was asked, it was found that 10 academicians used the directive prepared by the faculty, 1 the one prepared by CHE, 1 the one prepared by MNE, 1 a blend of CHE and faculty guidebooks. When asked whether the relevant faculty had a directive regarding the teaching practice, a large majority of the academicians responded that it did. It was found that while a majority of those having a directive followed that guidebook, some stated that although they had a guidebook concerning internship, they followed the directive of MNE or a directive which they created according to their own criteria. Apart from this, it was seen that there were some among the academicians who, although they had a guidebook, stated that they did not use the current guide. In parallel to the findings of the present study, Güngör (2018)'s study indicates that academicians evaluated pre-service teachers according to their own personal assessment criteria during the internship program.

When asked for their opinions concerning whether they made preparations for the school experience course, it was found that 9 of the

academicians made preparations beforehand, whereas 7 did not make any preparations. It was seen that the academicians who responded that they made preparations beforehand cited examples such as holding talks with the school administration or the mentor, conducting theoretical classes, cooperating with the mentor or the cooperating school, examining the directive, preparing materials, holding meetings and getting information about the school. When asked for their opinions regarding making preparations for the practicum, a large majority of them stated that they made preparations, citing examples such as checking the plans, cooperating with the school and organizing seminars.

When the academicians were asked whether or not they supervised their students week by week, interestingly enough, it transpired that a large majority of them did not follow on a weekly basis. The academicians who supervised on a weekly basis, on the other hand, engaged in activities such as receiving feedback, exchanging ideas and receiving information about attendance. Likewise, it was determined that the academicians did not supervise their students on a weekly basis in the teaching practice, either, and those who did engaged in activities such as receiving feedback, exchanging ideas with the mentor and organizing seminars. Unlike the findings of this study, it was determined in a study conducted by Güngör (2018) that academicians did not follow the activities on a weekly basis and the students did not generally perform all of the specified activities. Paker (2008)'s study, on the other hand focused, in parallel with the findings of our study, on giving feedback, emphasized the importance of giving feedback to pre-service teachers and suggested that feedback should be given in the right place at the right time.

When the academicians were asked how they evaluated the school experience course at the final stage, a large majority of them stated that they examined the files prepared by the students, received the mentor's opinions, checked attendance and made assessments according to criteria set by themselves. As for the teaching practice, on the other hand, a large majority stated that they made the final evaluation on the basis of the mentor's opinions, but others also stated that they made it according to criteria such as portfolio examination, the course system of MNE, their own assessment system and attendance. In parallel with the finding of the study, it was stated in Güngör (2018)'s study that evaluation was made in the teaching practice course according to attendance to classes and students' performance in the classes.

When the academicians were asked whether or not they made observations at the students' schools during the teaching practice, it was found that all of the academicians made observations and they made their evaluations during these observations according to criteria such as those criteria set by themselves, their overall opinion and the expectations specified in the

guidebook. In order to make school experience and teaching practice classes more efficient, suggestions were made such as assigning students to specialist advisers in the field, changing internship semesters, ensuring coordination between MNE and academicians, and making attempts at feasible activities. In parallel with the findings of the present study, Öztürk, (2001 retold by Büyükduman, no date), Kılıç (2004), Paker (2008), Görgen et al., (2012) stated in their respective studies that not assigning students to specialist advisers in the field could lead to problems and pedagogical course training should be provided to academicians and teachers, arguing that advisers lacking in internship experience will not be competent in terms of quality and quantity. As far as changing the internship semesters was concerned, it was found in a study by Ünlü Saratlı (2007) that school experience course should be given not only in the senior year but also in the first or subsequent years of the university life.

When the academicians were asked whether school experience and teaching guidebooks were specific to the field, it was found that no universities had guidebooks specifically prepared for the field of Social Sciences Teaching. When the guidebooks used were examined, it was found that 7 universities stated that they used MNE decree law as guide, while 7 universities pointed out that they used the CHE/World Bank guidebook dated 1998 as guide. The other universities, on the other hand, stated that they followed the two guidebooks or used them after a revision. In parallel with the findings of the present study, Hacıoğlu & Aklan (1997)'s study argued that the use of guidebooks prepared on the basis of common grounds without heed to fields of specialty could lead to some problems and demanded that guides should be prepared in a way that would enable raising of teachers in line with professional standards. Moreover, when it was examined whether the duties and responsibilities of the stakeholders had been specified in the school experience and teaching practice guidebooks, it was seen that the guides of 10 universities specified the duties and responsibilities of the stakeholders separately, whereas 7 of the guidebooks did not do so. In parallel with the finding of the study, Şahin (2003)'s study pointed out that the duties and responsibilities of the stakeholders should be stated clearly.

In light of the results obtained from the study, it can be argued that in general education faculties are in need of up-to-date internship guidebooks and that these guidebooks should be prepared in a manner that it will be field-specific and have appropriate directives and examples. The language of the guidebooks to be prepared should be clear and intelligible, and they should contain weekly directives, specify the duties and responsibilities of the stakeholders and be prepared in a way that they will help teachers, academicians and pre-service teachers to meet on a common ground. It is also suggested that the number of pre-service teachers per mentor and academician

should be reduced to a more reasonable figure. Moreover, appointment of advisers should be done on a voluntary basis on the part of teachers and academicians so that the training to be received by pre-service teachers will be more appropriate and beneficial. It can also be suggested that in the current system, seminars should be organized in cooperation with MNE and CHE in order for mentors to be better mentors for pre-service teachers and handbooks and brochures should be distributed to them.

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University Students' Internet Addiction Levels Under Various Variables

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Abstract

Purpose of this study was to examine the internet addiction levels of university students under various variables. In the study, the level of internet addiction was compared with variables such as gender, physical exercise patterns, accommodation preference, marital status of the family, cigarette and alcohol consumption, grade point average, frequently used social media platform type, daily time spent on internet. A total of 250 university students, 78 females and 172 males, with an average age of 21.52 ± 2.88, participated in the study on a voluntary basis. In the research, the 20-clause "Internet Addiction Scale" developed by Young (1998) was used for data collection tool. Results showed that the internet addiction point average of the students participating in the research was below 49 points which falls into without risk zone. However, internet addiction levels varied according to various variables. Within the scope of the study, it would be possible that daily internet use of 8 hours or more may lead to the average of risky internet addiction score, and that students who have smoking or alcohol addiction may be more prone to internet addiction.

Introduction

Addiction is a concept that has existed from the past until now. It expresses several attitudes and behaviors that human beings cannot give up even though it's harmful. Some explanations are examined under phases such as first use, continuing to use, quitting, thinking about using again and starting to use again (Ogel et al., 1998.) It is believed that the expression of addiction was first used in the historical process to describe the indispensability shown for fermented fruits (McKim & Hancock, 2012). The definition of addiction used for alcohol in the past has become used for many various attitudes and

behaviors today. Smoking, drugs, gambling, shopping, sex and even exercise addictions are among the addiction types that are frequently discussed and create treatment needs. The type of addiction that is among these types and perhaps occupies the agenda the most is, internet addiction, which has been aimed to be defined as technology, social media and smartphone.

The internet is a virtual network organized by the United States Department of Defense in the early 1900s to enable more rapid communication between departments. This virtual network, which was designed to connect more than one computer at that time, has been connecting computers all over the world since the 1970s. Today, however, it is a way that not only computers but almost any electronic device can be connected (Cohen-Almagor, 2013.) For this reason, internet addiction is such that it covers other types of addiction, such as smartphones, social media, and computers. Primarily for youngsters, cell phone, computer, tablet, or television without internet are non-impressive tools. The internet is an essential part of their education for university students (Nikolopoulou et al., 2020.) University students started to seek opportunities to access the internet in the cities smoothly, they went to for education. It has become an important reason for them to have an internet connection on the campus of the university where they decide to study and have an internet connection in their homes or dormitories.

The internet, which is a daily essential, has become supportive of daily activities under normal conditions. Activities such as shopping, watching movies, playing games, chatting with friends have become to a state that do not require a person leaving their homes anymore. This situation brought along immobility and addiction. The internet addiction among university students, who are defined as the generation guaranteeing the future, and the various destructions caused by this addiction, have been frequently researched recently. Wan Ismail et al. (2020) examined the internet addiction of university students and their stress, anxiety and depression levels and stated that internet addiction is related to stress, anxiety and depression. Jain et al. (2020) examined the relationship between internet addiction among university students with insomnia. Ghahremani & Nazari (2020) examined the relationship between university students' academic achievement and internet addiction.

The internet, which is the essential requirement of the new age we are in, is indispensable for young people with its facilities and time saving benefits. However, in addition to these benefits, avoiding damages has become a significant responsibility. For this reason, the level and causes of internet addiction need more research and should stay on the agenda. For a similar reason, this study aims to examine the level of internet addiction among university students under various variables.

Methods

This research is a descriptive study in the form of survey model. A total of 250 university students with an average age of 21.52 ± 2.88 voluntarily participated in the study, including 78 women and 172 men studying at various faculties at Suleyman Demirel University. Data were collected through easy sampling in the most visited areas of the university by students. In the study, the 20-clause internet Addiction Scale, which was developed by Young (1998) and whose Turkish validity reliability was checked by Bayraktar (2001), was used as the data collection tool. For the answers, six-point Likert type scale was used, it was requested to mark one of the following options "Never", "Rarely", "Occasionally", "Mostly", "Very Frequently" and "Always". These options were scored as 0, 1, 2, 3, 4 and 5 respectively. With this scoring, the minimum score that the scale can be obtained was 0, while the maximum score was 100. Those who scored 80 and above were classified as "addicted internet users", those who score between 50-79 were "Limited Symptoms" and those who scored 49 and below were classified as "No Symptoms" (Bayraktar, 2001.) The data collected from the scale were analyzed in the package statistics program. Cronbach's Alpha reliability coefficient of the scale was calculated as 0.883. In the normality test conducted on the distribution of the data, it was discovered that the results of the Kolmogorov Smirnov test and Shapiro Wilk tests were meaningful, and the data were not normally distributed. Accordingly, the Mann-Whitney U test was used for binary comparisons, and Kruskal Wallis tests were used for multiple comparisons. Post-hoc test was applied to comprehend the reason of the difference arising according to Kruskal Wallis test results. The significance levels were displayed next to the mean with letter superscripts.

Results

Statistical analyses of the data collected from the research are presented in tables in this section. Table 1 depicts the percentage and frequency analyses of results according to gender of the students, their physical exercise status, their accommodation while they are studying at university, their parents' marital status, cigarette and alcohol consumption status, their university grade average, and social media usage types.

Table 1. Percentage and Frequency Analyses of Students' Demographic Information

Demographic Variables		*f*	%
Gender	Female	78	31.2
	Male	172	68.8
Doing sports	Yes	162	64.8
	No	88	35.2
Accommodation Status	Alone At Home	63	25.2
	At Home With Family	37	14.8
	In Dormitory	84	33.6
	At Home With a Friend	66	26.4
Parental Marital Status	Together	223	89.2
	Divorced	27	10.8
Cigarette Smoking	Smokers	148	59.2
	Non Smokers	89	35.6
	Quitted Smoking	13	5.2
Grade Point Average (GPA)	4.00-3.00	165	26
	2.99-2.00	178	71.2
	1.99-0.00	7	2.8
Alcohol Use	Drinkers	132	52.8
	Non Drinkers	92	36.8
	Quit Drinking	26	10.4
The Most Used Social Media Type	Facebook	11	4.4
	Instagram	204	81.6
	Twitter	19	7.6
	Other	16	6.4

When Table 1 was examined, it was observed that 64.8% of the students whose 31.2% were women, and 68.8% were men, do regular sports and 35.2% do not do sports. It was shown that the proportion of students staying with their family was only 14.8%, while 33.6% of the students stayed in the dormitory. It was observed that 10.8% of the student's parents were divorced, and the rest were married. It was noticed that 59.2% of the students smoke, 35.6% do not smoke and the remaining 5.2% quitted smoking. Similar to smoking, 52.8% of students drink alcohol, 36.8% do not, and the remaining 10.4% quitted drinking. According to the 4.00-grade system used by the university, it was observed that 26% of students had a GPA between 3.00 and

4.00, a high ratio of 71.2% was between 2.00 and 2.99, and 2.8% was between 0.00 and 1.99. It was found that 81.6% of the students used Instagram most, 7.6% of them used Twitter the most, 4.4% of them use Facebook and 6.4% of them use other types of social media.

Paired comparison according to various demographic knowledge of students is presented in Table 2.

Table 2. Paired Comparison According to Various Demographic Knowledge of Students

Variables	n	Min	Max	Mean	Ss±	Mean Rank	U	Z	p
Female	78	7,00	64,00	28,15	10,17	109,19	5435,50	-2,403	0,016*
Male	172	4,00	76,00	32,02	12,07	132,90			
Doing Sports Regularly	162	4,00	76,00	30,13	12,09	120,18	6224,00	-1,592	0,111
Sedentary	88	7,00	64,00	32,10	10,65	135,46			
Parents Together	224	4,00	76,00	30,76	11,48	125,15	2833,00	-0,226	0,821
Parents Divorced	26	7,00	56,00	31,31	13,10	128,54			

*p<0,05

Internet addiction level of the students participating in the study contained a considerable difference by gender (Table 2). It is observed that male had a higher average score. Besides, there was no significant difference in internet addiction levels of students who do sports and those who do not do sports. In addition, there was no significant difference in the average scores of internet addiction of students whose parents are divorced. On the other hand, the average score of all students defined according to this paired comparison was below 49.00.

Multiple comparison analysis according to various demographic knowledge of students is presented Table 3.

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Table 3. Multiple Comparison Analysis According to Various Demographic Knowledge of Students

Variables	n	Min	Max	Mean	Ss±	Mean Rank	p
Living Alone At Home	63	7,00	56,00	31,59	11,38	130,40	
Living At Home With Family	37	4,00	76,00	28,68	16,59	109,41	
Living In Dormitory	84	9,00	59,00	29,27	9,67	115,67	0,064
Living At Home With A Friend	66	15,00	64,00	33,24	10,50	142,36	
Smoker	148	4,00	64,00	31,43[ab]	11,71	130,75	
Non-Smoker	89	5,00	76,00	29,08[a]	11,60	111,99	0,038*
Quitted Smoking	13	22,00	56,00	35,69[b]	9,25	158,19	
Drinker	132	12,00	64,00	33,05[a]	11,12	139,88	
Non-Drinker	92	4,00	76,00	28,93[b]	12,01	112,53	0,003*
Quitted Drinking	26	7,00	49,00	26,15[b]	10,59	98,37	
GPA Between 4.00 - 3.00	65	4,00	52,00	27,98	10,59	110,08	
GPA Between 2.99 - 2.00	178	5,00	65,00	31,73	11,32	131,37	0,124
GPA Between 1.99 – 0.00	7	12,00	76,00	33,86	22,65	119,36	
Mostly Facebook User	11	4,00	76,00	29,36	19,21	111,82	
Mostly Instagram User	204	7,00	65,00	30,79	10,93	125,46	0,558
Mostly Twitter User	19	16,00	47,00	29,32	9,72	116,13	
Other Social Media User	16	5,00	54,00	33,88	15,94	146,53	
Less Than 1 hour	16	5,00	43,00	20,63[a]	10,72	66,66	0,000*

on internet a day						
Between 1 and 3 Hours on internet a day	91	4,00	65,00	26,04[a]	10,73	92,06
Between 4 and 7 Hours on internet a day	112	9,00	76,00	33,33[b]	10,43	142,09
More Than 8 Hours on internet a day	31	22,00	54,00	41,00[c]	7,84	194,10

*p<0,05

When Table 3 was analyzed, it was found that accommodation type did not have significant effect on internet addiction level. However, it was observed that smoking and drinking had effects. Accordingly, there was a significant difference between non-smokers and those who quitted smoking. The internet addiction of students who quitted smoking was higher than others. According to the alcohol consumption status, there was no significant difference between those who quitted and those who do not drink, while alcohol users constituted the reason for the difference with high average scores. While there was no significant difference between the students' GPA and social media types used, there was a significant difference in daily internet use. Accordingly, it was found that there was no difference between the average scores of students who use the internet for 3 hours or less per day. Still, there was a significant difference between those who use internet daily for 4 to 7 hours and those who use it over 8 hours. It was observed that internet addiction also increased depending on the hours of use. It was found that the average score in Table 3 were all below 49.00 and this draws attention.

Discussion

In this study, which was carried out to examine university students' internet addiction levels under academic achievement levels and other variables, the results obtained from the research are discussed below in the light of related literature.

If the minimum score and the highest score that can be collected from the scale used to determine the level of internet addiction is remembered, the point that should be emphasized first is that the average score of the university students was below 49 points in all analysis results. According to the score classification, the level of internet addiction of university students was in the "no symptoms" class. Although their average values were in this class, it is

noteworthy when the differences between the levels are analyzed under various variables.

The internet addiction levels of the students participating in the study showed a significant difference according to gender. According to these analysis in Table 2, male students had higher internet addiction than female students. When the literature is examined, there are studies in which the level of internet addiction of men is significantly higher than women (Chou & Hsiao, 2000; Morahan-Martin & Schumacher, 2000; Kaltiala-Heino et al., 2004; Yoo et al., 2004; Johansson & Götestam 2004; Niemz et al., 2005.) On the other hand, Leung (2004) and Kim et al. (2006) stated that female students had higher internet addiction than male students. Despite these studies, there are also studies stating that there is no significant difference between male and female students (Greenfield, 1999; Whang et al., 2003; Pallanti et al., 2006). As of today, there is no definite distinction of internet addiction between male and female university students (Aslan & Yazici, 2016; Yilmazsoy & Kahraman, 2017; Aznar-Díaz et al., 2020; Unsar et al., 2020). Shawn & Black (2008) explains this situation as an analysis that cannot be resolved until all isolated societies in the world have fully gained internet use. However, the reality is that internet addiction can be observed in both genders.

It is revealed in the results in Table 2 that there is no significant difference in terms of average scores of internet addiction between those who do sports and those who do not, and those whose family is divorced and those whose family is married. Young (1998) underlined that computer and internet addiction harms domestic relationships and that, it is the parents' responsibility to manage it. The regulatory behavior of the family is the most vital factor that helps to get rid of the addiction in university-age youth (Paik & Kim, 2014; Gazo et al., 2020). However, in the research findings, the marital status of university students' families is not a factor that affects students' internet addiction scores significantly. However, there is no significant difference in terms of students' accommodation types (see Table 3.) Although there is a difference in scores of the ones staying in dorms and the students staying with a friend, this was not significant. The conclusion from these analyses suggests that internet addiction scores of university students do not change depending on their social environment. Shek & Yu (2012) stated that having divorced parents is related to the pathological internet use. However in this study, whether parents were divorced or not, living with the family, living at home, living alone or living with friends at home was not a factor in internet addiction.

On the other hand, besides gaining physiological and psychological benefits by doing regular sports, having a busy time to spend does not seem to be a factor significantly affecting internet addiction score. Park et al. (2016) reported that physical activities had a crucial effect on recovering from the

internet addiction. However, in this study, no significant difference was found between students who do sports and who do not do sports in terms of internet addiction.

Smoking and alcohol consumption are frequent subject of academic studies conducted on addiction. There are also studies where they are compared with other types of addictions. According to these studies, addiction is a behavior that can change from one attitude to another (West, 2013). It is said that smoking and alcohol consumption affect each other (Hays et al., 1999). Therefore, a habit that is tried to be abandoned may shift to internet addiction. Some studies indicate that internet addiction levels of university students are related to alcohol use (Griffiths, 1999; Sung et al., 2013; Zenebe et al., 2020). There are also studies claiming that smoking is related to internet addiction (Sung et al., 2013; Zenebe et al., 2020). According to Table 3, internet addiction levels of university students using alcohol were higher than those who do not drink and quitted drinking. However, the high score average of those who quitted smoking was remarkable in the analysis based on smoking status. According to this analysis, those who quitted smoking had higher internet addiction scores than smokers and non-smokers. As mentioned in the literature, it may be possible to transfer smoking addiction to internet use. However, if their average scores are remembered, the internet addiction scores of these students were below 49.

Social media is one of the factors that cause internet addiction. There are social media service providers that are designed with various content and serve many various purposes. The most commonly used ones are Facebook, Instagram and Twitter (Dailey et al., 2020; Yang & Lee, 2020). The effects of these service providers on internet addiction are also mentioned (Dailey et al., 2020; Gentina et al., 2020). However, according to Table 3 in this study, the level of internet addiction of university students did not differ according to the type of social media they frequently use. However, there were differences according to internet use. In this context, when the literature is examined, studies indicate that internet addiction is related to the duration of use (Eroglu & Bayraktar, 2017; Aznar-Díaz et al., 2020; Unsar et al., 2020; Zenebe et al., 2020). While the daily time spent on internet in Table 3 did not show a significant difference in the average of internet addiction up to 3 hours, it was found that daily internet usage times of 4-7 hours and above 8 hours showed a significant difference. As the daily time spent on internet increased, the level of internet addiction also increased.

Although the universities have various grading sclaes, generally the grading system consists of over 4.00. (Soh, 2010). Smith & Izadyar (2020) stated that university students' internet addiction was negatively related to GPA. Sung et al. (2013) found that students with academic success anxiety had high internet addiction levels. In another study, it was determined that

university students using the internet over 11 hours a week had lower school performances and academic success than those using the internet less than 3 hours a week (Gross, 2004). In this study, although the average score of internet addiction among those with a GPA between 0.00 and 1.99 was higher than others, this score was not significant. Academic success score of university students did not affect internet addiction levels.

In conclusion, in this study, where the internet addiction levels of university students were examined under various variables, it was found that male students had higher addiction scores than female students, doing regular sports, marital status of parents, accommodation preference, and academic success level did not affect internet addiction. The type of social media used did not affect the level of internet addiction. However, it was found that there were significant differences between the internet addiction score of cigarette and alcohol consumers, and the internet addiction scores of students drinking alcohol and those who quitted smoking were higher than others. It was found that time spent on internet causes a low internet addiction score of up to 3 hours a day, and internet addiction scores increase as the time spent on internet of 4 hours or more per day increases. Despite all these findings, it was found that university students did not have internet addiction at the pathological level, but internet addictions decreased and increased under various variables. Within the scope of this study, it can be emphasized that using the internet for 8 hours or more per day may increase the average risk of internet addiction score and that students who are smoking or using alcohol are more prone to internet addiction.

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Relative Effects of Two Activity-Based Instructional Strategies on Secondary School Students' Attitude towards Physics Practical

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Abstract

The study investigated the relative effects of two activity-based instructional strategies on students' attitude towards Physics practical in secondary schools. The study adopted the quasi-experimental design of pre-test, post-test and control group. The sample for the study comprised 74 Senior Secondary two (SS II) Physics students who were randomly selected through multistage technique from three co-educational senior secondary schools in Osun state, Nigeria. The schools were randomly selected to two experimental and a control group. The experimental groups were exposed to predict-observe-explain and virtual laboratory instructional strategies while the control group was taught using conventional laboratory strategy. Physics Practical Attitude Scale (PPAS) was the instrument used to collect relevant data for the study. The general question raised for the study was answered using descriptive statistics. The hypotheses generated were analyzed using Analysis of Variance (ANOVA), Scheffe Posthoc Analysis and Multiple Classification Analysis (MCA). Decisions were taken at 0.05 level of significance. The findings from the study showed that the treatment had positive effects on students' attitude towards Physics practical. Based on the findings, it was recommended that Physics teachers should make use of predict-observe-explain and virtual laboratory instructional strategies to improve students' attitude towards Physics practical in secondary schools.

Keywords: Activity-based instructional strategies, predict-observe-explain, virtual laboratory, Attitude, Physics Practical.

Introduction

Activity-based instructional strategies are students centered instructional strategies that allow active learning, where students are engaged in writing, discussing, describing, explaining, and reflecting processes that do

not normally take place in a traditional classroom. They are structured in such a way that students are immersed in experiences within which they engage in meaning-making inquiry, action, imagination, invention, interaction, hypothesizing and personal reflection. The students use their own experiences, prior knowledge and perceptions, as well as their physical and interpersonal environments to construct knowledge and meaning. The goal is to produce a classroom environment that provides meaningful learning experiences for students.

Students-centered teaching methods promote face-to-face interaction, group discussion, intense personal involvement, open communication and focus the students' attention on the content when they participate in learning activities. The focus of activity is shifted from the teacher to the students, they actively process content and their learning often incorporates the use of materials and resources such as real materials and virtual aids. It thus allows them to learn from their own active processing of information by combining content with skill. The two activity-based instructional strategies investigated in this study are predict-observe-explain and virtual laboratory instructional strategies.

The Predict-Observe-Explain Instructional Strategy (POEIS) is an instructional strategy in which students predict the result of a demonstration and discuss the reasons for their predictions; carry out and observe the demonstration and finally explain any discrepancies between their predictions and observations. If their observations are in agreement with the predictions, it becomes stronger and convincing; thereby gives the students deeper knowledge and understanding of the concept.

Predicting is foreseeing the possible outcomes of an unrealized event depending on the past experiences and collected data. It is crucial in the teaching and learning of science. It motivates students to activate their prior knowledge and articulate their understanding of the phenomenon under investigation. Kien, Gabriela, Ok-Kyeong, Francisco, and Lisa (2010) reported that prediction plays a bridging role in helping students make connections between a physical phenomenon and associated scientific concepts. It can be a useful pedagogical means to aid student learning in several ways. In terms of concept development, prediction allows students to activate and refine their existing knowledge. It fosters learning in that it provides an opportunity for students to account for the inconsistencies between what they predict and what they observe.

After the mental effort of making a prediction, getting it wrong, and then trying to work out why they were wrong, students are far less likely to forget what they have learned compared to simply being told the facts. The benefits of POE go even further than memorable learning experiences. By asking students to describe their confidence in their prediction, this tap into a

crucial 21st Century skill – metacognition (Dalziel, 2010). Metacognition is the ability of students to reflect on their own thought. It regulates, monitors and supports self-directed learning.

Virtual Laboratory is a virtual studying and learning environment with the aim of developing laboratory skills of students by stimulating the real laboratory. It is a computer-based activity where students interact with experimental apparatus via a computer interface. It provides students with tools, materials and laboratory sets which are electronically programmed in computer to perform experiments anywhere and anytime (Babateen, 2011).

The Virtual Laboratory Instructional Strategy (VLIS) used for this study is a computer-based instructional strategy made up of three components: text, video and simulated experiment. The text section exposes the students to the title, aim, theory, apparatus and procedures of the experiments. The video section exposes the students to the steps in carrying out the experiments via video. The simulated experiment is a section where students carry out or perform experiments in virtual environment using computer program.

As a technique for instruction, simulation allows students to deal in a realistic way with matters of vital concern but without dire consequences should they make wrong choices. Simulations enable students to understand complex interactions of physical or social environment factors. As techniques for experimentation, simulations permit researchers to perform exotic "dry lab" experiments or demonstrations without using rare materials or expensive equipment. Time compression is another cost-saving feature of simulation technology. Events that can take hours to eons in real time can be simulated in a few minutes (Encyclopaedia Britannica, 2010).

Among the various ICT applications, computer simulations are of special importance in Physics teaching and learning. Li, Ma, and Shi (2011) asserted that computer simulations are now an integral part of contemporary basic and applied Physics, and computation has become as important as theory and experiment. With the help of a powerful simulation many of Physics topics which are difficult to teach and transfer can be made simpler and clearer. Also, some experiments which are difficult to make or hard for the students to understand in a real laboratory can be made much simpler with the help of simulations. In this way Physics courses are becoming a fun and immersive. Simulations offer new educational environments, which aim to enhance teachers' instructional potentialities and to facilitate students' active engagement.

Virtual laboratory makes students active learners. It provides opportunities for students to learn at their own pace and understand difficult Physics practical concepts. Students are placed in a virtual learning environment where they can bridge new knowledge with previously learned knowledge through direct manipulation of apparatus using computer program.

This study is anchored on pragmatism learning theory propounded by John Dewey and experiential learning theory propounded by David Kolb. The two learning theories draw their roots from constructivist learning theory which advocates learner-centered approach in teaching-learning process.

Constructivism is a view of learning based on the belief that knowledge is not a thing that can be simply given by the teacher at the front of the classroom to students in their desks. Rather, knowledge is constructed by students through an active, mental process of development; students are the builders and creators of meaning and knowledge.

It suggests that students would benefit from learning opportunities that not only expose them to new information or experiences but also enable them: to examine their own ideas, to determine the extent to which the new experiences make sense in light of these ideas, to consider a number of possible alternative explanations for what they have experienced, and to evaluate the usefulness of a number of different perspectives.

Constructivist teaching fosters critical thinking. The teacher and the students share responsibility and decision making and demonstrate mutual respect. The democratic and interactive process of a constructivist classroom allows students to be active and autonomous learners. Using constructivist strategies, teachers are more effective. They are able to promote communication and create flexibility so that the needs of all students can be met. The learning relationship in a constructivist classroom is mutually beneficial to both students and teachers.

John Dewey introduced Pragmatism in Education. Pragmatism is a practical and utilitarian philosophy. It makes activity the basis of all teaching and learning. It is activity around which an educational process revolves. It makes learning purposeful and infuses a sense of reality in education. It makes schools into workshops and laboratories. It gives an experimental character to education. According to pragmatism, all education is "learning by doing". So, it must be based on the students' experiences as well as activities.

The principle of philosophy of pragmatic method of teaching is practical utility. The students are the central figure in this method. Pragmatic method is an activity-based method. The essence of pragmatic method is learning through personal experience of the student. Pragmatic method is thus a problem-solving method. Education to the pragmatists is not teaching the students things they ought to know but rather engaging them to learn for themselves through experimental and creative activity. Learning by doing makes students creative, confident and cooperative. Pragmatic education is thus auto-education or self-education.

Experiential learning theory propounded by David Kolb (1984) explains knowledge as being constructed through effective and purposeful hands on materials. Experiential learning is an instructional strategy where

learners gain knowledge by the experiences they encounter during the learning process. Kolb's experiential learning model was first published in 1984 with dramatic impact on the design and development of long life learning model when he advocated experience as the source of learning and development. Experiential learning is the acquisition of knowledge and skills through observations, discovery and hands-on experience: learning by doing. Kolb built on the work of Dewey and advocated a four-stage cycle involving concrete cycle: experience, reflective observation, abstract conceptualization and active experimentation.

Kolb's experiential learning model described a learning cycle in which experience leads to observation and reflection, followed by concept formation. New concepts in turn, may guide choices for new experiences. Kolb's experiential learning theory is explained in the model below.
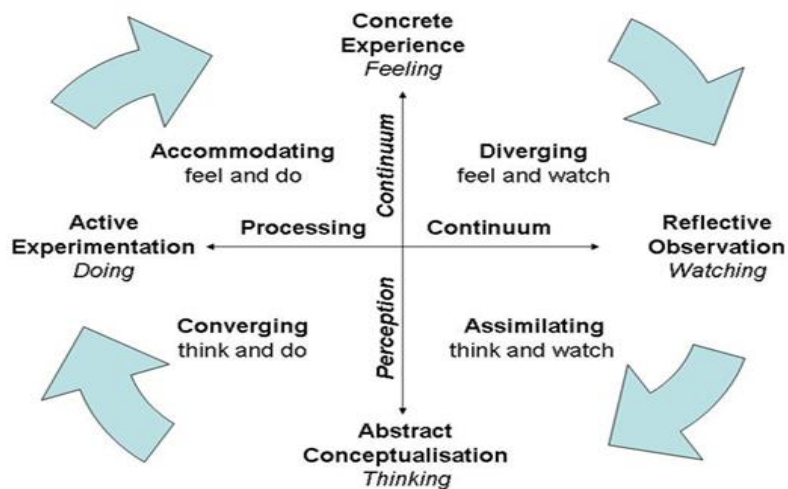
Figure 1: Adopted David Kolb learning Model (1984)
Source: https://www.simplypsychology.org/learning-kolb.html

In this model knowledge construction is conceived as a four stage process. Concrete experience is the first stage, it represents the immediate tangible experiences (hands on materials) that learners are involved in. During this process they physically manipulate apparatus. The experiences in the first stage lead to the second stage of observation and reflection, this stage basically entails the use of senses, which triggers sensory stimulus. The stimulus triggered lead to the third stage that is formation of abstract concepts. It is the stage where stimulus is assimilated into the learner's mind, as such

concreteness turn out to abstractness. From the assimilation, new experiences and concepts are created leading to the fourth stage of creation of new experiences. These experiences generate new knowledge and represent the instructional objectives/expected learning outcomes. The four stages are interlinked as one leads to the other.

Kolb views the learning process as a context of people moving between the modes of concrete experience and abstract conceptualization, and reflective observation and active experimentation. Thus, the effectiveness of learning relies on the ability to balance these modes. Effective learning is seen when a person progresses through a cycle of four stages: of having a concrete experience followed by observation of and reflection on that experience which leads to the formation of abstract concepts (analysis) and generalizations (conclusions) which are then use to test hypothesis in future situations, resulting in new experiences.

In the model, diverging (feeling and watching) emphasizes the innovative and imaginative approach to doing things. Views concrete situations from many perspectives and adapts by observation rather than by action. Assimilating (watching and thinking) pulls a number of different observations and thoughts into an integrated whole. Converging (doing and thinking) emphasizes the practical application of ideas and solving problems. It fosters decision-making, problem-solving, and the practical application of ideas. Accommodating (doing and feeling) uses trial and error rather than thought and reflection. Solves problems in an intuitive, trial-and-error manner, such as discovery learning.

In teaching and learning of Physics, ineffectiveness in practical instructions can be ultimately traced to lack of adequate link within the four stages in the model explained above. Adoption and proper implementation of this model in Physics practical instructions will develop laboratory skills of the students, enhance their scientific knowledge and transpose the students from passive learning to active students-centered learning process by hands on material. The model makes students the central figure of Physics practical activities by making use of their hands, senses and mind. This ultimately drives the students towards the process of assimilating and accommodating new knowledge into their existing knowledge.

The focus of this study is to find out how the two activity-based instructional strategies investigated affect students attitude towards Physics practical in secondary schools. Attitude is disposition towards something based on experience, it can either be positive or negative. Positive attitude springs out of good experience, if the experience is bad the attitude will be negative. Veloo, Nor and Khalid (2015) opined that negative attitude towards a certain subject makes learning difficult, while positive attitude stimulates students to put effort and leads to the high achievement in the subject.

The research of Kaya and Boyuk (2011) revealed that students' positive attitudes towards science highly correlate with their achievement in science. Determining students' attitude towards Physics is therefore a useful task in order to improve the performance of students in the subject. The estimation of students' attitude towards Physics has been carried out by many researchers. Many of them (Akinbobola, 2009; Alimen, 2009; Mekonnen, 2014) came to the same conclusion that the decrease in Physics academic achievement is alarming. The outstanding factor that caused this is the students' attitude towards the subject.

The report of Adebisi and Ajayi (2015) on correlation of students' attitude and gender differences on understanding of concept in Physics practical showed that students' attitude is significantly related to understanding of concept in Physics practical. The higher the students' attitude, the higher the understanding of the concept of Physics practical. In the other way the lower the students' attitude to Physics practical, the lower the understanding of the concept of Physics practical. The cause of the negative perception of students towards Physics was identified by Adedayo (2008) to include the fear of the mathematical skills involved, harsh teacher-students' relationship, students' unreadiness to study, preconceived bad information that Physics is a difficult subject and poor method of teaching. Olusola and Rotimi (2012) supported this claim that Physics is perceived as a difficult subject for students from secondary school to university and also for adult in graduate education. This impression greatly affects students' readiness and interest to study the subject. However, the reality on ground demands steering up students' attitude towards Physics practical in secondary schools. It is therefore necessary for teachers to help the students to develop right attitude towards Physics practical.

Attitude of the students towards Physics practical has a great impact on their performance in the subject. The availability, readiness and interactive manner of the students in Physics practical class is a function of their attitude towards practical activities. Thus right attitude towards Physics practical is imperative for optimal performance of the students in Physics examinations like WAEC and NECO.

Statement of the Problem

There has been growing concern about low achievement of secondary school students in science subjects. Poor performance in Physics has been a major concern for Physics educators, parents, guardians, curriculum planners, researchers and government. The implication of the persistent failure in Physics is grievous on the society as there may be shortage of manpower in science and technology related disciplines.

One of the Nigeria newspapers, The Punch, under editorial for Tuesday April 28, 2020 reported that "patients outnumber doctors at a ratio of 1:3500. This is against the 1:600 doctor per patient ratio recommended by the World Health Organization. The shortage of trained personnel is exacerbated by the brain drain syndrome" this is one of the long run effects of persistent failure in Physics in secondary schools on the society. Studying medicine in any of the Nigeria universities, the students must have at least a credit pass in Physics as one of the requirements.

Based on the allocation of marks to essay and practical aspects of Physics in external examinations like WAEC and NECO, it is discovered that it may be difficulty for students to make a credit pass in the subject if they performed poorly in practical aspect which is being assessed separately as an integral part of the subject carrying substantial weight in grading the students' performance.

It is also discovered that the methods adopted by teachers to teach Physics practical have not solved the problem of poor performance in the subject, probably because those methods have not actually focused on learners as constructors of their own knowledge and also damp their interest and invariably affecting their attitude towards practical activities making the students not to develop appropriate practical skills needed to perform well in their external examinations.

In view of the aforementioned, the need to adopt activity-based instructional strategies in teaching Physics practical in secondary schools with a view to helping students to develop positive attitude towards Physics practical and improve their performance in Physics practical necessitated this study. This study, therefore, sought to examine and compare the effects of two activity-based instructional strategies (POEIS and VLIS) on secondary school students' attitudes towards Physics practical.

Research Question

What is the attitude of the students towards Physics practical in the three groups before and after treatment?

Research Hypotheses

The following null hypotheses were generated for the study:

H_{01}: there is no significant difference in the pre-test mean scores of students' attitude towards Physics practical in the three groups before treatment.

H_{02}: there is no significant difference in the post-test mean scores of students' attitude towards Physics practical in the three groups after treatment.

Methodology
Research Design
This study adopted quasi-experimental design of the pre-test, post-test and control group. There were three groups altogether: two experimental groups (corresponding to the use of predict-observe-explain instructional strategy and virtual laboratory instructional strategy) and the third (conventional) group served as the control group. The teacher-centered instructional strategy was used as the conventional laboratory strategy of teaching Physics practical. The design is represented schematically as follows:

$$G_1: \quad O_1 \quad x_1 \quad O_2$$
$$G_2: \quad O_3 \quad x_2 \quad O_4$$
$$G_3: \quad O_5 \quad x_3 \quad O_6$$

Where
G_1 - Experimental group 1
G_2 - Experimental group 2
G_3 - Control group
O_1, O_3 and O_5 are the pre-test observations
O_2, O_4 and O_6 are the post-test observations
x_1-Treatment for group 1 (Predict-Observe-Explain-Instructional Strategy)
x_2 - Treatment for group 2 (Virtual Laboratory Instructional Strategy)
x_3 - Treatment for control group (Conventional laboratory Strategy)

Population, Sample and Sampling Technique
The population for this study consisted of all Senior Secondary two (SS II) Physics students in the three Senatorial Districts of Osun State. The Senior Secondary two (SS II) students were considered appropriate for this study because they would have been exposed to a considerable knowledge of Physics in Senior Secondary one (SS I). The sample for the study consisted of 74 Physics students of Senior Secondary two (SS II) in three co-educational senior secondary schools in the state. The multistage sampling procedure was used to select the sample. Stage one involved the selection of one Local Government Area from each of the three Senatorial Districts in the state using simple random sampling by balloting. The second stage involved the use of purposive sampling technique to select one secondary school with relatively-equipped Physics laboratory from each Local Government Area selected, and the third stage involved the use of students in an intact class of an arm randomly selected from each school considered.

Research Instruments
Physics Practical Attitude Scale (PPAS) was the instrument used to collect relevant data for this study. The Physics Practical Attitude Scale (PPAS) was developed to measure the attitude of students towards Physics

practical. The PPAS had two sections A and B. Section A consisted of students' personal bio-data such as name of school, gender, age range and class while section B consisted of 40 items-questionnaire intended to measure students' attitude towards Physics practical. The PPAS was structured in 4-points Likert scale: Strongly Agree (SA) – 4 points, Agree (A) – 3 points, Disagree (D) – 2 points and Strongly Disagree (SD) – 1 point. The face and content validity of the instrument were carried out by experts. The reliability coefficient of 0.73 was obtained for PPAS using Cronbach's Alpha. The value was considered high enough to be used for the study.

Data Analysis

The data collected were collated and analyzed. The question raised was answered using descriptive statistics of mean, standard deviation and bar chart. The hypotheses generated were analyzed using Analysis of Variance (ANOVA), Scheffe Posthoc Analysis and Multiple Classification Analysis (MCA). Decisions were taken at 0.05 level of significance.

Result
Question

What is the attitude of the students towards Physics practical in the three groups before and after treatment?

In order to answer the question, mean scores of attitude of the students towards Physics practical in the three groups before and after treatment were computed and compared. The result is presented in Table 1.

Table 1: Students' attitude towards Physics practical in the three groups before and after treatment

Group	N	Pre-test		Post-test		Mean Difference
		Mean	SD	Mean	SD	
Predict-Observe-Explain	24	62.37	4.14	135.73	4.59	73.36
Virtual Laboratory	20	63.20	4.77	132.56	9.04	69.36
Control	30	64.21	6.08	90.10	8.77	25.89
Total	74					

The attitude of students towards Physics practical in the three groups before and after the treatment is further depicted in Figure 2.
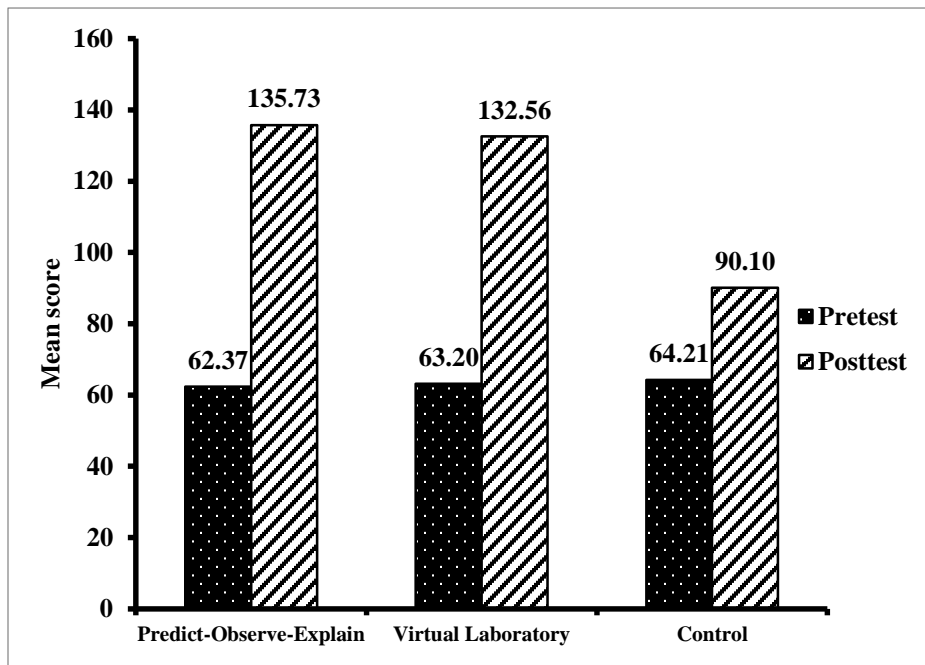
Figure 2: Bar chart showing attitude of the students towards Physics practical
in the three groups before and after treatment

Testing of Hypotheses

H_{01}: There is no significant difference in the pre-test mean scores of students'
attitude towards Physics practical in the three groups before treatment.

In testing the hypothesis, pre-test mean scores of students' attitude
towards Physics practical in the three groups before treatment were computed
and compared for statistical significance using Analysis of Variance
(ANOVA) at 0.05 level of significance. The result is presented in Table 2
below.

Table 2: ANOVA showing attitude mean scores of students in the three group
before treatment

Source	SS	Df	MS	F	P
Between Groups	46.010	2	23.005		
Within Groups	1896.208	71	26.707	0.861	0.427
Total	1942.218	73			

p>0.05

The result in table 2 above shows that the computed F-value (0.861) obtained for the groups with a p value > 0.05 was not statistically significant at 0.05 level. The null hypothesis is not rejected; implying that there is no significant differences in the pre-test mean scores of students' attitude towards Physics practical in the three groups before treatment.

H02: There is no significant difference in the post-test mean scores of students' attitude towards Physics practical in the three groups after treatment.

In order to test the hypothesis, post-test mean scores of the students' attitude towards Physics practical in the three groups were computed and compared for statistical significance using Analysis of Variance (ANOVA) at 0.05 level of significance. The result is presented in Table 3.

Table 3: ANOVA showing post-test attitude mean score of students by treatment

Source	SS	Df	MS	F	P
Between Groups	34944.235	2	17472.117	290.509*	0.000
Within Groups	4270.161	71	60.143		
Total	39214.396	73			

*$p<0.05$

The result in table 3 above showed that the computed F-value (290.509) obtained for the groups with a p value < 0.05 was statistically significant at 0.05 level. The null hypothesis is rejected; implying that there is significant difference in the post-test attitude mean scores of the students in the three groups.

In order to locate the sources of pairwise significant difference among the groups, Scheffe Posthoc test was carried out. The result is presented in Table 4 below.

Table 4: Scheffe Posthoc analysis of students' attitude towards Physics practical by treatment

Group	1	2	3	N	Mean
Predict-Observe-Explain (**1**)			*	24	135.73
Virtual Laboratory (**2**)			*	20	132.56
Control (**3**)				30	90.10

*$p<0.05$

Table 4 above showed that there is significant difference between the attitude of students exposed to predict-observe-explain instructional strategy and conventional laboratory strategy at 0.05 level. Similarly, the mean difference between the attitude of students exposed to virtual laboratory instructional strategy and conventional strategy is statistically significant at 0.05 level. However, there was no significant difference between the attitude of students exposed to predict-observe-explain instructional strategy and virtual laboratory instructional strategy at 0.05 level.

In order to determine the effectiveness of the treatment (instructional strategies) at enhancing students' attitude towards Physics practical, Multiple Classification Analysis (MCA) was used. The result is presented in Table 5.

Table 5: Multiple Classification Analysis (MCA) of students' attitude towards Physics practical by treatment

Grand mean=116.38					
Variable + Category	**N**	**Unadjusted Devn'**	**Eta^2**	**Adjusted For Independent + Covariate**	**Beta**
Predict-Observe-Explain	24	19.35		19.21	
Virtual Laboratory	20	16.18	0.90	16.16	-.03
Conventional	30	-26.28		-26.15	
Multiple R 0.033 Multiple R^2 0.001					

Table 5 revealed that students exposed to predict-observe-explain instructional strategy had the highest adjusted mean score of 135.59 (116.38+19.21) on attitude towards Physics practical. This was closely followed by those taught using virtual laboratory instructional strategy with an adjusted mean score of 132.54 (116.38+16.16) while the students in the conventional laboratory strategy group had the least adjusted mean score of 90.23(116.38+(-26.15). This implies that virtual laboratory and predict-observe-explain constitute effective instructional strategies for enhancing students' attitude towards Physics practical.

Discussion

Table 1 revealed that Physics students in the predict-observe-explain instructional strategy group had mean score of 62.37 while those exposed to virtual laboratory instructional strategy and conventional laboratory strategy had mean scores of 63.20 and 64.21 respectively prior to treatment. This implies that the attitude of the students towards Physics practical in the three groups before treatment was unsatisfactory. On exposure to treatment, students taught using predict-observe-explain instructional strategy had the highest mean score of 135.73, closely followed by those exposed to virtual laboratory instructional strategy with a mean score of 132.56 while the students in the conventional laboratory strategy group had the least mean score of 90.10. This implies that the attitude of the students towards Physics practical in the three groups after treatment was high.

Figure 2 showed the students' attitude mean scores towards Physics practical in the three groups before and after treatment. The Bar Chart showed that students taught using predict-observe-explain instructional strategy had the highest post-test attitude mean score, closely followed by those exposed to virtual laboratory instructional strategy while the students exposed to conventional laboratory strategy had the least attitude mean score. The comparison between the pre-test and post-test attitude mean scores in the three groups showed that the post-test attitude mean scores are higher than the pre-test attitude mean scores. This implies that the treatment had positive effect on students' attitude towards Physics practical. The Bar Chart further showed that predict-observe-explain is the most effective strategy for enhancing students' attitude towards Physics practical. This is in agreement with the finding of Gernale, Duad and Aranes (2015) that there was an improvement in the attitude of the students exposed to predict-observe-explain approach. It was further elicited that the attitude of the students was significantly enhanced since the activities were basically learner-centered.

Table 2 showed that there was no significant difference in the pre-test attitude mean scores of the student in the three groups. It could therefore be said that the attitude of the students towards Physics practical before the commencement of the treatment is homogenous.

Table 3 indicated that there was significant difference in the post-test attitude mean scores of the students in the three groups. This implies that the attitude of students towards Physics practical in the experimental groups (Predict-Observe-Explain Instructional Strategy and Virtual Laboratory Instructional Strategy) was significantly higher than their counterparts in control group (Conventional laboratory Strategy). It shows that the treatment influenced the attitude of the students positively towards Physics practical.

Table 4 further showed that there was significant difference between the attitude of students exposed to predict-observe-explain instructional

strategy and control group. Similarly, there was significant difference between the attitude of students exposed to virtual laboratory instructional strategy and control group. However, there was no significant difference between the attitude of students exposed to predict-observe-explain instructional strategy and virtual laboratory instructional strategy. This is in line with the report of Teerasong etal (2010) who reported positive attitude of students using predict-observe-explain strategy. It is also in support of Tuysuz (2010) who discovered that virtual laboratory applications made positive effects on students' achievements and attitudes when compared to traditional teaching methods. Likewise, Asiksoy and Islek (2017) found that virtual laboratory experiences made positive effects on students' attitudes.

Table 5 showed the effectiveness of the treatment at enhancing students' attitude towards Physics practical. The treatment accounted for about 90% (Eta^2=0.90) of the observed variance in students' attitude towards Physics practical.

The results showed that predict-observe-explain and virtual laboratory instructional strategies are both effective instructional strategies for enhancing students' attitude towards Physics practical. The interactive and manipulative effects of Physics apparatus encapsulate in activity-based instructional strategies improve students' attitude towards Physics practical works. Students tend to learn better in activity-based class where they manipulate apparatus, think and act in scientific manner to gain insight into the concepts of Physics practical. These strategies that make students the central figure of learning activities enhance students' experience, understanding, skills and motivate them to develop positive attitude towards pratical works in Physics. This finding provides empirical support to earlier finding of Gambari, Falode, Fagbemi, and Idris (2013) who reported that the application of the virtual laboratory had positive effects on students' attitudes when compared to physical laboratory method. It is also in agreement with Pyatt and Sims (2012) who asserted that using virtual laboratory increases motivation and desire for lesson and laboratory in the process of learning. Likewise, the finding is in line with Bilen and Kose (2012) who reported that predict-observe-explain instructional strategy had positive effects on pre-service science teachers' attitudes toward science teaching.

Conclusion

This study shows that the treatment influenced the attitude of the students positively towards Physics practical and there was no significant difference between the attitude of students exposed to predict-observe-explain instructional strategy and virtual laboratory instructional strategy. This implies that predict-observe-explain and virtual laboratory instructional strategies are both effective instructional strategies for enhancing students' attitude towards Physics practical.

Recommendations

Based on the finding of this study, it was recommended that Physics teachers should be enlightened and encouraged to employ predict-observe-explain and virtual laboratory instructional strategies to cultivate positive attitude of students towards Physics practical in secondary schools.

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The Status of the Humanities in The 21st Century: A Case Study

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Abstract

From the time of ancient Greece until late nineteenth-century Europe, the humanities enjoyed a status of respect and prestige. From the latter half of the 1990s, their status and prestige dropped, mainly due to the low economic value of the humanities for a goal-oriented generation and due to the limited representation of humanities graduates in centers of power and employment. The current study illuminates the efforts of Israel's institutions of higher education to attract students and the need for the humanities in 2020. The article explores the resources involved in the study, thought, psychological comprehension, knowledge base, and aesthetic development characteristic of humanities disciplines. Select examples from the field of the arts illustrate the humanities' unique contribution to a world focused on technology, science, and the pursuit of money and profit.

This study focuses on Israel as a case study that illuminates the status of the humanities in institutions of higher education around the world. The state of these studies in Israel was explored through learning products approach and ways of coping with the challenges of the twenty-first century, and highlights the significance of humanities studies in the technological world into which contemporary academic institutions have been drawn. This research discusses the paradigmatic change in higher education from content-centered to learning-centered academic programs and from STEM to STEAM.

Introduction
About the humanities, humanistic and human culture studies, and Jewish studies

The humanities is a general name for several disciplines that include philosophy, the arts, and languages and deal with human fields of interests (Triger, 2007), unlike disciplines that deal with the study of processes, nature

(physics and chemistry), and social relations (sociology and economics). As defined by Israel's Council for Higher Education, the disciplines of the humanities also include Jewish studies (Davidovitch, 2004) and humanistic and human culture studies (Yisraeli, 2020)**.**

The humanities investigate the various displays of human spirit as well as the products of human creativity throughout history. Namely, students examine human actions with regard to the unique reality in a certain time and place, as affecting the universal essence of life and its meanings in various cultures. Scholars in the humanities explore various dimensions of human life throughout human history and culture. Students study that which human beings generated for themselves in language and its symbols, religion and law, government, ideology and worldviews, ritual and myth, literature and poetry, philosophy and art, math and philosophy, hermeneutics and the history of science, history and music, architecture and sculpture, folklore and time-dependent consciousness, written memory and constantly renewed creativity in the expanses of human thought with its uniqueness and changing diversity (Furstenberg, 2020). The humanities also deal with unique skills that involve cultivating intellectual inquisitiveness, hidden creativity, the history of science, formulating new problems, and asking new questions. In addition, they have a unique value-based contribution to imparting and advancing knowledge, truth, and justice, liberty and equality, morals and benevolence, justice and peace (Elior, 2011).

The term "humanistic studies" is based on the classical conception whereby the aims of the humanities are to forge a person with general knowledge education and open mind and to create an intellectual society that encourages the development of culture, ethics, and sociopolitical values (Lamm, 1993, 1999). For the philosopher Plato, spiritual matters were the only route to a meaningful life. He saw in the intellectual the passion to seek truth, wisdom, beauty, and good (Goldman, 2014). The humanities may be said to be a manifestation of all disciplines that express human culture and the product of human creativity, including in the Jewish world (Yisraeli, 2020).

The change in the status of the humanities in academia
The elitist status of the humanities was maintained from ancient Greece to late nineteenth-century Europe, strengthening the association between education and personal excellence, a solid foundation in the humanities, and their instruction. The conception of education was based on the belief that educating for excellence requires a study of the humanities. In contrast to the current conception, the humanities were perceived as practical studies that provide tools essential for realizing one's goals, and a means for success and achievements. These studies were perceived not as a luxury but rather as essential for one's adjustment to life. The humanities maintained their

status despite the crises in the history of the West, as well as the ethical crisis (Rinon, 2014).

Beginning from the latter half of the 1990s, **a change was evident** in the attitude to the humanities in Israel. Humanities programs began losing students. Their numbers dropped significantly from 18.5% in 1996 to 11.7% in 2001, 9.5% in 2006, and only 7.4% in 2013. The low demand for the humanities is also evident in the decline in the number of candidates, from about 6,330 in the early 2000s to some 4,200 in 2012/13 (Council for Higher Education, 2013). An example of this drop in the Literature program at the Hebrew University: In the 2008/9 academic year, only 18 students registered to the Hebrew Literature program at the Hebrew University of Jerusalem, a miniscule number compared to more than 200 students in the program in the 1950s (Shamir, 2009, 2012). This resembles trends throughout the world (Furstenberg, 2020).

The decline in demand for the humanities also led to a decline in the number of faculty members employed in teaching these disciplines. Research findings (Frank & Gabler, 2006) indicate that the number of lecturers in the humanities has diminished dramatically. From 1995 their number dropped by 41%, while the number of faculty members in the social sciences increased by 222% (Asis, 2020).

Another illustration of this trend is the decline in the status of Bible studies in Israel. Ben Ayun (2011) describes several causes for the declining status of Bible studies. In addition to the global decline in the status of the humanities, shifting forces are influencing the world of education and leading to accelerated growth of the technological disciplines at the expense of the humanities. Zakovitch (2005) discusses another cause of the depreciation in the status of the humanities – the distance between the Bible and the student's world, as manifested in the lifestyles of the figures described and in the linguistic style that is incomprehensible to students.

Learning-focused teaching and backward course design - from STEM to STEAM (Davidovitch & Shiller, 2016).

Art and science both hinge on discovery, and discovery requires thinking out of the box. But how do you lead students to think creatively in STEM education? The answer is STEAM, and A is for the arts. STEAM—the integration of music, visual arts, and drama into daily STEM instruction—has been proven to enhance student achievement in STEM subjects. After all, creative, real-world problem solving is what working scientists and mathematicians actually do. But how do busy STEM educators weave arts activities into a sometimes-inflexible STEM curriculum?

Obstacles encountered by students of the humanities

Currently, young people wishing to study the humanities encounter barriers. We analyze these barriers from two points of view – the social-sociological perspective and the economic perspective (Furstenberg, 2020).

The social-sociological perspective

- The Jewish humanities are not popular (Shamir, 2012).
- There is a decline in the academic standards of students accepted to these courses of study (due to lower/more accommodating admission requirements). Outstanding students are attracted to prestigious and highly regarded programs, and therefore those who apply to humanities know that they are not regarded as prestigious programs (Shenhar, 2007).
- Students regard these disciplines as old-fashioned and irrelevant for modern life (Shenhar, 2007).

The economic perspective

- The humanities reflect a socioeconomic phenomenon characterized by globalization, privatization, and capitalism. Young people seek profitability and utilitarianism (Shamir, 2009, 2012).
- There is also a problem with regard to faculty members in the humanities. Only at around age 50 do faculty members in the humanities earn tenure, and until then they risk finding themselves outside academia and destitute. Hence, there is no incentive that motivates individuals to apply for studying the humanities (Shamir, 2009,2012).

Jewish studies – Particular and Universal Aspects

Jewish studies occupy an important place in Jewish culture. Some claim (Yisraeli, 2020) that the massive entrance of the colleges to the field of undergraduate programs in Jewish studies, and in recent years in graduate programs, has increased the competition within Jewish studies, and that the universities are not up to the competition. The admission terms at the colleges are more accommodating – creating a competition among the students who the universities do not want and for whom university studies are beyond their capabilities.

However, in the case of PhD studies, Yisraeli (2020) says that the field is flourishing as never before, both in Israel and elsewhere. This is particularly surprising due to the fact that PhD students know that their chances of finding a job in academia are scarce. People pursue doctoral degrees in humanities out of a desire to engage in research and to continue their research outside academia as well, based on a true interest in the field and because the subject of their research is important for them.

With regard to the profile of the research students, it is evident that:
1. There is a considerable proportion of graduates of religious schools among research students in the humanities (Yisraeli,2020). This is only

natural. These are knowledgeable students in Jewish studies who seek to pursue advanced studies in order to acquire new tools and receive guidance in studying and research. They also find gratification in academic work, and the pursuit of Jewish studies is an important value for them.

2. Yisraeli (2020) notes that a considerable share of the students come from the field of education and teach in the humanities.
3. Some choose to study for a PhD in Jewish studies although they come from other fields such as hi-tech, in the search for spiritual realization. For these students, Jewish studies represent a field of interest that is beyond the applied or purposeful.

Prof. Vered Noam (2020) calls this phenomenon in the humanities of multiple students earning advanced degrees and few undergraduate students an upside-down pyramid. Noam too identifies an increase in Jewish students, and addresses this from an international view. She notes that beginning from the mid-twentieth century, the major share of international research in Jewish studies was conducted in Israel. Today there is extensive research in the US and Europe as well.

In addition, there are developments in the field of computerization, and the digital humanities are opening up new possibilities. Many original materials are available on the Internet. For example, the Cairo Genizah, all the Qumran scrolls – materials that were not accessible in the 1990s. The result is an abundance of research and development of new perspectives on familiar subjects. For instance, there are new literary readings of ancient texts, and efforts in comparative inter-religious research, and more. Nonetheless, the crisis in the humanities cannot be disregarded and, in some respects, it is even graver in Jewish studies, particularly in undergraduate programs (Noam, 2020).

Noam (2020) points to a series of reasons: the risks of postmodernism, economic factors, and the political and social circumstances in Israel. At the same time, she notes the resurgence in Jewish studies, both around the world and in Israel. She sees this as natural, as the humanities pertain to that which is beautiful, to the meaning of life, human hope, the sources of culture, the humane – and as long as there are human beings, there will also be a desire and longing for the humanities and their values. She views the current decline of the humanities as a temporary and passing anecdote in the history of the human spirit, a crisis from which something new will emerge. Noam (2020) notes that maintaining the diverse world of the humanities is a basic condition of a free society that recognizes the value of culture and discourse. Moreover, the humanities are an essential tool for knowledge of both Jewish and general history, culture, and philosophy, specifically in a world in which boundaries are constantly being breached. She claims (2020) that it is not possible to

understand that contemporary events in Europe, the US, the Muslim world, orand in general, to maintain a dialogue with people and societies around the world, without knowledge in the cultural and religious foundation that the humanities provide. Noam (2020) adds that Jewish culture can contribute to general and inter-religious studies in the humanities, and play a role as the source of Jewish cultural treasures. The challenge encountered by academia in general is to make cultural and spiritual treasures relevant, up to date (Yisraeli, 2020). We must be attentive to topics that interest today's young people and make adaptations. The question is – how?

The humanities: Spiritual assets

As the popularity of the humanities declines, their objective and deep significance increases. A world that lacks these disciplines will lack human sensitivity and feeling, warmth and honest friendship. In societies with a strong technological orientation, such as Japan where there is a general atmosphere of "workaholism," there is a conspicuous absence of quality leisure time that digital means are unable to fill. Quality leisure is essential for one's mental health. The occupation with science, space, medicine, and the financial world with all it entails, has justifiably taken over the world, but without the rich world encompassed by the humanities our world will become barren, estranged, robotic, and lack vitality. High culture and spirituality certainly advance humanity and have the potential to enhance people's lives. To examine the contribution of the humanities to individuals and to the collective, we chose the history of art as an illustrative discipline. The plastic arts, which include painting and drawing, sculpture with various materials, and architecture, have expanded human knowledge and provided intellectual tools for life (Dorot, 2013). Literature with its various genres, in addition to being a source of pleasure and entertainment, is also capable of developing life skills such as psychological understanding of others, an ability to feel empathy for others, analyses of historical and geographical conditions, and even healing through bibliotherapy.

In the following examples we demonstrate several areas that are expressed in these and that contribute to our intellectual enrichment, satisfy our curiosity, enhance our ability to deal with complex psychological states, and more (Richards, 2017). Occupation with the arts and with other artistic disciplines raises human beings and the level of their intellectual and aesthetic reasoning, which makes it possible to surpass the limited narrow reality and helps students develop a comprehensive perspective on life.

A visual source of knowledge about the ancient world, and a gesture to the classical world that served as a source of inspiration for Renaissance artists, was provided by Raphael Sanzio (1483-1520) during the years 1509-1511, in his monumental fresco *The School of Athens* (Figure 1), in the Stanza

della Siegnatura at the Vatican in Rome. This room is one of four halls in the living quarters of Pope Julius II that Raphael was asked to redecorate. The fresco is an extensive visual depiction and song of praise for the Platonian Academy and classical Greek philosophy, including Greek sages with their various occupations and vocations. For the first time in Western art, an artist managed to form a harmonious unity, bringing together well-known figures of the ancient era, side by side with his own contemporaries. This wall is an excellent example of how it is possible to attain aesthetic-visual pleasure and moreover, allows us to learn about two periods concurrently: the ancient classical world and the Renaissance. Indeed, Raphael was not personally acquainted with the classical world, but through the admiration that he and his peers felt for ancient Greece and its values he managed to reproduce this reality from his imagination and plant it in his own era. Furthermore, the decorated space contains those special figures who symbolize the desired connection between the forces of the soul and the forces of the mind, between investigation of the source of the universe and research of the good life and happiness – the main topics of ancient philosophy.

The painting portrays 21 Greek philosophers, scientists and mathematicians, authors, poets and architects, who lived in various periods in history, whom Raphael brought together in a momentous magnificent space framed by classical architecture, standing, sitting, walking, arguing, studying, talking, working, or playing, in a system of elliptical movement that begins in the foreground and ends at the center of the background. Among these are Socrates in a deep argument, as well as Archimedes, Euclid, Pythagoras, Ptolemy, and Bramante. Raphael connects the painting, nature, architecture, and sculpture, and includes sculptures of Apollo god of light, archery, and music, holding a lyre, and of Athena the Greek goddess of wisdom presented in her Roman guise as Minerva.

To enhance the harmony and build bridges between the Renaissance present and the classical past, the artist gave the Greek sages the facial features of contemporary figures: Plato, for instance, received the face of Leonardo da Vinci, the artist and scientist who was Raphael's contemporary, while Heraclitus received that of Michelangelo, also a contemporary of Raphael's. The space, which begins at the center of the exact geometric tiles in the area close to the observer and, based on the best mathematical knowledge at the time, creates perfect depth and is a constitutive example of the Renaissance desire to use the laws of perspective to build a "correct appearance": This fresco reflects the illusory architecture that conveys trustworthiness, historical human diversity, and nature – the blue sky strewn with clouds.

The ceiling is constructed of four arcs, beginning from the large outer one that is closest to the observers. The arcs are a gesture to Roman builders. At the center of the painting, under the central arc, Raphael placed Plato and

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Aristotle, where the latter is looking at his teacher walking beside him, both deep in conversation, probably discussing the philosophies symbolized by the books they are holding. Plato, emblematic of the divine and the mysterious nature of the universe, is wearing a red cape and portrayed as a scholar with white hair and beard. He is barefoot and is standing on his toes, rising in the direction of his right hand that is pointing vertically to heaven – "the seat of all ideas" – as in his book on the absolute ideas, "Timaeus" (Dancy, 2004). This book, which is an essay on the universe, includes the theories of forms and deals with space, time, eternality; it was utilized by the mathematical sciences for a millennium. Aristotle, who symbolizes reality and the "here and now", wears a blue cape, and is taller and younger than Plato. He is a vital, handsome man, wearing sandals and fashionable clothes, the more realistic of the two. He is holding out his arm horizontally, parallel to the ground – towards corporeal reality, similar to the orientation of his book, "Nicomachean Ethics" (ibid.), which presents his empirical ideas that analyze the world we live in and explore the physicality of life and the realistic realm. As he sees it, the purpose of ethics is practical and not theoretical: not knowledge for the sake of knowledge.

Plato's "Theory of Ideas" is to a large degree a response to the sophists' argument of the impossibility of gaining familiarity with a world whose characteristic principle is constant change, which transforms all knowledge into hypothetical knowledge and that renders any knowledge as uncertain. In his "Theory of Ideas", Plato determines that material reality is not the only realm and that there is another domain, that of ideas. This domain of reality is much more realistic because it is not corporeal and therefore exists eternally, unchanged. Since the world of ideas is not corporeal it cannot be grasped by the senses and requires cognition and the mind. Finally, the ideas that Plato suggests in his "Theory" do not depend on human beings or on their physical existence. As a result, these ideas are objective and always correct. For instance, in the corporeal world it is possible to argue about what is beautiful, but in the world of ideas there is one constant and eternal theory of beauty. According to this theory, the world of ideas is real, whole, and good, and every object and quality in the corporeal world has a parallel in the world of ideas. Not all the ideas are necessarily realized in the corporeal world but everything in the latter is a derivative of perfect ideas" (ibid., p. 19).

According to philosopher Marcilio Ficino (1499-1433), the two directions indicated by the arms of Plato and Aristotle symbolize the supreme quality of Plato's contemplation of ideas, which points upwards, and the positivist spirit of his disciple, who points horizontally (Encyclopedia of Art Education) (http://www.visual-arts-cork.com/famous-paintings/school-of-athens.htm). Plato and Aristotle appear to complement each other. Raphael framed them in an arc and thus stressed their essential unity and granted them

a unique identity that distinguishes them from all the other philosophers present. By stressing the dramatic difference between the directions of their arms, Raphael depicted the transcendental and metaphysical nature of Plato's philosophy versus the corporeal-practical nature of Aristotle's lectures. Raphael's distinction between the two raises basic epistemological questions that touch upon the source, nature, methods, and limits of personal knowledge, such as, what is the source of our knowledge concerning reality? Is there a difference between knowledge originating from divine revelation and knowledge originating from empirical observation and the training of human logic?

The hands in the center of the work express a philosophical concept. Plato, whose book is, as stated, held vertically, is pointing upward because he posited that the changing world that we experience is a mere shadow of a higher, eternal and unchanging reality. This reality, which comes from another world, is supreme, and serves as the site of beauty, justice, and wisdom. In complete contrast to Plato, Aristotle, whose arm and book are parallel to the ground, believes that the only reality is that which we can see and experience through our senses. His book emphasizes relationships, justice, friendship, and governance in the human world, as well as the need to learn them (Figure 1).

Another example that demonstrates the possibility of learning historical facts in a creative and interesting way, but even more so an encounter with an interesting psychological story that teachers human empathy even in times of war, is the meeting of the two generals at the center of the monumental painting "The Surrender of Breda" or "The Lances" by Spanish artist Diego Velázquez (1599-1660), painted in 1634-1635 (Figure 2). Velázquez depicted the Marquis General Ambrogio Spinola of Genoa, who conquered the city of Breda in the Netherlands in 1625, in a campaign by the Flanders who were loyal to the King of Spain against the Dutch who had rebelled against the Habsburg Empire (Pepper, 2011).

Many link "The Surrender of Breda" to the Alexander Mosaic from Pompeii, and see the Surrender as a paraphrase on the mosaic, which depicts the Battle of Issus between Alexander the Great and the vanquished Darius III. For example, elements such as the spears in the background and the outstretched hand appear in both paintings. Velázquez's biographer, Carl Justi, noted that both artworks anthropomorphize a historical event by focusing on the emotions expressed by the main characters.

The conquest of the fortified city Breda was one of the impressive military successes of the Spanish in the later stages of the Thirty-Year War between Holland and Spain. Prior to the conquest, the Spanish government decided to make do with imposing an economic siege on Holland, as an alternative to employing military force. Nonetheless, General Spinola took his soldiers and attacked the city. Underlying the fighting was his personal rivalry

with Dutch General Justin of Nassau. Four years later (1629), Velázquez became acquainted with Spinola, who died in 1630, and even joined him for a trip to Italy. In 1637, Breda was occupied by the Dutch. Velázquez painted the story of the city's surrender several years after the battle, as a national gesture, but mainly in gratitude to Spinola whose fame had already become an event of the past as a result of a military failure in a war between Spain and France in Northern Italy. The painting salutes the generosity of Spinola, who became a friend of Velázquez, and glorifies his name and image. The general died several years before the event was painted, when Breda had already been occupied by the Dutch (Berzal. 2013) for 10 years. The painting also pays homage to King Philip IV, who is portrayed in the painting as a powerful man of might. This is the artist's contribution to Spain's national identity.

"The Surrender of Breda" (Wagner-Pacifici, 2005) is one of a twelve-painting series of the victories of Spanish King Philip IV, and it describes the formal ceremony held on June 8, 1625, in which the key to the city was delivered about three days after it surrendered. The artist disregarded the violent aspects of the battle and chose to focus on the outcome – the surrender of the Dutch. "At the center of the painting is the key that the Dutch general is endeavoring to hand over to Ambrogio Spinola, which lost its relevance but was essential from a symbolic point of view. Spinola's receiving of the key is the equivalent of a handshake" (ibid, p. 104).

Some doubt the entire incident, saying that this was a political agreement rather than a surrender in a military battle. That is, Breda did not surrender because it was attacked but rather, to prevent the city's destruction or plunder by the attacking forces, the city gave the forces monetary compensation for the loot that they did not take. Hence, the portrayal of Spanish chivalry is misplaced. The inaccuracy of the painting is evident, for example, in the fact that it depicted the military forces using spears rather than rifles, which were already in use at the time. In addition, Justin of Nassau died in battle and his successor was unable to withstand the siege placed by Spinola. He surrendered in May 1625 and it was he rather than Justin who presented the key to Spinola.

Despite his young age, the artist shows deep sensitivity and a mature psychological understanding in this painting. The surrender is characterized in the painting as a civilized act where the Spanish conqueror accepted the Dutch surrender while maintaining the honor of the latter and avoiding revenge. In the painting, Veláazquez illustrates the dramatic event by portraying the two generals, who meet in the center, with humane expressions. In the genre of war paintings, particularly those depicting military victories in the early Modern European period, the victorious conquering commander would appear on horseback while the vanquished would be kneeling submissively, humiliated by the conqueror. This painting radically deviates from this

convention, stressing the touching human aspect whereby "an elegant altruistic victory is the true definition of a great leader or commander, and not necessary the cruel ability to defeat a rival on the battlefield" (Berzal, 2013).

The two camps are depicted with many contrasts: On the right – the many Spaniards, victorious and erect, with their direct gaze, organized, strong, and proud, their upright lances against a powerful and protective background. The large, noble horse bursts in and the Spanish flag is proudly hoisted. The spears and lances, drawn tall above the horizon, create the impression that the number of Spanish soldiers was greater than in the painting and that the group is well organized and has considerable military capacity. On the left – the few defeated Dutch with their few short weapons stand as an unorganized rabble, their heads bowed, and the irritable horse as well as the orange flag convey confusion and defeat.

In the painting, the Dutch Justin of Nassau hands over the key to the city gates – both a tangible and symbolic gesture - to his Spanish rival. The surrender is manifested in his body language, expressed by Justin's hand, which conveys failure, concession, and recognition of defeat as it offers the key. This is supplemented by his placement on a lower height than his rival. The painting does not, however, show a victorious commander on a horse and a defeated commander on his knees (Figure 2). The hand of the proud Spanish general, the victorious conqueror who alighted from his horse, is outstretched in an expression of humane compassion and generosity. He gazes at his vanquished rival, and despite his superiority, he places his arm on the other's shoulder in understanding to prevent bowing Justin from kneeling and suffering humiliation. The body language of the Spanish general conveys consideration without patronization. The battle remains in the background as mere clouds of smoke and the focus of the empathic painting is on the compassion towards the surrendering rival rather than on military might and force in battle, defeat and victory trumpets: "Spinola dictated generous surrender conditions to the Dutch, instructing his soldiers to treat them with respect and politeness and to let them leave the place in military parade, unharassed and accompanied by drums" (Bailey, p. 102).

The city was not destroyed. The painting illustrates the fairness of man and of a victorious commander who forbids his subordinates to act in contempt towards the defeated and commands them to be considerate. Although only days before they had been killing each other, in the painting the two armies share an atmosphere of reconciliation, peace, and mutual respect.

The third example demonstrates issues of parental authority, parent-child relations, true relations, and parental respect, which are relevant in the postmodern world as well. Universal issues such as these have perturbed humanity from time immemorial, and have found expression in art, narrative fiction, playwriting, and poetry. The renown Dutch artist Rembrandt van Rijn

chose to focus on father-son relations and the inter-generational conflict in his painting "The Return of the Prodigal Son" (1661-1669, Figure 3), which demonstrates his deep spiritual and psychological understanding of the human story, through which the observer understands the concepts of love, relationship, guilt, motivation, pride, jealousy, remorse, and forgiveness. The painting focuses on the victory of love, good, and justice. The event is portrayed as an act of human wisdom and spiritual nobility, expressed by the emotional accuracy displayed by Rembrandt and through his chiaroscuro (light and shade), in his portrayal of the reconciliation between the remorseful son and his forgiving father.

This painting originates from a parable in the New Testament – the Gospel of Luke 15: There was a man who had two sons. The older son loyally remained with the father and worked with him in his fields, but the younger son left his father's house with his part of the estate, spent all his money on wild living, lost everything, and was forced to return to his father's house. When his father saw him, he was filled with compassion; he ran to his son, threw his arms around him and kissed him. The father instructed his servants to dress the son in precious clothes and to hold a feast and celebrate. When the older son heard this he complained to his father about the discrimination, as he who had always worked his father's fields loyally had never received any such appreciation as that awarded his brother, who had engaged in a life of sin. The father answered his eldest: For your brother it is right to celebrate and be glad because he had been dead and is alive again; he was lost and is now found.

In the painting the father accepts and embraces his son who repented after a process of self-examination. The conclusion of the story is that one who was exposed to a life of sin but repented is entitled to special treatment and is considered by God to be more worthy than the God-fearing believer who never deviated. In the center of the scene, with its contrasting light and shade, is the figure of the slightly bowed elderly father, his eyes closed, hugging his ragged wandering son who is kneeling before him. The father accepts his son with love and forgiveness, his hands expressing compassion, forgiveness, reconciliation, and healing, while the body language of the son, who rests his head on his father's chest, conveys his honest intentions, although his sheathed sword arouses doubts and queries. The son avoids looking into his father's eyes due to his sorrow, discomfort, embarrassment, shame, and remorse. Some contend that he does not wish to look at his father because he is not truly repentant and his return home was only occasioned by his sorry circumstances.

To the father's left stands the elder son, whose red garment resembles that of the father and whose illuminated face attests to his family affiliation, straight backed with folded arms – the rational right covering the emotional left to calm it. He looks on with obvious dissatisfaction and even objection as

his father gives in to his brother's ungratefulness. Aside from the father's illuminated face and his acceptance of the son, evident in his body language, the father's illuminated hands have a major role. His two arms embrace the son and defend him, placed as they are on his illuminated back. The hands, which tell the entire story, differ from each other: The left hand is strong and muscular with a masculine, coarse, authoritative expression, and it is the largest and widest of the two. Its fingers are spread and spaced and a certain pressure of the thumb on the son's back is evident despite the gentle contact. This is the hand that reminds the son of his sin as well as of the father's doubts, reservations, and suspicions regarding his son's intentions. The right hand is perceived as feminine; it is smooth, narrower, soft, subtle; its fingers have an elegant nature as they are tight and close to each other. This is the compassionate hand that forgives the son's sins and seeks to stroke, comfort, and pardon. Despite their different texture, the two hands together grant limitless compassion, unconditional love, and eternal forgiveness.

The son's two feet seem to parallel the two hands. The right foot in the rough soled shoe and the bare injured left foot also symbolize the two aspects of the father's attitude to his son's return: The first conveys fatherly toughness, fortifying the strength of the son who is planning his life, while the second conveys maternal softness that defends his vulnerable side (Nouwen, 1994). The dramatic, theatrical, deep, and psychologically charged moment when the father accepts his deviant son was produced by Rembrandt in the last year of his life. His personal experience, life tribulations, and nearing his own end probably played a part in his decision to choose this moving scene of reconciliation (Figure 3).

These three examples are a drop in the sea of knowledge, beauty, academic, and educational treasures contained by the humanities. After all these, is it even possible to imagine a world that is only practical, purposeful, profitable, and cold from a humane and spiritual respect? What about human thought, with its casuistry and subtleties? Are the generations of philosophy destined to be forgotten or erased? If we are dealing with fables, then philosophy has become the "queen" of the non-purposeful, and although several departments of philosophy in various universities have been closed, it appears that it is specifically philosophy that has begun to once again attract attention. This is an effect of the development of artificial intelligence, which requires deep and abstract thinking and differs from the needs of the natural sciences. Engaging in the humanities fosters a broad, critical, and creative ability of reasoning.

Conclusion

In Israel and around the world there is a decline in the status of the humanities, raising questions regarding the significance of their continued existence in a world strongly attracted to values of modernity and technology. In a world of instant responses and immediate gratification, humanist values seem irrelevant. The current study explores the contribution of the humanities in the present world and the need for the academic humanities studies in contemporary Israel.

The examples described above illustrate that the humanities are essential for a critical human society and therefore it is necessary to make sure that these programs continue to exist, but not in their current form. Changes should be made in the study tracks, making them more practical and attractive, such that they speak the "language of the current generation".

In addition, it is necessary to develop study programs that combine disciplines in the humanities with disciplines in the natural sciences, social sciences, and even medical studies. A combination between economics and languages, literature and psychology, art, and education, business management and arts, and more. Constructing interdisciplinary study programs may enhance the status and spare the very existence of these sciences. Developing creativity in teaching the humanities, creative and challenging teaching methods that will differ from monotonous studies that adhere to constant revision, might reinvigorate the humanities and increase the demand for these programs.

It is also important to continue to revitalize the humanities programs raising awareness of decision makers and placing the issue on the public agenda. A previous study ((**Davidovitch & Shiller, 2016**), found that the attitude of high school students predicts their future choice of study discipline. Exposing high school students to a humanities-related academic experience may increase motivations to study these disciplines.

This study proposes a shift in orientation from STEM to STEAM, by incorporated humanistic studies into the studies of science-based disciplines (in this acronym, "A" signifies the arts). This shift originates from a method that sees the disciplines of science, technology, engineering, and mathematics as the disciplines of the future and urges educational systems to embrace strategies for promoting these disciplines, yet at the same time, placing humanistic studies as an integral part of academic education. The integration of humanistic studies may have unique value for science-based education, particularly in the era of robotics and technology, and may be an encouraging trend for humanistic studies.). Such a shift may.

The article illustrates the significance of humanistic studies, particularly in an era that challenges the role of the academic campus that offers a variety of means for students' study. The main potential advantage of

physical universities and academic institutions, where students and teachers meet, talk, and hold discussions, is in the direct and unmediated relationship that provides a setting for discussions and discourse, which may be sufficient to justify the existence of the universities. This is particularly significant also in light of the concerning data that indicate a significant drop in registration to universities in Israel and around the world, with the current young generation gradually finding less benefits to universities for shaping their personal and professional future.

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Paintings

Figure 1

Raphael Sanzio, "The School of Athens", 1509-1511
Musei Vaticani, Stanze di Raffello

Figure 2

Diego Velazquez, "The Surrender of Breda" / "The Lances", 1634-1635
Museo del Prado, Madrid, Spain

Figure 3

Rembrandt van Rijn, "The Return of the Prodigal Son", 1661-1669
Hermitage Museum, Saint Petersburg, Russia

The Turning Point of Italian Scientific Pedagogy in The School of Maria Montessori and Giuseppina Pizzigoni

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Abstract

At the beginning of the 20th century, there were several women in Italy, who gave pedagogy a new impulse. Among those women, two educationalists, Maria Montessori and Giuseppina Pizzigoni introduced new visions of the school by designing strategies that overcame the barriers to education. The first, with the structuring of a method, arose in Rome and has now spread throughout the world. The second was the creation of the Pizzigoni Renewed School in Milan. The Ministry of Education validated their proposals as innovative methods for all schools. In 1911, Pizzigoni's experimental method received official approval and, since then, teacher training courses were promoted. The enlightened spirits of these two pioneers led the Italian school towards a new deal. The search for a method was at the basis of the scientific and experimental turning point; the method also had to taken advantage of medicine and psychology, both relevant in the preparation of all teachers. This article focuses attention on the value of the scientific research conducted by Pizzigoni, less known internationally. Pizzigoni thought, built and defined the school and the method as a unique pedagogical act. She structured the curriculum for kindergarten and decidedly wished to turn the direction of elementary studies upside down: from Idealism to Positivism, from passivity to activity, from rigidity to creativity. In her mind children must be removed from the unhealthy places of the Milan suburbs and, instead, must be educated in a school open to the world. Hence the pedagogical elaboration of the concept of objective teaching as the keyword of the experimental method.

Introduction

In 20th-century Italy, official pedagogy was male and official education was female: more males had the opportunity to become academics and the majority of the teachers in schools were women. In the 21st century, there has been an increase in the number of women in university chairs of General and Social Pedagogy and History of Pedagogy. The statistics of the Italian Ministry of Education, University and Research report 156 males and 222 females on December 31, 2019. The Italian school situation is still similar to the past, in the sense that the majority of teachers are represented by women. In the school system, there are 872,268 teachers; of these 159,741 were males and 712,527 females on August 31, 2018 (MIUR, 2019).

Female educators, mothers, teachers and female professors have represented the model of Italian culture until most recent years. Perhaps the most well-known case of the inversion of this trend is that of Montessori. She was a new woman for the times in which she lived, and made pedagogy the flag of female liberation, hereby justifying everything with science. On the other hand, university careers for women in pedagogy, particularly elementary school teachers, has always been difficult, since an educated woman could aspire at most to a permanent teaching position in school and most certainly not a university career. This is why we can say that, even until 1970, women encountered pedagogy being taught by men at the university and developed educational interventions in families and schools as educators and teachers. This situation changed after 1970 through student movements, mass university education, the liberalisation of study plans and the institution of new courses for degrees in Sociology and Psychology; all the above began competing against courses for degrees in Pedagogy that are notoriously more philosophical and thought of almost exclusively for persons wishing to teach. Thought of, that is, by men for women. In other words, the theory was a male thing and practice was a female thing.

The early 20th century in Italy was in itself an era dedicated to women as regards education more than pedagogy. Rosa (1866-1951) and Carolina (1870-1945) Agazzi, Giuseppina Pizzigoni (1870-1947) and Maria Boschetti Alberti (1884-1951) were teachers and educators; unlike Maria Montessori (1870-1952), they did not believe so much in having to render a service to science as to serve childhood and adolescents moving towards adulthood, thus, conceiving the best education for developing the child. The different training of these women was unquestionably important in the subsequent development of feminine pedagogy and education (Chistolini, 2009, pp. 38-40).

The strong, tenacious routes, constants in education and feminine pedagogy are: the emergence of interest in education; autonomous pedagogic thought; setting up a school; the sensation of the idea; and the fame and persistence of the innovation.

The vision of two enlightened women

The thought I would like to put forward considers two important examples of Montessori, which began with her experiment with "Casa dei bambini" (Home for Children) in Rome on 6 January 1907 and about which she wrote in *Il Metodo della pedagogia scientifica (The Method of scientific pedagogy)* in 1909. Above all, Montessori was a physician interested in pedagogy; she did not have a long, constant university career, but she was very well known as a speaker and for disseminating The Method and was known as "Doctor".

Pizzigoni was a teacher-educator, the "Lady", as she was called, who conceived and diffused a new school known as "La Rinnovata" (The Renewed School), still functioning in Milan today. Ms Pizzigoni conceived the fundamental guidelines for the school in 1907 and created an initial nucleus with them, as an experiment, in Ghisolfa in 1911. In the same year she illustrated *La scuola elementare rinnovata secondo il metodo sperimentale (The Renewed school according to the experimental method)* during a public Conference (Pizzigoni, (n. d., p. 37). In a short article in the "Pedagogic Journal" in 1909, Pizzigoni was able to show her interest in scientific and practical research (Pizzigoni, 1909, pp. 71-74).

In 1927, the Municipality of Milan promoted the development and expansion of the school according to the plan of the teacher; shortly thereafter, the Pizzigoni Work was set up (Opera Pizzigoni, 1934) as a non-profit organisation having the purpose of disseminating the method and programme, preparing teachers and assisting schools (Nicoli, 1947, pp. 141).

The principal reason of the literature I am proposing lies in the question *Pedagogia maschile – educazione femminile? (Male pedagogy – female education?)*, the title of the European seminar *Männliche Pädagogik – weibliche Erziehung?* carried out in Nuremburg on 21-23 January 2007, within the academic collaboration between Università "Roma Tre" and the University of Würzburg, Germany (Böhm, 2007, pp. 35-40).

However, the intellectual challenge is neither in the question nor the argument that may arise, but in the dash between the two terms. There is no alternative between pedagogy and education, just as there is no alternative between male and female. Both are necessary for properly educating a person. In particular, the theory of education, recognised in Christianity, and to which we refer, is based on the coherence of the person, who educates with the rationality of a man and fidelity of a woman. The fidelity of a man and rationality of a woman are not excluded, however, emphasis is placed on how the woman is in charge of the educational duties complemented with affectivity, sensitivity and love, much more than the man, who is totally intent on the rational process of his educational activity. Even if we do not like this casuistry, we cannot but confirm its relevance, not so much in terms of gender

as in terms of the human condition, suspended among intelligence, willingness and feelings. Both are examples and role models for their children and both are figures required for the complete, harmonious growth of a child.

Male and female exist as gender distinctions from biological, cultural and social points of view. A man who leaves his job to raise his children and allows the woman, alone, to work, and a woman who takes on the male role model for her career, hereby completely neglecting her family, confirm the distinction between male and female, to the exasperation of social behaviour.

There are two levels: that of common people and that of specialists in education. There are parents who raise their children according to principles of goodness and honesty, freedom and responsibility, which they draw from their own religious and social education. They have never read books on pedagogy, nor do they look for the best method or the best teacher when they send their children to school. For them, the family educates before the school and the school should do its job, by teaching the necessities of cultural and social life.

If, on the other hand, we look at specialists in education, we see that they are quite careful about indicating exactly what to do to educate children, young people and adults. Specialists deduce the principles of education from theories worked up by other people and rarely experience the dilemmas of educating first-hand. The separation between academic training and school remains an open question. I teach general pedagogy in the graduate's course of teachers' training, but I cannot talk to school teachers and have to do the *a posteriori* construction of *a priori* teaching. This means that the professor of general pedagogy is asked to insert general pedagogic reasoning - which gives scientific value to going to school - into didactic practice; the professor must make a deduction from an induction and present, in writing, the deduction prior to the induction.

The emergence of scientific perspective in the study of the child

Let us move on to our examples. Montessori was an extraordinary woman, a woman with a medical degree at a time when it was difficult for a woman to study, more difficult to attain a degree, and almost unthinkable to graduate in medicine, i.e. in a strictly male field of study. Furthermore, we do not get an image of Montessori as a woman, who was affectionate towards her own children, but rather of a doctor lecturing on the problem of education. Of course, the change from an educational approach, such as that of Pestalozzi, attentive to the role of the maternal figure, and an educational approach, such as that of Montessori, is quite evident. Pestalozzi did not eliminate the mother, but reinforced and enhanced her; in fact, he judged infanticide a social evil as a result of lack of education and opportunity for the instruction of women. Montessori was concerned with the affective role of women, being mainly

directed at discovering a child that has a mind like a sponge; she did not neglect the context that makes the mind absorbent, but entrusted the entire task of education to the biopsychic and social structure. Social conditions must support education, not hinder it.

A recent paper written by authors Valeria P. Babini and Luisa Lama (2003) on the education of Maria Montessori emphasises as much the internationally famous educationalist as the figure of the new woman, both militant and emancipated. The transition from medicine to pedagogy was derived from the professional experience made by Montessori between the end of the 19th century and the beginning of the 20th: a heavily militant experience, in which medicine, social policies and practical feminism were interwoven, ending with the experiment with "Casa dei bambini", which can be considered the goal reached at the end of her educational path as a youth.

Maria Montessori was trained in medicine and then pedagogy, but her university studies were not completed, since she did not finish her period of teaching at the University of Rome. Her university activities were terminated in 1919, after non-attendances and leaves of absence. Teaching did not seem to interest her any longer.

What can be emphasised about this new, emancipated woman is that she was international. She used language that was easily understood by everyone. She introduced medicine into society, hereby assailing the education issue. She used the trampoline of science to disseminate ideas of social renewal in favour of education.

The question is, if Montessori was an educationalist or, rather, a physician, who had understood the importance of education to avoid illness, degeneration and deviancy and foreshadow a new humanity, liberated in both tradition and character. Social militancy could merge with an academic career through liberal teaching in anthropology, for which she presented her candidacy in 1902. Between 1902 and 1904, she enrolled in philosophy and attended courses by Labriola, Credaro and Barzellotti. She also attended the free courses in experimental psychology by De Sanctis, anthropometry by Vram and zoological anthropology by Moschen, who would then be on the Committee for free teaching. Labriola, Barzellotti and Credaro, who taught theoretical philosophy, the history of philosophy and pedagogy at the University of Rome, received her and allowed her to illustrate her view of education. Labriola was interested in the development of experimental psychology, Barzellotti in scientific research and Credaro watched, with interest, the pedagogy of Herbart for a scientific founding of educational knowledge. This is why Montessori responded to the impulse of giving substance to positive pedagogy, independent of philosophy. Credaro invited Montessori to give a conference on the subject of pedagogic anthropology (1903); the lessons were then collected in the renowned volume, *Antropologia*

pedagogica, the fruit of four years of academic activity (Babini, Lama, 2003, p. 132). New pedagogy has a scientific basis; from biology one reaches the philosophical concept of becoming man.

From the method to the school

From a strictly academic point of view, Montessori cannot be considered an educationalist interested in being compared with the pedagogic culture of her time. Instead, she presented herself as an academic who wished to demonstrate how, to save humanity, one begins with the child and freedom of the human being and, more particularly and from direct experience, freedom for women.

Even without being a teacher of pedagogy at the University, Montessori used her culture and training to communicate to the world a new pedagogy that had the ideals of autonomy, independence, freedom and peace in common with the feminist movement. These ideals were better received in the United States, where, during those years, the progressive education of Parker and Dewey was being encountered (Tienken, 2017, pp. 124-125). The idea that philanthropic education should serve democracy and that there was hope in founding a new nation, by educating about childhood in the slums and the poor people in the most deprived areas, made one believe, even blindly, in the possible regeneration of the world. Montessori fostered this same humanitarian spirit and found fertile land, sowed by Dewey's ideas, in her conferences held in the United States.

Montessori felt the need to meet, as best she could, her mother's expectations, the wish to emerge as an original woman, the conviction that every social progress must come from science. Her mother was a well-read, liberal woman with a strong personality, who exercised such a great influence over her daughter that she convinced her to stay away from her son in order not to hinder her career. Her enrolment in medicine, research on the state of degradation of people with no education and affirmation as a free and independent person merged into the definition of the elements of the method. The citations by Montessori are pedagogic, but also medical, and, basically, her interest in children and the discovery of pedagogic anthropology were directly derived from her medical studies. At the moment in which she posed questions about the sense of life, and perhaps even about the method, she could not help but broach the pedagogic issue. She was not born into pedagogy, but reached it, hereby remaining a physician attentive to the structuring of knowledge into an organised form, hence, the method.

Pizzigoni is another story, despite being a contemporary of the other. At least three aspects are to be noted in the Pizzigoni experiment:
a) the critical issue of the background of the new school;
b) the comparative perspective in the renewal design;

d) the social resonance and historic-cultural continuity of pedagogy.

Between old and new school

As for the critical issue, this refers to the Pizzigoni's description of schools of her times: "It all fails, because schools only concern themselves with intelligence and not with feelings and volition" (Pizzigoni 1956, p. 3), and again "I made attempts to modernise my school as much as I could, but many judged me a rather odd person. But my spirit was not daunted and, by directly studying the school, I had a quick, brief vision of what elementary school should be. At that time (in 1907), almost obeying an inner voice advising me, all in one go I laid out the fundamental points, on which the new school should be founded; I saw what the new environment should be; I saw how children would be able to move in it; I saw all the light and beauty that would come to the children's minds and spirits from a life of experience, and formed an ideal out of it" (Pizzigoni 1956, p. 18). Pizzigoni talks about the dream and utopia of the new school, thought out in a new environment and with new teachers. "Knowledge of both individual and group child psychology; aptitude to live the life of the world of little people; a mind trained in the knowledge of nature and social and national life; knowledge of method criterion for carrying out various sciences, and great interest in childhood, valued in itself, in its continuous development and in the future it will reach: in my opinion, these are the indispensable elements of training a teacher for a truly renewed primary school" (Pizzigoni 1956, p. 11).

Objective teaching, the experimental method, the psycho-physical experience of the pupil, workshops, classes in the open air and forming the character of the child are the original aspects of the Renewed School. This School opposes verbalism, studying for exams more than for life, and collecting words rather than observable facts. The reference to Leonardo and Galileo, as well as to Aristide Gabelli and Italian positivism, is clear (Roberto Ardigò, Saverio De Dominicis). Just as apparent is the appeal to idealism in recognising the pedagogic idea that releases the "universally implemented" pedagogic concept and founds the renewal on the "principle of truth", composed of ideas and things, body and spirit. In the introduction to the Fundamental Guidelines and Programmes, Pizzigoni writes, "The thinking in this work is the mirror of life of the pedagogic idea within my spirit, and is meant to be the story of new educational development..." (Pizzigoni 1922, p. 3). The building is the school that renders concrete the ideas feeding the conscience. "For me, *new school* is what has as much *space* as has the world and as many *limits* as has life. And, since life is analysis and construction, *new school* is what *experiments* and *works*" (Pizzigoni 1956, p. 293).

She criticises Herbart, who makes do with a teacher able to describe her experiences, whereas a teacher should reawaken the experiences of the

pupils. She prefers Fröbel in *Education of man* that emphasises the importance of life in the open air, nature, travel and walks; one's own country is a "single all", and nature is a "continuous all" (Pizzigoni 1956, p. 26). As for Di Vincenzo Cuoco, Pizzigoni likes the specification of the aim of education that "more than presenting positive ideas, has to provide the mind with the aptitude to understand science" (Pizzigoni 1956, p. 27). In conclusion, after having reviewed these studies, Pizzigoni states, "How can I express the great joy of hearing the echo of my soul in these writings?" (G. Pizzigoni 1956, p. 28). And then, "This is how the concept of the duty of school is gradually completed and assumes the entirety of the great value in educating individuals and reforming society" (Pizzigoni 1956, p. 29).

And further, "Let us leave the world of words and enter the world of facts, that is my motto. I have conceived the school this way: facts teach; pupils experiment and learn; all teachers do is bring all the facts they find fundamentally educational into contact with the pupils, or the latter into contact with the former, and guide the minds of those who have to learn, so that the learning is orderly and becomes a source of life" (Pizzigoni 1929, pp. 10-11). The teacher and school prepare the conditions and ensure the possibilities of learning.

School renovation architecture

Having perceived the need to reform the school system, by renewing it from the inside, Pizzigoni studied the various experiences of the new school in the United States and Europe. She noticed how the U.S. presented itself as the land of true, modern, scientific pedagogy, against verbalism and in favour of personal and intellectual observation of the facts and phenomena. That school, totally aimed at solidity, seemed truly to reply to the needs of childhood. The teacher cited O. Buyse, the Hamptom school, the English open-air school (Letchwork in Garden City), Abbotsholme and workshops of practical pedagogy. Regarding Germany, she cited the Landerziehungsheime (1898) of Lietz, a 19th century experiment in education towards citizenship. France was represented by the École des Roches (Edmond Demolins 1852-1907), Switzerland by the Waldschulen, Sweden by its workshops, and, for Russia, Tolstoi's Jasnaja Poljana school.

Her studies preparing her to become a teacher and educational trips to Alsace, Germany, and Switzerland with faithful Maria Levi certainly showed an insatiable thirst for knowledge and the desire to compare her ideas and actions with the reform of the educational systems being created in European schools (Rossi Cassottana, 1988, 13). The coeducation of males and females and the opportunity of introducing sex education into schools (Rossi Cassottana, 1988, pp. 120-127) were among the innovations introduced by Pizzigoni. This was also probably the result of studies of experimental

psychology and pedagogy and the awareness of the ongoing scientific debate about the value of differences. Thus, she confirmed the right and duty for the complete education of women in an era in which the wind of feminism, originating from the U.S., was still blowing weakly over Italy.

The intuition of the experimental method

With regard to the position of pedagogy, Luigi Romanini, introducing the edition of *Linee fondamentali* (Fundamental Guidelines) of 1956, wrote that it was more befitting to talk about Pizzigoni in terms of school pedagogy, that is, she induced the ideal and practical renewal of the school from the reality of the school, rather than from an academic general pedagogy that was constructed upon a preconceived idea and deduced the reality of the previous idea. That is to say, the need for a reversal from practice to theory (school pedagogy) and not from theory to practice (general pedagogy). Romanini concluded "If we keep in mind that, only over the last few years, after wandering through doctrinism, the concept of 'pedagogy of the school' is being systematically and academically attained. In the end, this concept must not surpass, but resolve 'general pedagogy' (just as school, now open to everyone, solves the education of children in civilised countries in the present social situation). Giuseppina Pizzigoni 'maestra' appears to deserve most of the credit for having had vocational insight and having prepared the way" (Pizzigoni 1956, p. XI).

The assessments made by G. Lombardo Radice about the Renewed School were addressed to the didactic inventiveness of the teachers and the inventiveness of the "work and expression of the pupils" (Rossi Cassottana, 1988, p. 23). Minister Luigi Credaro approved the Pizzigoni experiment and considered it a reform model for elementary school. The Gentile reform and elementary school programmes worked up by Lombardo Radice were abundantly inspired by the Renewed School. Examples in Italy and abroad have shown the dissemination of the method and today there are still exchanges between schools and teachers (Colombo, Manicone, Zuccoli, 2017, pp. 212-224).

Conclusion

The pedagogical production of the two women was very important in the sense of refining the method of teaching. Undoubtedly, the medical training of Montessori and teacher's training of Pizzigoni were determining factors in the repercussions of their scholastic and social engagement (ASOP, 2019). Both pay attention to the scientific and experimental perspective of teaching and learning process looking for the theoretical formulation of principles and concepts. They never left behind the aim of fixing the practice of education starting from the direct observation of facts and experience. They

were convinced that theoretical concept must be validated in the field of practice, and the experience must renew the concepts. Their methods had also a severe impact on the social context. Education was in their minds the crucial point for the re-foundation of the society. Without a doubt, these women, who had an illuminated vision of education, contributed decisively to the transformation of the school committed in the liberation of the human being from the spiritual and material point of view. The revolutionary visions of Montessori and Pizzigoni gave the basis to the most modern shapes of the Italian school and also represent meaningful examples for schools of other countries (Böhm, 2000, 2015; Wisiak, 2016; Aktan-Acar, 2017).

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Mediating Role of School Attachment in the Relationship between Perceived Stress and School Satisfaction

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Abstract

The purpose of this study is to test the mediating role of school attachment in the relationship between perceived stress and school satisfaction in secondary school students. In the study, the Perceived Stress Scale in Children, Brief Adolescents' Subjective Well-Being in School Scale, and the School Attachment Scale for children and adolescents were applied to 538 students (258 girls and 280 boys) who were educated in different secondary schools in Turkey. The data were tested using Pearson moments multiplication correlation coefficient and structural equation model analysis. Research results have shown that school attachment plays a fully mediating role in the relationship between perceived stress and school satisfaction in secondary school students. In other words, stress's predictability of school satisfaction has been eliminated by the inclusion of the mediatory variable of school attachment into the structural equation model. This result has been discussed in light of theoretical and empirical data.

Keywords: Stress, School Attachment, School Satisfaction.

Introduction

Stress is the negative emotions and beliefs that a person experiences when they feel unable to cope with the wishes of the environment they are in (Aronson, Wilson, & Akert, 2012). Stress can also be caused by the threat and difficulty of physical and spiritual boundaries along with features such as extreme tension, inability to relax, and restlessness (Lovibond & Lovibond, 1995). Stress has become a term that is conceptually expressed in our everyday lives without question and has evolved into a concept that significantly affects human life. Stress threshold is the lowest level of arousal in which an individual perceives an internal or external stimulant as a threat that will result in a stress response. So while one condition or a situation may be stressful for one of the two people, it may not be stressful for the other. In other words, the

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resulting stress response is the result of an internal evaluation of how one perceives the source of stress (Uluğ, 2010). Stress is not just an adult-related concept (Wible, 2013). Children and adolescents can experience stress just like adults. This stress that children and adolescents experience can result from a variety of situations, such as achieving academic success in school, making and maintaining friends, and managing the expectations of parents and teachers (APA, 2009). However, it is emphasized that children and adolescents are more vulnerable to stress if they have one or more of the conditions such as problem in the family economy, nutrition and sleep problems, lack of adequate social support from parents and predisposition to conflict and crime in the family environment (Terzian, Moore, & Nguyen, 2010). In some sources, children receiving "do it" messages from their parents or teachers too often, being overfilled with homework and different programs, losing their sense of security, and being unable to spend qualified time with their parents have been cited as sources of stress (Korkut-Owen, 2015). A child's response to stress may not resemble an adult's. There may also be a difference in stress symptoms according to their age, such as the social, emotional, and biological development of children. Preschool children often return to infancy behaviors such as crying, having problems eating and sleeping, being aggressive or timid, or losing control of their bladder. Primary and secondary school-age children show stress through the loss of appetite, abdominal pains, abstinence from activities, sadness, depression, whining (Longo, 2000). According to O'Rourke and Worzbyt (1996), having problems with school attendance and focusing, having conflicts with teachers, having school-related concerns, acting aggressively in peer-to-peer relationships can in some cases be symptoms of stress. Individual experiences and assessments related to the school environment in which a significant proportion of these stress symptoms are experienced are associated with the overall quality of life of the students (Huebner & Gilman, 2006).

School is an important developmental environment where adolescents spend a large part of their time. Although it is stated that adolescents' school-related lives and their long-term psychological development are related (Huebner, 2010), there are only a few studies that examine school satisfaction. School satisfaction is the cognitive assessment of school life by the student's own standards in various areas related to school (learning environment, student-teacher relationship) (Baker, Dilly, Aupperlee, & Patil, 2003). School satisfaction is associated with many areas of compliance, such as student behavior at school, academic achievement, and meeting basic psychological needs at school (Huebner & Gilman, 2006). A study in America calculated scores on some of the sub-dimensions of students' life satisfaction (family, friends, environment, selfness, and school). When these scores were examined, it was found that the lowest score belonged to school satisfaction

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(Huebner et al., 2000). A similar study found that approximately 25% of students had school dissatisfaction and 10% of their experience was terrible. Given that school satisfaction levels drop as children enter puberty (Proctor, Linley, & Maltby, 2010; Suldo, Riley, & Shaffer, 2006), it has been concluded that secondary school level can be a significant source of school dissatisfaction for a large number of students. Among adolescents, it was concluded that student-teacher relationships are a stronger variable in predicting school satisfaction than family and friend relationships (DeSantis-King, Huebner, Suldo, & Valois, 2006). A study conducted in four countries in Europe found that the first two of the most important concepts affecting students' school satisfaction were the environmental justice/equality at school and the support of the teachers (Samdal, Nutbeam, Wold, & Kannas, 1998). When the literature was examined, it was seen that the concept of school satisfaction is in positive directional relationship with variables such as happiness (Schnettler et al., 2015), positive social behavior (Hilooğlu & Cenkseven-Önder, 2010), self-esteem (Karatzias, Power, Flemming, Lennan, & Swanson, 2002), academic success (Bacete, Perrin, Schneider, & Blanchard, 2014; Hampden, Thompson, & Galindo, 2017) and school climate (Varela et al., 2018).

Although school life is an important variable closely related to the life satisfaction of the students (Özdemir & Koruklu, 2013), it is also a process that includes many sources of stress, including anxiety of tests and failure and conflicts created by relationships with peers (Santrock, 2012). One of the most important variables identified in the literature is attachment, which protects the individual from the negative effects of such stress-inducing experiences in adolescence as in other periods of life. Developed by Bowlby (1969), the concept is defined as the intense emotional bond that the individual develops for people who make sense for himself/herself. According to Bowlby (1969, 1973), the infant develops schemes that include basic expectations and understanding of the accessibility of others in the event of need, in line with the quality of the relationships he/she has established with others as a result of his/her early life experiences. Later in life, this basic understanding determines the patterns of behavior that the individual will refer to in their relations with others. As such, children whose needs are met and a safe environment is created by the primary attachment figure can apply to the source of attachment for help and support in stressful situations and make healthy decisions in terms of development by taking risks when necessary, with the feeling of trust resulting from the healthy psycho-social bond established with their primary attachment figure. On the other hand, based on such positive interactions, children who are deprived of the cognitive and emotional scheme that others are trustworthy and that themselves are valuable, do not trust others and do not benefit from the psycho-social, physical support and comfort that can be

provided from the outside against the sources of stress. School attachment, a continuation of children's early attachment relationships, plays a very functional role in children's lives with its cognitive, emotional, and behavioral dimensions (Fredricks, Blumenfeld, & Paris, 2004). In the process of development, it is a very strong psychological need for adolescents to experience different attachment relationships and gain a sense of belonging (Osterman, 2000). Schools are considered to be an important socializing environment that ensures such relationships of attachment (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004). Attachment to teachers and other adults in this respect is a very important developmental process that continues to have an effect in later life as a continuation of initial attachment relationships (Bergin & Bergin, 2009). In this respect, the concept of school attachment as a form of attachment is related to functions such as a sense of belonging, emotional attachment, and satisfaction from school life (Ueno, 2009). Studies show that students with low levels of school attachment behave more aggressively towards their peers and experience school rage. General life satisfaction, psychological stability, and positive social behavior increase in students with high levels of school attachment (Ashley, Ennis, & Owusu-Ansah, 2012; Savi-Çakar & Karataş, 2017).

The present study

According to the results of the literature review, when the stress levels increase, secondary school students, stay away from activities in the school environment, cannot adapt to the school, and feel anxiety and sadness about the school (Longo, 2000). This can significantly lower students' school satisfaction. In addition, the students who suffer from stress have difficulty adapting to the environment as a result of the threat of physical and spiritual boundaries. When the literature is examined, one of the concepts that can eliminate the effect of stress on reducing school satisfaction is thought to be school attachment. As a matter of fact, it is stated that the students who have school attachment have decreased mental distress and increased feelings of school safety, positive emotions and school satisfaction (Baker et al., 2003; Katja, Paivi, Marja-Terttu, & Pakka, 2002; Tian, Liu, Huang, & Huebner, 2013). For these reasons, school attachment is thought to reduce (partial mediation) or eliminate (full mediation) the possible negative relationship between stress and school satisfaction. Although there are several studies in the literature on the concepts of stress, school satisfaction, and school attachment, there is no study in which these three variables are examined simultaneously with the structural equation model within the framework of available sources. In this study, it is particularly important to examine whether school attachment plays a mediating role in the relationship between stress and school satisfaction. In light of all these assessments, this study sought answers

to the research question, which was determined as "Is there a mediating role of school attachment in the relationship between stress and school satisfaction in secondary school students?"

Method
Participants

The participants of the study consist of 538 students who continue their education in 5 different secondary schools in Denizli/Turkey city center. After obtaining the required permits from school administrators and teachers, the researcher provided data collection tools to students who voluntarily agreed to participate in the study. During this period, analyses were carried out on 538 scales due to some of the 550 scales presented by the researcher to the students being severely incomplete. There is no ethnic difference between the participants. 280 of the students were male (52.0%) and 258 (48.0%) were female. In terms of their age, 135 (25.1%) of the children are 9 years old, 139 (25.8%) are 10 years old, 111 (20.6%) are 11 years old, 59 (11.0%) are 12 years old, 62 (11.5%) are 13 years old and 32 (5.9%) are 14 years old. The average age of children is 10.76 and the standard deviation of their age is 1.52.

Data Collection Tools
School Attachment Scale

The School Attachment Scale, developed by Hill (2006) and adapted to the Turkish language by Savi (2011), was used to determine the students' school attachment. The adaptation study was carried out on 708 students who were studying in 3-4-5-6-7-8th grades of primary schools and whose ages ranged between 9-14. The scale consists of 13 items. There are three sub-dimensions on the scale: (Example item: I am proud to be at this school), teacher attachment (Example item: I like my teachers), and friend attachment (Example item: I am proud with my friends). The scale is a 5-point Likert-type scale. The individual marks one of the options of 1 (definitely yes), 2 (yes), 3 (maybe), 4 (no), and 5 (definitely no) to indicate how suitable the statement he/she read is for him/her. The scores that can be obtained from the scale vary between 13 and 65 points. The high score obtained from the scale indicates that school attachment is high. Exploratory factor analysis was performed to determine the validity of the scale, and it was reported that scale materials were collected under three factors that accounted for 59% of the total variance. In another study, Savi-Çakar and Karataş (2017) used confirmatory factor analysis was performed to determine the validity of the School Attachment Scale. Confirmatory factor analysis was performed for the scale and fit indices were calculated as $\chi2/df = 2.98$, $p < .001$, RMSEA = .08, SRMR = .06, GFI = .90, AGFI = .85, NFI = .92, CFI = .94. The internal consistency coefficient of Cronbach Alpha calculated for all items of the scale was 0.84 and the test-

retest reliability coefficient was 0.85. The internal consistency coefficients obtained for the sub-dimensions of the scale were found 0.82 for the sub-dimension of school attachment, 0.74 for the sub-dimension of teacher attachment and 0.71 for the sub-dimension of friend attachment (Savi, 2011).

Brief Adolescents' Subjective Well-Being in School Scale (BASWBSS)

Brief Adolescents' Subjective well-Being in School Scale, developed by Tian, Wang and Huebner (2015) and adapted to Turkish by Özdemir and Sağkal (2016), was used to determine students' school satisfaction. The adaptation study was carried out on 336 students who were between 10-14 years of age in the 5-6-7 and 8th grades of the schools. The scale consists of two sub-dimensions: school satisfaction and school effect. In this study, school satisfaction sub-dimension was used. The School Satisfaction dimension consists of 8 items related to success, school management, teacher-student relations, peer relations, teaching and academic learning (Example item: I perform well in my school). The scale is a 6-point Likert-type scale. The individual can give answers ranging from 1 (strongly disagree) to 6 (strongly agree) to indicate how appropriate the statement he/she read is for him/her. The scores that can be obtained from the scale vary between 8 and 48 points. The high score obtained from the scale indicates that school satisfaction is high. Confirmatory factor analysis was performed to determine the validity of the scale and the compliance indexes were calculated as $\chi2/df = 2.90$, $p < .001$, RMSEA = .08, SRMR = .05, GFI = .94, AGFI = .90, NFI = .96, CFI = .98. Cronbach Alpha internal consistency coefficient calculated for all items of the scale was found to be .84 and .93 for school satisfaction sub-dimension (Özdemir & Sağkal, 2016).

Perceived Stress Scale in Children

Perceived Stress Scale in Children, developed by Snoeren and Hoefnagels (2014), adapted to Turkish by Oral and Ersan (2017), was used to determine the perceived stresses of students. The adaptation study was conducted with 380 students ranging in age from 8 to 11. The scale is one-dimensional and consists of 9 items. The scale includes items such as "in the last week, find it hard to calm down" and "feel like there was a lot to do and too little time". The scale is a 4-point Likert-type scale. The individual points to one of the options 1 (almost never), 2 (sometimes), 3 (often), and 4 (very often) to indicate how appropriate the statement he/she read is for him/her. The scores that can be obtained from the scale vary between 9 and 36 points. The high score obtained from the scale indicates that the perceived stress is high. Confirmatory factor analysis was performed within the scope of the validity studies of the scale and compliance indexes were calculated as $\chi2/df$ = 1.58, p> .001, RMSEA = .04, SRMR = .03, GFI = 98, AGFI = .96, CFI =

.97. The Cronbach Alpha reliability coefficient of the scale was found to be .76 and the test-retest reliability coefficient was found to be.71 (Oral & Ersan, 2017).

Data Analysis

Before the analysis of the data, the coefficients of kurtosis and skewness were examined to determine whether they exhibited a normal distribution (see table 1). It has been recognized that the values of kurtosis and skewness for dependent, independent, and mediator variables are between -2 and +2 and exhibits a normal distribution (Morgan, Leech, Gloeckner, & Barrett, 2004; Nielsen, et al., 2017). Then the descriptive statistics of the variables and the relations between the variables were presented. Subsequently, two-stage structural equation modeling was carried out in line with Kline's (2011) recommendations. This modeling is considered to be one of the advanced quantitative techniques for establishing a statistical cause-and-effect link in a theoretically supported network of relationships (Hoyle, 2012). In the two-stage structural equation modeling, the measurement model is tested first. It is expected to be tested and confirmed whether the observed variables that will form latent variables in the measurement model contribute significantly to the latent variables and whether the relationships between the latent variables and the direction of each other are meaningful are tested and expected to be verified (Kline, 2011). In the second phase of structural equation modeling, there is a test of the structural model created based on the theoretical infrastructure. In the structural model, pathways are established to reveal the statistical cause-effect relationship and the significance of the pathways and the goodness-of-fit indices of the model are examined. In order to determine the goodness of fit indexes in the analysis for structural equation modeling in the study, chi-square to the degree of freedom ratio ($\chi2$/df), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square (SRMR), Goodness of Fit Index (GFI), Adjustment Goodness of Fit Index (AGFI) Incremental Fit Index (IFI) ve Comparative Fit Index (CFI) were taken into consideration (Brown, 2006; Meydan & Şeşen, 2015). For structural equation modeling, the calculated ratio of $\chi2$/df being lower than 3 indicates that the model has a good fit and lower than 5 indicates that it has an acceptable fit (Kline, 2011). Similarly, GFI, AGFI, IFI, and CFI values being higher than .90 and RMSEA and SRMR values being less than .08 are considered as an indicator of a compatible data model (Meydan & Şeşen, 2015; Schumacker & Lomax, 2010). The goodness of fit indices presented above was taken into consideration in the present study. In addition, in the case of measurement of latent variables with observed variables in structural equation modeling, a commonly used item, the parceling technique was used in order to reduce the number of variables observed in the model, to achieve a

more normal distribution and increase reliability (Bandalos, 2008; Nasser-Abu Alhija & Wisenbaker, 2006). Three sub-dimensions have been created for perceived stress and school satisfaction by item parceling technique. Friends, teachers, and school sub-dimensions on the school attachment scale are included in the analysis in their current state. The correlation values between the latent variables of the study are presented in Table 1 and the correlation values of the observed variables are presented in Table 2. The study also carried out bootstrapping with structural equation modeling to provide additional evidence of whether the mediation was meaningful (Preacher & Hayes, 2008). This process increases the number of samples and tests the significance of the direct and indirect effects in the established model and its use is increasing in mediation models day by day (MacKinnon, 2008). IBM SPSS and AMOS Graphics programs were used to carry out the analysis in this study.

Results

      Correlations between latent and observed variables are presented in this section of the study. It was then tested with the structural equality model whether there was a mediating role of school attachment in the relationship between perceived stress and school satisfaction.

Descriptive statistics

      In this study, some correlation values have negligible or low relationships, while others have substantial or high relationships. IBM SPSS and AMOS Graphics programs interpret whether the correlation values are significant or not significant according to the levels of 0.01 and 0.05 (Arbuckle, 2007). Given the inter-variable correlations presented in Table 1, it is observed that perceived stress has a negative and low relationship with school satisfaction *(r= -.27, p<.01)* and school attachment *(r=-.28, p<.01)*. In addition, this study found a positive and high relationship between school satisfaction and school attachment *(r = .63, p < .01).*

Table 1. Correlation Values Between Latent Variables of the Research

Variables	1	2	3	$\overline{X}$	SD	Skew.	Kurt.	α
1. Perceived Stress	1			16.24	5.12	.84	.21	.80
2. School Satisfaction	-.27**	1		40.35	7.44	-1.11	.79	.88
3. School Attachment	-.28**	.63**	1	57.97	6.91	-1.19	1.26	.88

**p < .01

Given the analysis results in Table 2, it has been found negligible, low, substantial or high relationships for observed variables. **Table 2.** Correlation Values among the Observed Variables of the Study

Variables	1	2	3	4	5	6	7	8	9
1. PSP1	1								
2. PSP2	.56**	1							
3. PSP3	.54**	.61**	1						
4. SSP1	-.20**	-.24**	-.25**	1					
5. SSP2	-.28**	-.27**	-.29**	.70**	1				
6. SSP3	-.16**	-.21**	-.19**	.71**	.73**	1			
7. SASD	-.25**	-.28**	-.26**	.50**	.58**	.53**	1		
8. FASD	-.11*	-.15**	-.14**	.31**	.34**	.27**	.52**	1	
9. TASD	-.22**	-.20**	-.23**	.52**	.51**	.55**	.66**	.37**	1

**p < .01   PSP1-2-3(Perceived Stress Parcel 1-2-3) SSP 1-2-3 (School Satisfaction Parcel 1-2-3) SASD (School Attachment Sub-Dimension), FASD (Friend Attachment Sub-Dimension) TASD (Teacher Attachment Sub-Dimension)

Measurement Model

The measurement model was tested in the first phase of structural equation modeling. There are three latent variables and 9 observed variables that make up these latent variables in the measurement model. As a result of the measuring model, it was understood that all the path coefficients were significant and the factor loads ranged from .55 to .88. According to the goodness of fit indices ($\chi2/\mathrm{df}$= 2.51, p < .001, RMSEA = .05, SRMR = .03, GFI = .98, AGFI = .95, IFI = .98, CFI = .98), the measurement model seems to fit well. After verification of the measurement model, the structural model has been tested.

Test of the Structural Model

Baron and Kenny (1986) indicate that in order to test the mediator variable with the structural equation model, there must be a significant correlation between dependent (school satisfaction), independent (stress), and mediator (school attachment) variables. As shown in Table 1, there are meaningful relationships between stress, school satisfaction, and school attachment. In addition, when the findings in Table 2 are examined, it is observed that the observed variables formed by the parceling method have different levels of relationships among themselves, and the situation provides the basic conditions put forward by Baron and Kenny (1986). In summary, given the findings in Table 1 and Table 2, it can be said that the results reached are in line with the structural equation analysis. The structural equation model combines two different models, namely the measurement model, and the structural model. According to the two-stage approach, relations between variables must first be verified with the measurement model and then transition to the structural model (Şimşek, 2007). In this study, after the verification of the measurement model, the structural model was tested. In mediation analysis, the gender variable is incorporated into the structural model as the control variable. The results were found to have acceptable fit indices according to the structural equation model analysis, ($\chi2/\mathrm{df}$ = 2.25, p <.001, RMSEA = .05, SRMR = .03, GFI = .98, AGFI = .96, IFI = .98, CFI = .98). The structural model for the analysis is presented in Figure 1. As a result of the analysis, stress was found to negatively predict the school attachment (β = -.36, p <.01) while school attachment positively predicts school satisfaction (β = .72, p <.01). With the inclusion of school attachment as an intermediary variable in the model, the power of stress to predict school satisfaction (β = -.06, p >.01) decreased. In other words, stress predicts school satisfaction at a significant level (β = -.26, p <.01) over school attachment. It was seen that the gender included in the analysis as a control variable did not have a significant effect on the mediator (β = .05, p >.05) and dependent (β = -.03, p >.05) variable.

Bootstrapping Process

The significance of the direct and indirect effects of the variables in the model was examined by Bootstrap analysis and 2000 number, which was recommended in the literature (Arbuckle, 2007), was entered for the number of repeated samples. The coefficients of direct and indirect pathways resulting from Bootstrap analysis and the average effects of 95% confidence intervals for these coefficients are presented in Table 3. Accordingly, it can be stated that all direct pathway coefficients are significant. It is observed that the indirect pathway coefficient that allows the mediator role to be understood is also significant *(β = -.26, p <.01).* In light of these results, it can be said that the relationship between perceived stress and school satisfaction in secondary school students has a full mediating role.

Table 3. Bootstrapping Process for the Fully Mediated Model

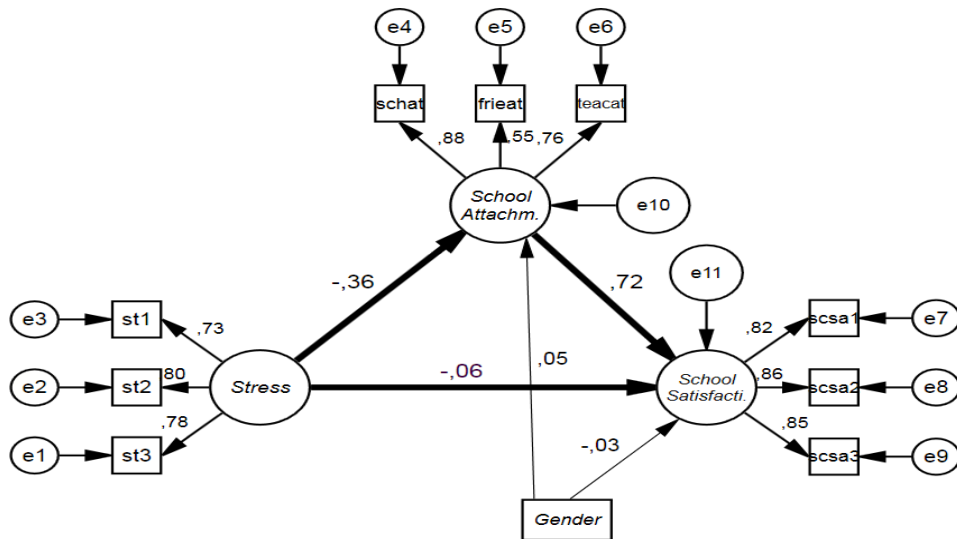| Model Pathways		%95 CI		
Direct Effect		Coefficient	Lower	Upper
Stress→School Satisfaction		-.32**	-.41	-.22
Stress→School Attachment		-.36**	-.46	-.26
School Satisfaction	Attachment→School	.72**	.62	.82
Indirect Effect				
Stress→School Satisfaction	Attachment→School	-.26**	-.35	-.18

Figure 1. The Full Mediating Role of School Attachment between Perceived Stress and School Satisfaction

Discussion

In this study, whether or not school attachment has a mediating role in the relationship between secondary school students' stress and school satisfaction was examined by the structural equation model. Accordingly, it has been revealed that school attachment has a full mediating role between stress and school satisfaction. In other words, the high predictability of stress to school satisfaction has disappeared when the school attachment, which is the mediator variable, is included in the structural equation model. This result is discussed below in the light of theoretical and empirical data. Step-by-step evaluation of the model covered in the research is thought to be important. From here, in the order given in Table 3, first direct effects and then indirect effects will be discussed.

Although, the concept of stress which is defined as the negative emotions and beliefs that a person experiences when they feel unable to cope with the wishes of the environment they are in (Aronson et al., 2012), was expected to negatively predict the school satisfaction, which is defined as thinking that the positive and psychological needs of the self are met when evaluating the school environment, it is still an important finding. Thus, according to Longo (2000), middle school students stay away from activities and feel unhappiness when they perceive stress in the environment. According to O'rourke and Worzbyt (1996), students who experience stress have problems focusing on school and have concerns about school. In such a situation, it can be estimated that the student's school satisfaction will

decrease. In addition, according to Fryxell (2000), students are in situations that can create anxiety in many areas at school. The concept of stress is positively correlated with anxiety, which in the literature is considered a variable that negatively affects an individual's psychological health (Lovibond & Lovibond, 1995). Stress that occurs as a result of excessive tension, inability to relax due to overstimulation, threatening, and enforcing physical and spiritual boundaries, makes it difficult for the individual to adapt to the environment they are in (Baltaş & Baltaş, 2012). Based on this, it can be said that stress is a variable that reduces the individual's school satisfaction. In light of this information, Lardier, Lee, Rodas, Reid, and Reid's (2020) study found a negative correlation between stress and school satisfaction among college students. In addition, Karatzias et al.'s (2002) study that was consisted of 425 secondary school students showed a negative correlation between students' stress levels and school satisfaction. In their study with adolescents, Huebner and McCullough (2000) stated that stress-inducing negative events reduced school satisfaction. When the studies mentioned in the literature are evaluated in a holistic way, it is thought that the finding that stress predicts school satisfaction negatively in this study is consistent and plausible.

School attachment which is another variable that stress predicts negatively is expressed as the students' feeling of belonging to their school, being proud of their school, and feeling safe in their school (Maddox & Prinz, 2003). In order for the individual to have an attachment to the school, he/she must communicate with school-related elements (teachers, friends, etc.), make and receive signals, trust the school, and strive to explore his/her environment freely by meeting his/her needs (Howes, 1999). It is thought that it is difficult for a student with high levels of stress to go through such a life. Because stress is a condition that makes it difficult for the individual to adapt to their environment as a result of the threat of physical and spiritual boundaries (Baltaş & Baltaş, 2012). It does not seem possible for a student who feels threatened to have confidence in the school and meet their psychological needs in the school. Also, according to Bowlby (1973), children are able to cope with stressful situations and make healthy decisions in terms of their own development when they think they are in an environment where they can have confidence. In contrast to this situation, however, they might have difficulty coping with stressful situations and has attachment problems. In addition, some children are more likely to experience stress at school due to problems in the family economy and apathy of parents. Given that children's reactions to stress and coping levels are different compared to adults (Terzian et al., 2010), children experiencing stress in a school environment where they do not feel safe and have difficulty coping with it can negatively affect school attachment. As such, according to the study of Ihtiyaroğlu and Ateş (2018) with students in adolescence, the level of school attachment decreases as the

level of stress coping decreases. In addition, McGraw, Moore, Fuller and Bates (2008)'s study with secondary school students found that students with high levels of stress had low levels of attachment to friends and school. Another similar study shows an increase in school attachment and social interaction levels as stress levels decrease (Bergin & Bergin, 2009). The results of the theoretical and empirical research were consistent with the finding that stress arising in the scope of this study negatively predicts school attachment.

The concept of school attachment an important concept that reinforces the individual's sense of belonging to the school and ensures that they are satisfied with school life (Ueno, 2009). While students with low levels of school attachment show school anger, students with high levels of school attachment show increased positive social behavior and psychological resilience (Ashley et al., 2012; Savi-Çakar & Karataş, 2017). With school attachment, it is reported that students' loneliness and psychological distress decreases, while their positive emotions and school satisfaction increase (Baker et al., 2003; Katja et al., 2002; Tian et al., 2013). Another of the variables that can increase the school satisfaction of the student is that their friends and teachers at school offering social support to the student (Jiang, Huebner & Siddall, 2013). From this point of view, as a result of this research, the fact that friends and teacher attachment, which is the sub-dimension of school attachment, increases school satisfaction, is consistent with the literature. In addition, it is expected that the students will be more willing to perform their duties in the school due to the school satisfaction that will occur with attachment to the school, and this will also strengthen their academic competence by increasing their motivation (Samdal et al., 1998). Proper and adequate satisfaction of students' need for attachment is considered extremely important in terms of physical, emotional, behavioral, and mental well-being (Osterman, 2000). School attachment also positively affects attitudes, perceptions, interests, and emotions towards the school and increases participation in academic activities within the school (Bouffard & Couture, 2003; DeBacker & Nelson, 2000). A study conducted with secondary school students in Turkey found that as the level of school attachment increases, school satisfaction also increases (Sağam & Kaplancı, 2018). Accordingly, it can be said that the scientific research and explanations made in the past are in harmony with the result of the present study which suggests that school attachment positively predicts school satisfaction.

The latest finding in the model identified in this research and the basis of the study is that the school attachment has a full mediating role in the relationship between stress and school satisfaction n the secondary school students. When the literature is examined, it is stated that different variables can affect students' school satisfaction. Some of these variables are school

climate, student's perception that they feel safe at school, and that they can get social support from their teachers and friends (Papsova, Valihorova & Nabelkova, 2012; Siddall, Huebner & Jiang, 2013). Based on this explanation, the network of relationships between stress, school attachment, and school satisfaction that emerged within the scope of the research was examined in more detail. When stress levels rise, students stay away from activities in the school environment and are unable to adapt to school, and have school-related concerns. This significantly reduces the school satisfaction of the students. In addition, students who experience stress have difficulty adapting to their environment as a result of threatening and straining physical and mental limits (Baltaş & Baltaş, 2012). In this case, it can be said that stress in students is a variable that reduces school satisfaction. One of the concepts that can eliminate the effect of stress on reducing school satisfaction is school attachment which is defined as having a sense of belonging to the school, feeling proud of the school, and feeling confident in the school (Maddox & Prinz, 2003). As a matter of fact, with school attachment, it is reported that students' loneliness and psychological distress decreases, while their positive emotions and school satisfaction increase. Current study results go beyond these direct effects between variables, revealing that school attachment has a full mediatory role between stress and school satisfaction. As secondary school students' levels of school attachment increase, the level of stress that negatively affects school satisfaction decreases. In light of all this information, it is thought that the model laid out in the scope of this research is acceptable.

Limitations, Suggestions and Conclusion

There are some limitations inherent in the current study examining the mediating role of school attachment between stress and school satisfaction of secondary school students. Defining these limitations can help provide recommendations for future research. First, this study used self-reported measurement tools to collect research data. It should be taken into account that the variables in the research can only be explained within the scope of the measurement tools, since the data was obtained through stuednts' self-reporting. To avoid this limitation in future research, different methods and techniques can be used in addition to self-reporting measurement tools, such as observations, interviews, and peer evaluation. The second limitation in the study is methodically due to the inability to establish the cause-and-effect bond fully. Although structural equation modeling is one of the most powerful techniques that can be used in quantitative methods, longitudinal and experimental studies are needed to better explain the cause-and-effect bond. The third limitation of the study is that the sample group consists only of secondary school students studying in Turkey. Therefore, new research needs

to be conducted with a larger sample group from different countries in order to increase the generality of the results.

Despite the limitations expressed, the importance of the model established by this study should not be minimized. Thus, it can be said that this model is meaningful and valid model. The findings from this study can be used as a source for preventive psychological counseling and guidance programs. School counselors can develop appropriate activities and psycho-education programs in schools to strengthen secondary school students' school attachment and help them develop more positive feelings and thoughts towards school. In addition, individual and group studies aimed at reducing stress levels and coping with stress conducted by school psychological counselors can contribute to increasing school satisfaction. n addition to these, school psychological counselors can provide information about the importance of these concepts to administrators and other teachers who work in their schools. Because this can be beneficial in increasing students' school attachment and school satisfaction levels.

In conclusion, this study is the first to empirically present a structural model for secondary school students studying in Turkey, in which the relationship between stress and school satisfaction is fully mediated by the concept of school attachment. Considering that there are approximately five million secondary school students studying in Turkey, this study will make an important contribution to the literature.

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