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TABLE OF CONTENTS

Volume 11, Number 2
June 2015

Articles

- 6 Mobbing and Stress**
Author: *Erkan Yaman*
- 14 A Critical Look at the EFL Education and the Challenges Faced by Iranian Teachers in the Educational System**
Authors: *Parvin Safari & Nasser Rashidi*
- 29 Creating Meaningful Experiences for Pre-Service Teachers: Thoughts and Experiences on an Elective Course**
Author: *Duygu Sönmez*
- 39 Learning Styles and Problem Solving Skills of Turkish Prospective Teachers**
Author: *Ilke Evin Gencel*
- 57 Prospective Mathematics Teachers' Opinions about Mathematical Modeling Method and Applicability of This Method**
Author: *Levent Akgun*
- 76 Assessing E-Learning Tools in an Academic Environment: A Study of Availability and Use among Undergraduate Students in a Nigerian University**
Authors: *Goodluck Ifijeh, Ifeakachuku Osinulu, Ugwunwa Esse, Egbe Adewole-Odeshi & Michael Fagbohun*
- 88 Reasons of Teachers for Applying for Graduate Programs and their Expectations from Programs**
Author: *Berrin Burgaz & Seval Kocak*

Mobbing and Stress

Erkan Yaman*
Sakarya University

Abstract

Mobbing is an important construct which has impact on the numerous psychological variables. The purpose of this study is to examine the relationships between mobbing and stress. Participants were 436 teachers (206 (55%) were female, 230 (45%) were male) from Sakarya, Turkey. Their ages ranged from 26 to 55 years and the mean age of the participants was 35.2 years. In this study, the Mobbing Scale and the Stress subscale of the Depression Anxiety Stress Scale were used. The relationships between mobbing and stress were examined using correlation analysis and the hypothesis model was tested through structural equation modeling. Data were analyzed by LISREL 8.54 and SPSS 11.5. In correlation analysis, humiliation, discrimination, sexual harassment, communication barriers sub-dimensions of mobbing were found positively associated with stress. Hypothesized model was examined via structural equation modeling (SEM). And also accounted for 11% of the stress variance. According to path analysis results, stress was predicted positively by humiliation, discrimination, sexual harassment, and communication barriers. This research shows that mobbing has a direct impact on the stress.

Keywords: Stress, mobbing, structural equation modeling

* Erkan Yaman is an associate professor at the Department of Educational Science in Sakarya University, Turkey.

Correspondence: eyaman@sakarya.edu.tr

Introduction

As a concept Mobbing is defined as emotional assaults (Yaman, 2007, 2009a, 2010) subjected to an employee working in an organization, and implemented for different reasons, by the superior(s)/colleague(s) or subordinate(s). After all, in the studies of mobbing, it is seen that although the contents are the same, different concepts are used as interchangeable. For example the terms “bullying/victimization, emotional abuse, maltreatment/mistreatment, harassment and abuse” are some of the concepts often used to define mobbing (Leymann, 2006).

Since the day it was came out, the concept of “mobbing” has attracted great attention in both theoretical and practical context, and has been the subject of quite many studies. As well as general extent studies have focused on “mobbing at work” (Casimir, 2002; Lewis & Orford, 2005; Mikkelsen, 2004; Zapf & Einarsen, 2001; Kersten, Kozak, Wendeler, Paderow, Nübling & Nienhaus, 2014; Yaman 2007, 2008), the research have also been intensified in some other fields like the psychological effects of mobbing at work (Leymann & Gustaffson, 1996; Mikkelsen & Einarsen, 2002; DiMartino, 2003; Lynch & O’Moore, 2004), causes of mobbing (Einarsen, Raknes & Matthiesen, 1994; Einarsen, 1999; Eriksen & Einarsen, 2004; Hoel, 2004; Sheehan, Barker & Rayner, 1999; Zapf, 1999) and relationship between mobbing and organization climate (Vartia, 1996; Vickers, 2006). The findings from mentioned researches showed that women academicians are more often exposed to mobbing (Björkqvist, Österman, & Hjelt-Bäck, 1994) and that who put mobbing into practice are mostly in upper stages than the victims (Yaman, 2007, 2009a). The physical effects of mobbing on victims disperse in wide fan such as: chronic insomnia, chronic tiredness syndrome, loosing/gaining too much weight, anorexia, neck/back ache, allergic reactions/irritation and rash, tachycardia, mouth dryness, dizziness, fear of loosing consciousness, muscle tenseness/cramp attacks, perspiratory/aura or cold wave, trembling/twitches, difficulty in breathing, headache/migraine, change in blood pressure, stomachache, diarrhea, alopecia/grey hair, chest ache, sickness/puking, intestines complaints, hearing loss, skin dryness, serious cuts and pitting/ deadness in hands and feet (Blase & Blase, 2003; Björkqvist, Osterman, & Hjelt-Bäck, 1994; Leymann, 1996; Yaman, 2007).

Among the most important psychological effects of mobbing on victims; stress, unhappiness, sadness, tension, feel of insecurity, de-motivation, unwilling to go to work, keeping the defense mechanism always on, nervousness, excessive reaction or unresponsiveness, depressive mood, lack of self-confidence, fear of loosing job, thought of resigning, crying/laughing attacks, worrying, paranoia, embarrassment, aggressiveness, feel of squashed, panic attack and chimneria can be considered (Blase & Blase, 2003; Björkqvist, Osterman, & Hjelt-Bäck, 1994; Bren & McNamara, 2004; Cusanck, 2000; Davenport, Schwartz, & Elliott, 2003; Kortum, Leka & Cox, 2011; Mikkelsen & Einarsen, 2002; Leymann, 1996; Lewis, 2004; Tınaz, 2006; Yaman, 2007; Zapf, 1999).

Stress has been defined as the damaging emotional and physical responses that occur when the demands of life overwhelm the resources, needs, or capabilities of an individual. It may be characterized as an emotional, chemical or physical factor that induces tension in the body or mind that play a role in disease causation and coping (Gary, 1995). Stress and its consequences have been examined by using various variables. These consequences may be examined under two categories, namely the negative and positive consequences. Stress and its negative consequences have been examined in different ways as well. Basically, in this field of literature, both physical, and psychological health status have been investigated as related concepts with stress in the literature. In other words, stress is correlated with both physical and psychological disorders (Hemenover & Dienstbier, 1998). For instance, some negative consequences are considered like involvement in peer violence and consumption of alcohol (Tschann, Flores, Pasch, & VanOss Marin, 2005). Meeks, Woodruff-Borden, and Depp (2003) argue that depression, and anxiety measures assess “unitary distress” construct since they have high inter-correlations among different samples.

The Present Study

Because research (Pranjic, Males-Bilic, Beganlic, & Mustajbegovic, 2006) on mobbing and stress is relatively new, studies that examine the relationships between mobbing and psychological variables such as stress, are needed. Therefore, the aim of this research is to examine the relationships between mobbing and stress. I hypothesized that humiliation, discrimination, sexual harassment, communication barriers, and total mobbing scores would be associated positively with stress.

Method

Participants

Participants were 436 teachers (206 (55%) were female, 230 (45%) were male) from Sakarya, Turkey. Of the teachers 168 were elementary school teachers and 268 were branch teachers. Their ages ranged from 26 to 55 years and the mean age of the participants was 35.2 years.

Measures

Mobbing Scale. The mobbing was measured by using Mobbing Scale (Yaman, 2009b). This scale has been developed on 515 public employees. This scale is a 23-item self-report inventory and consists of four sub-scales; humiliation (11 items), discrimination (4 items), sexual harassment (3 items), and communication barriers (5 items). Each item was rated on a 5-point scale (1=*strongly disagree* to 5=*strongly agree*). Results of confirmatory factor analysis indicated that the model was well fit. The goodness of fit index values of the model were RMSEA=.078, NFI=.95, CFI=.96, IFI=.96, RFI=.94, and SRMR=.074. The Cronbach Alpha internal consistency coefficients of four subscales were .91, .77, .79, and .79, respectively. The test-retest reliability scores were .91, .78, .82, and .82.

The Depression Anxiety Stress Scale (DASS). Stress was measured by using a Turkish version of the Stress Subscale of DASS (Lovibond & Lovibond, 1995). Turkish adaptation of the DASS had been done by Akın and Çetin (2007). The DASS is a 42-item self-report inventory that provides scores on three subscales: Depression (14-items), anxiety (14-items), and stress (14-items). Each item was rated on a 5-point scale. The language validity findings indicated that correlation between Turkish and English forms was .96. Factor loadings of the subscales ranged from .39 to .88. The Cronbach Alpha internal consistency alpha coefficients were found for depression, anxiety, and stress .90, .92, and .92 respectively. The test-retest reliability scores after three weeks were found .98 for three subscales. Related with the criterion-related validity of the scale, correlation coefficients between the DASS and the Beck Depression Inventory (Beck, Steer, & Brown, 1996) and the Beck Anxiety Inventory (Beck, Steer, & Carbin, 1988) were computed as .87 and .84, respectively (Akın & Çetin, 2007).

Results

Descriptive Data and Inter-correlations

Table 1 shows the means, standard deviations, inter-correlations, and Cronbach Alpha internal consistency coefficients of the variables used.

Table 1

Descriptive Statistics, Alphas, and Inter-correlations of the variables

Variables	1	2	3	4	5	6
1. Humiliation	1					
2. Discrimination	.74**	1				
3. Sexual harassment	.49**	.41**	1			
4. Communication barriers	.67**	.66**	.39**	1		
5. Total mobbing scores	.94**	.86**	.59**	.84**	1	
6. Stress	.27**	.23**	.11*	.22**	.27**	1
Mean	14,31	5,52	3,25	7,19	30,27	12,42
Standard deviation	4,29	2,23	1,13	2,51	8,72	8,57

** $p < .01$

When Table 1 is examined, it is seen that humiliation ($r = .27$), discrimination ($r = .23$), sexual harassment ($r = .11$), and communication barriers ($r = .22$), and total mobbing scores ($r = .27$) were found positively associated with stress.

Structural Equation Modeling

Hypothesized model was examined via structural equation modeling (SEM). According to this model, stress is predicted by mobbing. Figure 1 presents the results of SEM analysis, using maximum likelihood estimations. The goodness of fit statistics showed that the model was saturated and the fit was perfect ($df = 0$, minimum fit function chi-square = 0.00 ($p = 1.00$)). And also accounted for 11% of the stress variances.

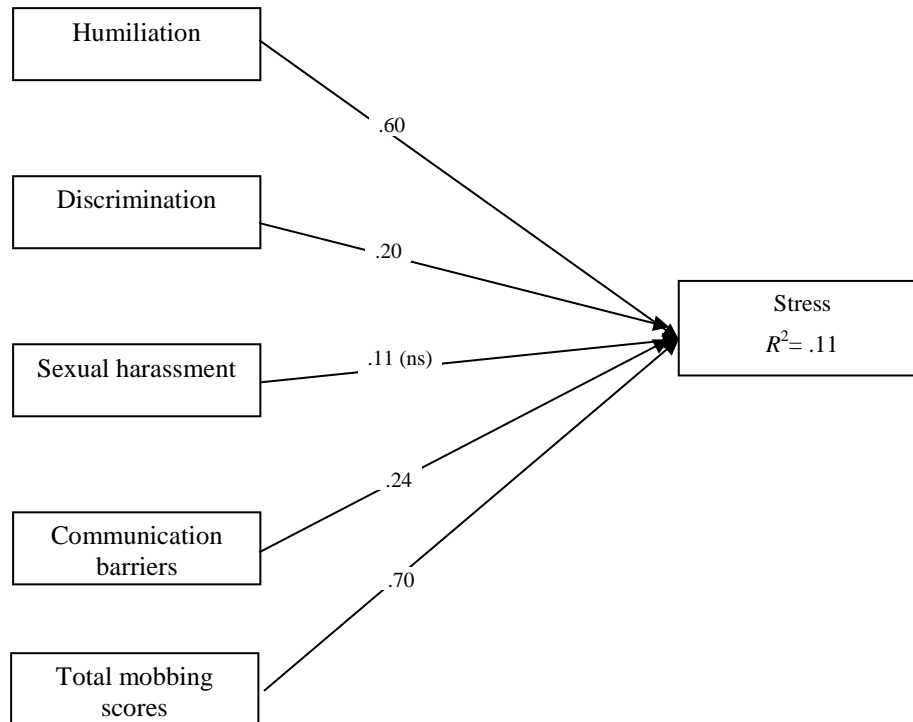


Figure 1. Path analysis between mobbing and stress

The standardized coefficients in Figure 1 clearly showed that stress was predicted positively by humiliation (.60), discrimination (.20), communication barriers, (.24) and total mobbing scores (.70). However, the path from sexual harassment to stress wasn't significant.

Discussion and Recommendations

The aim of this study was to investigate the relationships between mobbing and stress. Findings have demonstrated that there are significant relationships between mobbing and stress. Also the goodness of fit indexes of the path model indicated that the model was acceptable and that correlations among measures were explained by the model. According to Hu and Bentler (1999) CFI, NFI, GFI, AGFI, and IFI must be more than .95 and RMSEA and SRMR must be less than .05. Therefore the path model of this study can be viewed as had acceptable fit indexes.

As predicted, the models delineated that humiliation, discrimination, communication barriers, and total mobbing scores predicted stress in a positive way. Results from studies (Leymann & Gustaffson, 1996; Mikkelsen & Einarsen, 2002; DiMartino, 2003; Lynch & O'Moore, 2004) on the relationship between mobbing and some psychological variables proved that mobbing is positively associated with many indicators of psychological disorders. Similarly, stress was found to be positively related to various psychological symptoms (Chun-Wei & Chun-Yen, 2014; Karademas & Kalantzi-Azizi, 2004; Meeks et al., 2003; Sauter, Murphy, & Hurrell, 1990; Tschann et al., 2005). These results are consistent with the present study. Thus, it can be said that an increment in mobbing will increase stress and that there is a bi-directional causal relationship between these two variables.

This study makes several contributions. First, it demonstrates that the mobbing is associated with stress. Second, to my knowledge, this study was the first to examine the relationships between mobbing and stress. Consequently, this research shows that mobbing has a direct impact on the stress. People high in mobbing are more likely to be affected by stress. Thus, the current findings increase our understanding of the relationship between mobbing and stress.

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A Critical Look at the EFL Education and the Challenges Faced by Iranian Teachers in the Educational System

Parvin Safari * & Nasser Rashidi**

Shiraz University, Iran

Abstract

The ultimate aim of any EFL program is to promote long life language development in learners and prepare them for the language use in real life communicative situations. However, many educational systems all over the globe might not achieve this end. Actually, a number of factors within or beyond any system can influence the success or the failure of the language curriculum. In the case of the educational system of Iran, a critical look reveals the fact that despite a great amount of investment and expenses on the part of the government for so long, it is yet unable to generate proficient learners. Keeping this issue in mind, the researcher as the teacher educator teaching in an in-service class held through the Education Organization of Yazd, Iran could uncover the teachers' views and perceptions accordingly. Using currere and collaborative dialogue, the researcher in this qualitative study attempted to explore the challenges faced by teachers in addition to the potential factors leading to the current failures of the language curriculum in the system. The insightful findings of this study can be of great assistance to policy makers, textbook writers, and teacher educators to take critical actions towards the betterment and fruitfulness of the EFL program in our education system.

Key words: language development, language curriculum, currere, collaborative dialogue

*Parvin Safari is a Ph.D. candidate of TEFL at Shiraz University of Iran. She received her M.A in TEFL from Yazd University in 2008 as the top student. So far, she has published and presented several papers in different national and international journals and conferences. Her areas of interest are teacher education, critical pedagogy, discourse analysis, and sociocultural theory of language learning.

**Dr. Nasser Rashidi is an associate professor of TEFL at Shiraz University of Iran. He has published and presented many papers in different national and international journals and conferences. His areas of interest are sociocultural theory of learning and teaching and learning, teacher education, critical pedagogy, and critical discourse analysis.

Correspondence: psafari2009@gmail.com

Introduction

The history of language education has witnessed dramatic changes starting by a shift from Grammar Translation Method towards more communicative approaches such as task-based language teaching, post-method, and critical pedagogy. Actually, this paradigm shift provides the basis to claim that foreign language education is seen as a discipline in need of on-going self-examination and reflection (Reagan & Osborn, 2002). Accordingly, each language education along with the development in the field of language learning and teaching needs to be continuously re-examined in order to offer the best services for language learners.

Foreign language education in Iran has been overwhelmed with theories, methods, approaches, and practices over the past decades, but no change can be seen in the language system of the Ministry of Education; as learning English in a seven-year-continuum of public schools, very little empowers graduated students from highschool or universities with a tool to communicate effectively in real-life situations. Actually, the government's policy is to spend a great amount of time and expenses on language learning in Iranian public schools, but there is no plausible outcome; so students try to improve their English language proficiency in private language institutes. To investigate Iranian students' lack of competency, we are required to challenge different aspects of education by considering different factors and constraints leading to the failures of ELT in the Ministry of Education in Iran. This research, on the one hand, highlights the factors and constraints which directly/ indirectly intensify students' English language learning failure, and on the other hand, paves the way for further investigation of Iranian educational policy from different perspectives and provides hints and clues for policy makers, language educators, and teachers to critically and reflectively consider the current status of English language teaching and make the necessary amendments based on their students' needs and current level of language proficiency.

A Review of Related Literature

History of education in Iran and place of EFL in the Ministry of Education

Educational system of Iran enjoyed three periods of ancient Persian, Islamic, and modern era that were basically influenced by the political, economic, and religious trends of the time. During ancient Persian, ideas of Zoroastrianism such as justice, self-restraint, and honesty were reflected in education. In the meantime, in this era, the right of being literate and learning was bestowed to members of Royal families and high ranking individuals in the society. However, passage of years showed engagement of other members of society in the process of learning and teaching, as it was also expanded during Islamic era. So, education was integrated with Islamic values by Khwaja Nezam Al-molk who founded Nizamiyyeh. In this era, a clergy was in charge of instructing the fundamentals of religion and basic literacy to the youth.

In 1850, Amir Kabir founded the first institution of higher education in Iran named as Dar ul-Funun. The first subject matters included medicine, theology, military sciences, and engineering. In 1886, the first primary school was established in Tabriz by Haj Mirza Hassan Tabrizi. However, the establishment of school was accompanied by protests on the part of conservatives claiming that primary school was regarded as a means for westernizing learners and as a threat for the Islamic identity of the society.

During Pahlavi era (1925-79), a number of policies were conducted aiming at modernizing and advancing the education in Iran. For years, the educational system was based on French secular model, as it trained learners for modern occupations including management, science, administration, and foreign languages. There was also a special emphasis on the learning and teaching English, as communication between countries was the agenda of each curriculum and teaching program during Pahlavi regime. During this era, native language teachers were frequently teaching English to native speakers of Persian in schools and universities.

After the 1979 Islamic Revolution in Iran, the philosophy, policies, strategies, and objectives of the previous educational system were reexamined. The Islamization of the educational system was the most important change. In 1986, the Council of Fundamental Change in Education was established. Actually, this organization was affiliated with the Higher Council of Cultural Revolution to reform the educational policy and propose a system based on the Islamic doctrine and religious values in education (Derry, 2000). These changes influenced all aspects of the education system in Iran and English language teaching and learning was not an exception, so for a decade or so, English lost its credibility and position in education, and was regarded as a tool in the hands of superpower countries dominating other countries. Teaching and learning English were also impeded at universities and it was no longer studied or taught as a course after Cultural Revolution in Iran. During this time, students of English had to abandon their studies or change their fields of study.

However, after many years, due to the significance of English as an international language, it somehow gained its place in the educational system of Iran. In recent years, the government has tried to put an emphasis on English as a subject matter, in addition to the requirement for communicative fluency and competency. It is indeed believed that mastery of English is required for international competitiveness, increasing Iran's international opportunities and integrating it into the international community. In other words, the government has attempted to establish a balance between the aspiration for spiritual and cultural independence from the West, and the wish to do well as a modern country in competition with the West (Salehi-Isfahani, 2000).

The educational system in the Islamic Republic of Iran has not undergone any significant changes since Pahlavi's era and is modeled based on the French system (Madandar Arani, Kakia, & Karimi, 2012). After the Islamic Revolution, for long, the educational system included pre-primary school in which students spent one year prior to the primary school. In primary school, there were five grades each containing different subject matters usually taught by the same teacher. However, English was not regarded as the main subject matter. But some non-public schools chose English as a prestigious course in order to attract more applicants. Students then continued their studies in a three-year-continuum of junior high school. They had to spend a course of English including 4 hours a week during an educational year for each grade. Each of English textbooks at this level included dialogues, oral drills, grammar points, pronunciation, and reading passages. The grammar exercises, pronunciation, and oral drills were all decontextualized not indicating any trace of authentic life.

Highschool as the next level of learning cycle involved 4 grades, where English was taught 3 hours a week in the first year of learning. At grades two and three, just 2 hours a week were allotted to English courses in the teaching syllabi. Actually, the number of sessions per week and the number of lessons did not match with each other at these two grades. In the respective textbooks, there was a focus on vocabulary, grammar, conversation, pronunciation, and reading passages. However, grammar, vocabulary, and pronunciation were detached from any contextualization. In the case of reading passages, unattractive long passages accompanied by some questions including yes-no, wh-questions, true-false and multiple choice questions reflected discrete point approach to teaching. It was at grade 4 that there was an increase in the number of sessions involving 2 sessions with 4 hours a week. But the focus of this course was just on reading skill and nothing more. The unattractive reading passages included many vocabularies which were so demanding for students.

However, a reform occurred in the educational system in 2012 which changed the number of grades in schools. The current system is somehow similar to Pahlavi's educational system in which primary school, junior high school, and highschool included six, three, and three grades respectively. The new system has been administered up to the second grade of junior high school. English as a subject matter is introduced in junior high school. Generally, Grammar Translation Method is the most prevalent teaching methodology in public schools, as English teachers utilize GTM through the textbooks which are devoid of any listening or speaking activities and just deploy grammatical structures and exercises disguising as the 'writing' activities (Hosseini, 2007). Thus, the language knowledge is summarized in terms of knowing the vocabularies, the ability to read and translate the texts, and the knowledge of grammatical rules and structures. It means that a mastery of this

knowledge is sufficient for a student to obtain the passing score for entering the next educational year.

Purpose and Significance of the Study

Despite a vast amount of investment including time, money, and human resources on the EFL program in the Ministry of Education in Iran, it has not yet been able to achieve the satisfactory outcomes for so long in order to produce the competent learners in comparison to other systems of education in different countries. Taking a critical look at the status of English in the ministry, one can pursue the reasons for its failures including constraints, and obstacles as the potential factors impeding the language development in the Ministry of Education as a relentless authority which creates constraints contributing to the current failures of English language teaching and learning. In Iran, the ministry is mainly in charge of all educational policies from determining, planning, and designing the instructional materials and textbooks, time of the subject matters, system of exams and testing, employing teachers, and financing to providing facilities for public schools.

In order to investigate the causes for the failures of EFL programs, and the challenges faced by teachers in the process of language development, English teachers' experiences and perceptions constitute the invaluable sources because they are considered to be a core component of the system touching and challenging the constraints and problems directly/ indirectly far more than any element. Hence, in this study, the researcher who was a teacher educator instructing English teachers in an in-service class attempted to explore Iranian English teachers' perceptions concerning the respective issue as their views regarding the factors leading to the inefficiency of EFL program in Iranian public schools provide enlightening insights which can be of so much assistance to the policy makers, the curriculum developers, language planners, and teacher educators.

Methodology

Participants

In this qualitative research, the participants consist of twenty five experienced English teachers who have been working for more than 10 years in the Ministry of Education. Actually, these English teachers participated in an in-service class held by one of the education centers in Yazd, Iran. The researcher as the teacher educator who is a Ph.D. student in TEFL taught this group of teachers during a two- month period. Such a teaching methodology course was planned to enhance teachers' knowledge of the innovative teaching methods and approaches aiming at improving the language competency of the students in the public schools. To establish the ethics of the study, the researchers promised the participants not to report their names in the study.

Instrument

To fully gain teachers' perspectives and attitudes towards foreign language education failures, constraints, and problems of language development in the Ministry of Education of Iran, the researchers used *carrere* (reflexive narrative) and collaborative dialogue. The purpose of *carrere* which was firstly introduced by Pinar (2004) is to put an emphasis on subjectivity and narrative voice in teaching. Actually, this method of data collection as an autobiographic tool provides a framework for critical reflection on the inherent problems of the education system. However, using *carrere* to obtain teachers' perspectives and attitudes follows four stages of regressive, progressive, analytical, and synthetical. At first, teachers' experiences are the focus of attention and reflection. In the progressive stage, teachers' ideas towards constraints, problems, and obstacles that might prohibit teachers' future performance are investigated. Then a critical examination of the past and present is done through analytic stage. And finally, insights from past, present, and future are combined in order to transform the social milieu (Sedeghi & Ketabi, 2009). Meantime, collaborative dialogue also provides teachers with a chance of discussing and collaboratively dialoguing the failures of EFL program in the education system, problems, constraints and their challenges to develop learners'

English language proficiency. The researchers used three steps of data analysis based on Strass and Corbin's (1998) constant comparative method involving open coding, axial coding, and selective coding. Then, the credibility of data was ensured through member checking as a method of triangulation used at the last phase of data analysis by asking participants for further accuracy, clarification, and meaning (Aray, Jacobs & Sorenson, 2010).

Key Findings

After the process of transcribing, codifying and analyzing the data, the researchers could uncover relevant themes and concepts with respect to the Iranian English teachers' perceptions concerning the issue of the failures of EFL program in the Ministry of Education in Iran. Below, we examine each theme as a cause, a constraint or a challenge responsible for the current status of EFL program and the failures.

The Authoritarian and Rigid Nature of the System

Kanpol (1998) claims that the authoritarian nature of education can be described in terms of absolutely rigid rule structures, control systems, strict disciplines, and top-down hierarchy. Accordingly, Freire (1985) states that the root of authoritarianism is in bureaucratic system in which all the people dealing with education are assigned clearly defined roles and positions in the form of structural leaders and subordinates from which they cannot violate. One shortcoming of this restricted system is that teachers and learners find no opportunities for creativity and innovation. The power hierarchy of the system materialized in the form of domination can be seen among teachers, principals, and students in a sense that principals as an absolute authority dominate their power over the teachers and the teachers exert their power over learners. Freire (1985) believes that in this kind of system, students become authority-dependent and the future passive citizens through learning that education is summarized at listening to what teachers tell them to do.

Regarding the status of the educational system of Iran, Safari and Pourhashemi (2012) believe that the educational system of Iran with the authoritarian nature pursues rigid rules, rigorous education structures, inexorable control systems and strict disciplines. Actually, principals in such unyielding systems are regarded as absolute authorities that, according to Hattie (2003), have influence on the climate of the school. Principals' authorities are defined in terms of their freedom in making any decisions, no matter how much unreasonable these decisions might seem. These superficial and unreasonable decisions that sometimes emanate from their blind beliefs cover a wide range of educational decisions related to the curriculum development, learners' needs, assessment, and the choice of instructional materials and even the teaching methodology of English teachers. In this regard, through the interview that I had with one of these teachers, she expressed her opinions as follows:

During the 12 years that I work in schools, there has always been a wide gap between principals and teachers. The principal like an authority has a separate room to which nobody has access. We indirectly receive decisions made by her, sometimes these decisions are illogical, but we have no rights to resist against them. Actually, these decisions have been made before, without consulting with other academic members in school."

As vividly perceived in the above-stated comment, the schooling relationships in the form of the ladder of control and power can clearly be examined between the principal as someone who has the absolute authority in school and the teachers as the people who should obey the orders with no objection. These asymmetrical relationships and the imbalance of power between the people in educational settings have indeed led to the perpetuation of the status quo and the maintenance of the silencing atmosphere prevalent in our schools.

In the context of Iranian language classrooms, this asymmetrical relationship can be seen between teacher as the power and students as the subordinates. To create a democratic atmosphere and

social transformation in education, according to Freire and Macedo (1987), a dialogic relationship is essential through which the different parties negotiate and share the power. In this kind of system, teachers are not authoritarian but rather they tend to learn from their students. Accordingly, Gracia and Leiva (2014) state that a collaborative process should be included in education so that teachers, school leaders, principals, and staff members can participate equally. Through this process, all voices are considered and put alongside each other, leading to the creation of a safe space for each individual.

Teachers' Financial Needs

When the issue of education and the development of EFL are raised, we always prefer to focus on everything covering a wide range of educational issues such as good teaching, teacher training programs, Professional development, curriculum evaluation, testing, language teaching methodologies, learners' performance, learning outcomes and so on. These issues are actually worthy of attention until we can find a way to resolve the problem of teachers' low salaries. An average salary that an Iranian teacher receives monthly is less than \$350 which is the lowest salary on average among all ministries' hired staff, in spite of the fact that the inflation rate based on the government's confession in the country stands about 16%. During the 18 months of Hassan Rohani's presidency, fortunately, the inflation rate has decreased from more than 40% to 16%, yet no raise in teachers' salaries have occurred.

Keeping this issue in mind, how do we expect Iranian English teachers to enhance professional development, language competency, teaching strategies, knowledge of second language research while they are not financially supported on the part of government and the ministry? It should be remembered that raising families on this low salary is impossible for Iranian teachers. Then, what can be the consequence? Teachers have to work outside the school to make ends meet! A teacher expressed his ideas as the following:

I'm expected to teach well, to create a fresh atmosphere in the classroom, and to patiently and energetically implement the phases of lesson. But is it possible at all? I receive the lowest salary in the society; on this salary, I cannot support my family at all. Thus, after leaving my school, my major work begins. In the afternoon, I have to work somewhere else. Actually, I have no time to spend for further study. Feeling really tired, I will begin the following day. I'm feeling so tired that I want to fall asleep in my class.

However, in order to build an ideal education system in our society, we need to support teachers. This cannot be possible unless they are financially supported. In other words, supporting teachers gives rise to the improvement of the quality of education, the development of teachers' competency, and the enhancement of success among learners. So, good education is impossible without good teaching and the good teaching depends on the teachers' job satisfaction. If teachers are paid at a plausible level, they can further focus on their work. Regarding this important issue, the government should take appropriate actions to economically improve teachers' life conditions.

Public School Textbooks and Instructional Materials

Given that instructional materials and textbooks play a crucial role in promoting the curriculum goals and in facilitating the processes of teaching and learning, it should be noted that it is necessarily required for policy makers of education, language educators, teachers, and instructors to regularly take into account the issue of appropriate materials and textbooks. As Tomlinson (2012) puts it, materials for language learning serve to pursue different aims. They are said to be *informative* as they inform the learner about the target language and features, *instructional* guiding the learner in practicing the language, *experiential* giving learner the chance of using language, *eliciting* as they encourage the learner to use the language and finally *exploratory* getting the learner to make discoveries about language. According to Oxford (2002), as learners learn at different ways, the ideal materials are those aiming at the provision of all the ways to help learners acquire the language through experience and use.

Due to the fact that the education system in Iran is extremely centralized, textbooks as the main medium of instruction across the country are centrally provided, written and used in all schools. Each course at each grade has its own textbook used in every school in Iran. Teachers in each course are instructed to use the textbooks to direct every aspect of their instruction. The students are required to study the textbooks in each course. Finally, testing and evaluation are also restricted to the contents of each textbook (Madandar Arani, Kakia, & Karimi, 2012).

With respect to the types of language instructional materials and textbooks used in the Ministry of Education of Iran, it can be said that Tomilson's (2012) functions are not observed in the nationwide textbooks of the public schools. They just include demotivating drab language features accompanied by the decontextualized exercises detached from authentic life. No trace of language use can be seen; actually, if there is, it has no similarity to the tasks learners face in the outside world. A teacher referred to this reality as:

The exercises, grammar, reading texts, language functions and all the things embedded in the book aren't appealing at all. Because I explain the things which are of no use to my students, not only learners but I also get tired soon. Sometimes I'm waiting for the bell ring to get rid of such a torturing atmosphere.

According to Cummins (2005), a focus on the language features should be linked to critical inquiry into the issues of language and power. Further, a focus on the target features must be integrated with the extensive input through reading and chances for written and oral language use. What is emphasized in the state school EFL textbooks is language features at the expense of language use.

A cursory look at the EFL course books used in the ministry of education makes it also vivid that the contents of English books do not pursue any theoretical and practical basis, scientifically researched-based principles and the most recent theories of language learning. A participant in this project stated his opinions as the following:

The textbooks that I use to teach English to my students are the ones that I actually read when I was a student, about 20 years ago. I think the content, exercises, colorless pictures and useless grammar points are written in the way as if teaching and learning processes were static and fixed without being influenced by the findings of second language acquisition research.

The textbooks of Iranian public schools remind us of banking education through which a teacher as the absolute authority is in charge of creating a silent atmosphere to facilitate the process of sending pieces of knowledge and information located in the book into the empty minds of passive learners as the receivers. As Safari and Pourhashemi (2012) claim the instructional materials and textbooks used in Iranian public schools are saturated with the compilation of information and taken-for-granted knowledge not reflecting any social issues related to the learners' lived experiences in the real world. In other words, as Cummins (2005) puts it, teachers should create a context in language classrooms where culture is expressed, affirmed, and shared. Doing so motivates learners to invest themselves in the learning process. This can be done through the inclusion of topics related to students' lives, experiences, and cultures in the textbooks. But the Iranian EFL textbooks are devoid of such topics. In this regard, an experienced teacher said:

The book gives me this chance to make learners listen to me all the time. My students must take in all the explanations, information, and knowledge. They should listen to me carefully; otherwise they are not able to learn. When I provide them with exercises during the class, students can't find any chance to talk to each other."

The Employment System

Another controversial issue which deserves special attention concerning the low performance of the ministry in EFL policy is the issue of hiring competent teachers. Undoubtedly, teachers should possess necessary skills, knowledge, and plausible language proficiency to rely on it as the basis for their own professional development and also for the enhancement of learners' competency, success, and learning. In Hattie's terms (2003), the single most powerful influence on students' achievement which is actually regarded as the gold standard of expertise is located in the hands of teachers.

In education, excellence in teachers really makes differences, as teachers' knowledge and skills help them to become intellectuals and the agents of educational change. However, those who have no competency cannot transform into the social agents; hence, they maintain status quo in the growth of students' success. With respect to the level of teachers' competency, Richards (2011) claims that teachers are in need of language-specific competencies of which fluency is of high significance. In this regard, Medgyes (2001) also states that teachers are required to reach a threshold proficiency level in order to succeed in effective teaching. Further, teachers are required to possess academic proficiency in order to promote students' learning. The academic proficiency, according to Krashen and Brown (2007), includes knowledge of academic language, knowledge of the subject matter (e.g. the knowledge of linguistics, teaching methodology, educational research, and etc.) as well as strategies.

Hence, a major task of the Ministry of Education is to recognize and employ highly proficient English teachers possessing professional knowledge, skills, competencies, and capabilities through which they can promote English competency and proficiency in learners. As there is a lack of structured and systematic plan to choose the proficient teachers among the pool of candidates, the ministry confronts with the problem of not having any homogeneous English teaching staff concerning the plausible level of language competency. As an English teacher, I myself have always witnessed the presence of different English teachers in the same school possessing absolutely various teaching methodologies and levels of language proficiency. A teacher in her journal wrote as:

I think our students can progress more if English teachers are actually chosen from the most skilled graduates. Currently, the most important issue is English teacher who, in my opinion, is the key to all the prosperity of the ministry in developing the field of EFL. In English language group that I belong to, rarely can a fluent, skilled, and proficient English teacher be seen. The English teachers, their numbers actually reach over 60, were all selected from Azad University 20 years ago; they all hold translation degree which has no similarity to TEFL. At the time of their employment, the organization of education was in severe need of completing English teaching staff. Thus, everybody whether strong or weak graduating from this university was employed as an English teacher. Since then, there has been no employment of English teachers in this organization anymore!!!”

To this teacher, the ministry suffers from not having a well-structured system for the employment of competent teachers, so that, as seen, no vacancies during this long period of time are left for the recent proficient and skillful graduated teachers who have the updated professional knowledge and skills. While teachers are participating in in-service classes, it can be found that possessing a great amount of grammatical knowledge, rules, and features is judged to be as a criterion for a teacher's proficiency and skills. Thus, a teacher who has such kind of knowledge is given some priorities, for instance, she or he can teach in the best school or even teach to other teachers as the educator. A teacher said:

In my opinion, teachers' knowledge is summarized in knowing about grammar. In the in-service classes, the focus is just on grammar and nothing else. The instructor who wants to teach for instance the teaching methodology of book one of high school comes to the class having some thick grammar books in hands. She opens the book one and directly goes to the lessons, reads sentence by sentence, and then mentions the detailed grammar rules of each

sentence. She elaborates the grammar rules so detailed that we then forget all the other things. Actually, this is the teaching methodology class which lasts for 30 hours. At last, we are required to take a grammar exam to receive certificate for the methodology class and it is finished!!!!

According to this teacher's view, the knowledge of grammar is perceived as the sole criterion for language competency seen not only among the English teachers but also among the educators and instructors. When teachers believe that the knowledge of grammar is so significant that the instructors themselves value it a lot, they have nothing but the transmission of grammar knowledge to students. And hence, the banking education continues and perpetuates in the language classrooms. As a result, students silently sit and listen to the teacher as the source of grammar knowledge and power sending a huge amount of grammar information to their blank minds which is of no use in their real lives.

The Status of English as a Subject Matter in the System

After the Islamic Revolution of Iran in 1979, the Islamic government commenced severe actions against any secular ideologies, Americanization, imperialism, and the hegemony of English. In the early years of Islamic government, accompanied by Cultural Revolution and the widespread religious hegemony throughout different educational settings, there were attempts to vanish English from the educational scene; since it was regarded not as a subject matter or a course on its own right taught at universities or schools rather as a means through which the superpowers could further oppress and dominate our country. However, after many years, this superficial ideology has changed since language policy makers feel that there is a need to have a special focus on English as an international language to develop the country. In order our country to politically, economically, and technologically involve in competitiveness against other countries; the government has recently taken positive actions to boost the competency in English among students. Furthermore, there is an increase in the establishment of language institutes all over the country contributing to the generating of fully competent learners of English in Iran.

On the whole, the history of EFL in Iran indicates that English on the one hand is thought to be of vital necessity for the scientific, economic, and technological developments while at the same time more emphasis on its significance is considered to be a threat to the Islamic identity of the nation (Kiani, Ghafarsamar & Mahdavi, 2011). Although in recent years, the negative severe reactions towards English have gradually been disappeared and English as a subject matter and as an instructional course has been included in the school curriculum or at universities, due to its menace to people's Islamic and cultural identities and beliefs, it has, to some extent, gone unnoticed and not yet found its genuine place as a subject matter in the Ministry of Education. Considering the status of English language education in Iran as a tool for the linguistic or cultural imperialism after revolution, it should be noted that it has not yet gained a plausible place in education, as the beliefs and attitudes in the form of hidden biases and hindsight continue to remain in language education even after so many years of teaching and learning. It is so interesting to quote what a teacher says about his experience:

I teach English in grade two of high school having 12 classes per week, each class including just one hour and a half. I wish I could be a teacher of another subject since the number of lessons is 7 with a great amount of grammatical rules and exercises, long tiring passages and some other useless exercises. The amount of work demanded does not match with the number of sessions. At the end of the term, I cannot finish the determined budget of the book on time. So I have to borrow other teachers' class time hour to cover the lessons; while there are some other subject matters which seem to be of no use for students have twice more than my class time hour in comparison to English. Several times, I talked about this issue to the head of English group. He says it is something which is not our business. And we have written some letters to the ministry but with no answers.

Another teacher stated some other point as:

At the end of the educational year when the exam schedule is announced, English is located at the end as the last exam. Actually, it seems such a burden since at that time other teachers have corrected learners' exam papers, but I want to begin a hard working job. Another thing is that, during this period of time, learners have forgotten lots of things.

As stated by these two teachers, English as a subject matter has totally been neglected in the educational system and is regarded as a subject deserving no attention and respect since it is yet subconsciously thought to be as a linguistic and cultural tool of imperialism and a hazard for people's moral, spiritual, and cultural values. Thus, regarding these views, it is suggested that in order to develop students' language competency, all the policy makers, educators, principals, and teachers are required to critically reflect on their beliefs and attitudes making them explicit. In that case, they can make a good decision regarding the status of English not as a foreign language but as an international language that our students need to learn.

Learners' False Expectations and Erroneous Beliefs

In the contexts of language learning classrooms, the perceptions, beliefs, and attitudes that learners bring with them in the learning situation are said to have a contributory factor in the process of their learning and ultimate success (Breen, 2011). As the positive beliefs and perceptions about language learning can be contributory and fruitful, the unrealistic and false expectations can impede this process. According to Horwitz (1988), since students' beliefs about language learning can be based on limited knowledge and/or experience, the teacher's most effective course is to confront erroneous beliefs with new information. In some cases, students may never have had their views about challenging language learning.

In Iranian educational contexts, teachers are frequently faced with language learners' false conceptions concerning different issues including the eventual goal of language learning, fully competent English teachers, and a good language learner. A teacher stated his views in this regard as the following:

Each year, I have to deal with my students' erroneous expectations that are in need of being challenged. They expect me to be a good teacher if I explain grammar rules completely, translate all English sentences into Persian, and not to speak English in class. They believe that the eventual aim of language learning is to help learner become proficient in possessing the knowledge of grammar and vocabulary, and pass the tests based on discrete point approach. A good learner is the one who listens to the teacher, does the homework, and pass the formative as well as achievement tests.

Based on this comment, Iranian English teachers are necessarily required to appropriately challenge these misconceptions and beliefs. As most of these unrealistic expectations arise from their lack of knowledge, information, and limited experience, the teacher should justify learners to become informative through explaining and elucidating the main goal of language learning, the characteristics of a good teacher and learner. In Cummins's (2005) sense, a school language policy is process-oriented rather than product-oriented, that is, it attempts to generate organizational structures and patterns of teacher-student interactions that will enhance student participation. Thus, through creation of student-teacher collaboration and interactions, teachers can encourage language learners to explicitly and critically gain awareness about their own beliefs and conceptions; consequently, change them into the positive beliefs to reconsider language learning courses as the means to prepare them to use language in the real world. Thus, a good language teacher as a social agent whose duty is to create changes in education can help learners in this journey to critically undergo social transformation to use language for expressing their voices and worlds.

When students' false expectations and beliefs change, they see language learning as something far beyond learning certain useless decontextualized rules and structures. Through the process of transformation, they understand that teachers are the intellectuals that link language contents to the

students' real world experiences in order to create contextualization. Thus, teaching is not summarized in terms of transmitting knowledge to learners; rather, as a process which relates the classroom to the social, cultural, political, and historical aspects of the students' lives in the outside world.

The System of Assessment

The system of assessment in Iran is plagued by serious problems (Madandar Arani, Kakia, & Karimi, 2012). There are some factors which are believed to be the potential obstacles to the reformation of the traditional system of assessment in the Ministry of Education. Among various factors, the lack of teachers' consciousness and understanding of the harmful effects of the traditional exams, the lack of familiarity and knowledge about modern assessment approaches, and the lack of awareness of the global innovations and experiences are highly significant (Ahmadi, 2004 & Ghosgolk, 2005). Some researchers have also indicated that undue emphasis on the final score has caused damage to the students' creativity as well as the lack of exposure to higher cognitive skills (Porahmadi, 2008; Kakia & Almasi, 2008). Accordingly, Van Lier (2004) states that narrow test-based accountability cultures in schools cut off the academic success. In fact, they might acquire good grades in the short term, but they will not be well-prepared to confront challenges in real-life situations.

It is worthy of note that the system of assessment is defined in terms of the contents of the textbooks (Madandar Arani, Kakia, & Karimi, 2012). Students are required to study and memorize the contents of the books for achieving the passing score. Every academic year of public schools consists of two terms in which students are obliged to take two summative tests as necessary for proceeding to the pursuing academic year. In doing so, teachers stick to the books and become the slaves of the books to teach solely on the basis of the textbook contents. So, they resort to the transmission model of teaching and learning, and transmit the information to the passive learners. Actually, following and covering the textbook contents is an obligation taken by teachers to transmit the curriculum to the students. This method of teaching and testing kills students' creativity by removing them from the realities of the actual lives and world.

In regards to the assessment of English, it is said that testing is on the basis of the textbook materials including grammatical rules, exercises, decontextualized sentences, and texts. Students' listening and speaking are not measured because the system does not include them in the textbooks. Reading and writing are also restricted to the memorization of grammatical intricacies, arcane paradigms and their applications in the decontextualized sentences. A teacher said:

About the system of testing, I can say that it is based on the book. The book includes grammar, exercises, and vocabulary so that students should study all these to get the passing score. In class, I teach about all these things in detail. All the students study what I say as well as do all the exercises. Testing is just based on what is covered in the book and what I teach in the classroom and nothing more.

According to Van Lier (2004), since the grammar teachers neglect to relate the language to the living language, they create this impression in learners that the real language is what is included in the textbooks. As a consequence, students who have spent six or eight years of foreign language learning in schools are really shocked as they encounter foreign cultures. It is the reality of foreign language education in our system. After many years, students who are accustomed to the traditional way of teaching, learning, and testing, are embarrassed when they encounter with real life challenges. They have nothing but many useless grammatical rules in mind that they also forget them after a while.

Multi-Level Language Classes

A challenge for teachers has always been how to manage classes with students from different levels of language proficiency. According to Mathews-Aydinli and Van Horne (2006), a multi-level class presents challenges for teachers so that they need to be addressed. In fact, the teacher in such classes requires training, sufficient experience, and extra time to appropriately prepare lessons and

instructional materials. Also, in doing so, they can benefit from teacher collaboration and program support in order to plan activities meeting all the abilities in the classroom. If activities only meet the needs of average proficiency-level learners, those low-proficiency learners may get frustrated, and those advanced learners may become bored (Boyd & Boyd, 1989; Wrigley & Guth, 1992). Thus, instructors and teachers teaching in this type of classes should utilize multi-level lesson planning including strategies for organizing group, pair, and individual work.

In the public schools in Iran, all the language classes are presented in the form of multi levels in which the average number of students in each class sometimes goes beyond thirty. Hence, an Iranian teacher's challenge is how to deal with the problem of both the management of crammed classes and the planning of instructional activities to meet the needs of all the students with different levels of language proficiency. An English teacher should adroitly undertake the management and control of such classes while at the same time they are required to devise instructional strategies and plans to create a challenging environment for students with high level of language ability and a supporting milieu for low level language learners to feel secure and safe. In regards to this constraint in such classes, a teacher said:

When I teach in English classes in the ministry, I feel so tired. Sometimes I don't know what to do. In each class, there are few students whose English is perfect, and even they are able to speak fluently. They expect me to teach challenging materials because they think the book contains simple materials that they know all. On the other hand, there are a large number who are average and a few who are very weak. I don't know what activities I should use to involve all the students. The large number of students in class is also another challenge so that their management becomes so difficult for me.

Thus, due to the nature of English classes held in public schools, one solution can be to instruct teachers through in-service classes about the appropriate strategies to deal with these challenges.

The Pre-Service and In-Service Classes for English Teachers

Hui (1995) believes that the pre-service and in-service classes are the most efficient resources through which teachers can gain professional abilities and increase their academic awareness. Actually, the purpose of teacher education programs, seminars, and conferences held in different countries is to broaden teachers' conceptions of the discipline, update their professional lives, and inform them with the latest language learning theories and developments, philosophical and theoretical considerations, as well as practical and pedagogical aspects of language learning and teaching.

According to Kumaravadivelu (2012), the traditional ways of teacher education follows the transmission approaches by which teacher educators transmit a set of pre-determined, pre-selected, and pre-sequenced bodies of knowledge to student teachers. These approaches assume the role of the teacher educator to that of conduits passing on the digestible bits of professional knowledge to student teachers. That is, teachers receive the master teacher's professional knowledge and apply it in the classroom. These top-down approaches assume the role of conduit for the teachers through which they as passive technicians channel the flow of information from expert to learners without altering the content of the information.

It is suggested that the pre-service and in-service classes for Iranian teachers are based on the transmission approach through which the teacher educator as a conduit tries to pass on his or her own knowledge to teachers. Actually, the educator's professional knowledge is also summarized in terms of a host of grammatical intricacies and complicated grammar features transmitted to teachers as passive recipients. In regards to the nature of pre-service and in-service classes held through the Ministry of Education for the enhancement of Iranian English teachers' professional knowledge, as Safari and Pourhashemi (2012) put it, what actually matters in such classes is nothing except the provision of

linguistic knowledge and the elaboration of useless decontextualized structures aiming at updating English teachers' professional skills. One teacher said:

To this date, I've taken part in more than 500 hours of in-service classes presented by the ministry. I think the most ridiculous classes which are a waste of time and energy. An instructor comes and teaches grammatical rules and structures of the book in detail. After the course is finished, we all forget all the details about grammar.

When teacher educators have lost the right path, how do we expect Iranian English teachers as the transformative agents to create changes in their classes? And how can they teach learners on the basis of this superficial knowledge within socially, politically, culturally, and historically situated contexts? In fact, the drastic transformation should occur in all facets and components of the system from the education system to other elements such as policy makers, language planners and educators. Until the elements of the system do not get critically aware of the status of language program in the system, any effort towards the betterment is futile. The teacher educators themselves are required to critically reflect on their actions and make their ideologies and beliefs explicit. Surely, the explicitness of their conceptions helps them make better decisions on how to teach English in their classes.

Conclusion

Language learning education constitutes one of the most important elements within the realm of any educational system. The aim is to teach learners in order to acquire the skills necessary for any challenges they face in real lives. To generate highly proficient students, the education system is required to investigate the best ways to develop the curriculum efficiently. Actually, this can firstly be achieved by dint of critical reexamining and reconsidering all the different aspects of the education system which directly/ indirectly affect language development. In the case of the status of language curriculum in the Ministry of Education in Iran, it can be said that it has ended up with failures in producing the proficient learners. Actually, this qualitative study as an attempt tried to exploit teachers' views on the failures of language program and the challenges they confronted in the system. Inspired by their views, this study could also explore the factors leading to the current failures of the EFL curriculum in Iran. An awareness of these factors, undoubtedly, helps policy makers, language planners, curriculum developers, textbook writers, and teacher educators to critically take a step towards a major reform in the EFL program in the ministry of education.

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Creating Meaningful Experiences for Pre-Service Teachers: Thoughts and Experiences on an Elective Course

Duygu Sönmez*

Hacettepe University

Abstract

This study investigates the effectiveness of an elective course titled, “Microteaching in Teacher Education” (MiTEc) which is offered to the 3rd and 4th year pre-service science teachers. This course aims to provide pre-service teachers with meaningful experiences and prepare them for real-classroom settings. During the study, qualitative methodology was employed and face-to-face semi structured interviews and focus group discussions were used as the means of data collection with the participation of 23 pre-service science teachers. All the data was transcribed and content was analyzed to identify emerging themes. MiTEc was found to have a positive influence for pre-service teachers in improving their teaching skills, observations skills, self-confidence and self-awareness, which then also had a positive impact on other courses. The ability to connect theory with practice was one of the major benefits of the course.

Keywords: Microteaching, pre-service science teacher, teacher education, video use

* Dr. Duygu Sönmez is an Assistant Professor of Science Education at the Hacettepe University. Her research focuses on biology education, education for sustainable development and professional development of science teachers.

Correspondence: dsonmez@hacettepe.edu.tr

Introduction

In the long history of teacher education, the universal goal has been to educate teachers and teacher candidates so that they can serve as effective teachers. This is a global endeavor regardless of the subject area. Accordingly, in Turkey, teacher education programs aim to educate teachers with diverse skills who are competent in the content area as well as in culture and information technologies (YOK, 2004) and who can serve as effective teachers.

But what does ‘effective teacher’ means? While the meaning attributed to the term ‘effective teacher’ changes with time, the definition evolves with the demands created by the advancement in science and technology and changes in policies. In Turkey, the qualifications of an effective teacher are identified by the guidelines of Ministry of Education. The guidelines include general competencies as well as content specific competencies (MEB, 2008). Through these guidelines, the main purpose of teacher education is also identified. So what is needed to educate effective teachers?

In pre-service teacher education, concrete real experiences as Cruickshank (cited in Amobi & Irwin, 2009) defines, play an important role. Real classroom settings provide pre-service teachers with direct experiences and allow them to explore the relationship between theory and practice while getting the opportunity of improving their reflective and analytical skills (Feyten & Kaywell, 1994). Although the value of real classroom experiences is undeniable, in Turkey, pre-service science teachers have this opportunity only during the last year of their four year undergraduate education.

The current science teacher education program was implemented in 2006 in Turkey. The program consists of four years of coursework where students are only exposed to real school environments during the last year of their education. The first three years are comprised of theoretical coursework focusing on science content as well pedagogical content knowledge. In this case, several questions can be raised. For one; is the last year of real world experience enough for pre-service teachers to make the connection between theory and practice explicit? Another question is how effective are these real-world experiences in making the connection between theory and practice? Unfortunately, field-based teaching experiences are reported to not always serve as the best learning environments for acquiring reflective practices and connecting theory and practice (Erdman 1983, cited in Amobi & Irwin 2009). From a global perspective, literature suggest the lack of explicit understanding of the connection between theory and practice which leads to inadequately prepared pre- service teachers for teaching practice (Mergler, 2010). So, how can the benefit of real-classroom experiences be maximized for pre-service science teachers? This study was designed with these questions in mind and investigates the effectiveness of Microteaching in Teacher Education course (MiTEc).

MiTEc is an elective course and was designed to create a learning environment for pre-service science teachers where they can practice the theoretical background they are taught and develop an understanding of the connection of the theory and practice before pre-service teachers are involved in real classroom settings. Microteaching is accepted as a valuable teaching tool in teacher education. The value of microteaching strategy has also been investigated as a part of a Practice Teaching course in a previous study and found to have a positive influence on learners (Sonmez&Hakverdi-Can, 2012). This study aims to investigate the long-term impact of MiTEc on two courses that take place in a real school environment, which has not been explored. MiTEc which is subject to this study has been offered for the last two years to pre-service science teachers. While the study was exploratory in nature, it aimed to investigate the central question ‘What is the impact of MiTEc on pre-service science teachers’ future coursework involving teaching practice, such as the School Experience course and the Teaching Practice course. In this context the research questions investigated were:

- 1- How pre-service science teachers perceive MiTEc?
- 2- What are the contributions of the microteaching course for pre-service science teachers?
- 3- Are there any differences of experience in School Experience course and Practice Teaching Course among participants who took the MiTEc and who did not?

Microteaching as a Teaching Strategy

Microteaching is a teaching approach that allows pre-service teachers to have clinical experiences in their own learning environments (Amobi, 2005). With a history going back to 1960's, microteaching has been widely used with various approaches. In the traditional approach, it has been used as a teaching method to develop teaching skills among pre-service teachers. However, today, it has developed into a teaching method used to prepare pre-service teachers for real classroom settings as well as provide them with an experience of teaching a complete lesson (Amobi, 2005). While the term 'microteaching' has been widely used in literature, some of its applications even take over different names including 'peer teaching' rather than microteaching (MacLeod, 1987) regardless of the fact that the term peer teaching may also be used in different meanings.

The early applications of microteaching were used at the School of Education at Stanford University as a part of teacher intern program in 1963. Its first applications were both for training and diagnostic purposes (Allen, 1967). While microteaching allows pre-service teachers to practice teaching in a simplified environment including class size or teaching length (McLeod, 1987), it also takes place in a controlled environment where intensive feedback and discussions are provided. As of the 1970's, video feedback became the dominant feature of microteaching applications. Today videos still have a wide use in teacher education. Without subject area limitations, microteaching has a use in pre-service teacher education including science education, environmental education, physics education, language education, music education and so on (Diana 2013, Uzun, Keleş et al. 2013).

Linking theory and practice through field experience and the use of reflective thinking and writing are important elements in teachers' education (Amobi and Irwin, 2009). Although the value of real classroom settings is undeniable, they might not be the best learning environments for novice pre-service teachers since they may not be able to evaluate their own teaching practices. To overcome this issue, research suggests campus and university based microteaching learning environments promoting pre-service teacher development through reflective practices (Pultorak, 1996; Amobi & Irwin, 2009).

In its current use microteaching has two important components; lessons that are videotaped and feedback (Metcalf, 1993; Benton-Kupper, 2001; Butler, 2001). In a previous study, using videos to develop observation skills among novice teachers was found to be an effective teaching approach (Sonmez&Hakverdi-Can, 2012). The video applications were integrated into the School Experience course and were used to prepare pre-service science teachers for school environment.

MiTec, subject to this study, is an elective course open to 3rd and 4th year students. The course aims to provide pre-service teachers with opportunities to practice the theory they were taught during the first couple of years in the program with microteaching practices. The second purpose of the course is to prepare pre-service teachers for fourth year courses, School Experience course and Practice Teaching course, through real world examples, video cases and discussions. The course is offered weekly for two hours. The course is divided into two sections, use of videos and teaching practices. As a part of the course, initially all students are asked to develop evaluation criteria to evaluate teaching and identify good teaching practices. Crumley & James (2009) emphasizes the importance of forms developed by participants in relation to facilitation of critical reflection on teaching (Vander Kloet and Chugh 2012). Then, students review and discuss videos recorded in actual classroom settings and discussions are held weekly focusing on different aspects of teaching. In addition to videos, students are also asked to prepare a complete lesson and teach it to their peers. All the teaching sessions are video recorded as a part of the course, and each session is followed by discussions. While the instructor observes each student and takes notes on what is going on and what are weaknesses, she does not interrupt the flow of the lesson. Her notes lead the discussions on teaching performance afterwards. In addition, each student is expected to write two reflections; one after teaching and the second one after watching their own video critiquing their own teaching. One of the downsides of having microteaching practices on campus is the audience. Since pre-service teachers teach to their own peers they might not experience the challenges of an actual classroom. To overcome this issue, classroom cases may be created with the guidance of the instructor. Classroom discussions

were also conducted led by the instructor. Thus pre-service teachers learning process is supported through both verbal and written reflections. According to Metcalf (1993) adjusted peer provided guidance may be as beneficial as instructor-guided laboratory learning environments. Through each microteaching sessions all of the students benefit from different examples and discussions.

Method

In this study, qualitative research design was the choice of methodology to investigate the central question, 'What is the impact of MiTEc on students' future teaching experiences?' In particular, individual interviews and focus group discussions were used for data collection purposes and document analysis technique was used to analyze the data.

Participants

The study was conducted with the participation of 23 undergraduate students. All of the participants were seniors enrolled in the Science Teacher Education Program at the undergraduate level at one of the major universities in Ankara. The data collection was completed during May of the spring semester, which corresponds to the final 4-5 weeks of the semester as well as the four yearlong education. The data collection timeline was set to assure that all the pre-service teachers completed the majority of the coursework of the Teaching Practice course and spend enough time at their practice schools.

Among all participants of the study, 10 of them had taken MiTEc in previous semesters and 13 have not. However, all the participants were successfully completed School Experience course during the first semester of the year and were enrolled in Practice Teaching course offered during the second semester. Seventeen of participants were female and six were male.

Data Collection and Analysis

The data collection was completed in two stages. In the first stage, face to face individual interviews were conducted with students who had taken MiTEc. The interviews were conducted in semi-structured interview format with guiding questions and all of the interviews were voice recorded with the permission of the participants. Participants were asked to comment on MiTEc and describe their experiences. Guided questions were used during the interviews when need. Some of the guiding questions were;

1. Can you evaluate MiTEc you took, how beneficial was it for you?
2. In your opinion what were the short and long term benefits of taking the course?
3. In particular can you describe the benefits in relation to the School Experience and Practice Teaching courses?
4. What kind of contributions do you think MiTEc had on your professional development?

In the second stage, focus group discussions were held. These meetings were also voice recorded. Both students who took MiTEc and those who had not, took part in each of the focus group meetings. A total of three focus group meetings were held and students chose the meeting they would attend based on their schedules and time convenience. During the meetings, participants were asked to reflect on their experience in the Practice Teaching course and discuss challenges and difficulties they had faced. Participants' perceptions on MiTEc and its benefits were also discussed. All recordings were transcribed upon completion of the interviews and focus group meetings.

Available participants were asked to provide feedback on transcripts. Content analysis was used to analyze the transcribed verbal communications. More specifically during the data analyzes all of the interviews were transcribed verbatim and the content analysis was used to analyze the transcription of the interviews and focus group discussions to identify the emerging themes and

subthemes in relation to MiTEc and its benefits and impact on the School Experience and Practice Teaching courses. An outside reviewer provided feedback on sample cases to assure validity.

Findings and Results

The very first question asked to pre-service teachers was how beneficial was MiTEc for them. All participants interviewed individually took MiTEc at least one or two semesters prior to the data collection, and were in the second semester of being in a real school environment. Thus they had enough experience to evaluate the value of the course in comparison to other courses they have taken as well as based on their experience in real school environment. One of the pre-service teachers stated, 'I believe the benefits are more obvious when student teaching is done'. This comment also supports the researcher's choice of timeline for the data collection.

Practice is an important part of pre-service teacher education and MiTEc was identified to be a valuable practice opportunity based on the interviews and groups discussions conducted. Several themes and subthemes were identified indicating the benefits of the course, which are presented in Figure1 as well as listed in Table 1 accompanied by exemplary quotes.

All of the students identified MiTEc as a good opportunity to experience the dynamics of teaching a complete lesson with the consideration of possible problems that might arise as well as solutions. Participants, who have not taken MiTEc were part of the focus group discussions. As they have reported, during both the School Experience and Practice Teaching courses, they were closely interacting with peers who have taken the MiTEc since they were immersed in the same school environment. They were facing similar issues in regards to teaching and classroom environment. As they had stated, they were communicating with each other and having conversations with peers and even getting tips on how to overcome issues they faced in relation to lesson planning, classroom management or asking questions. The pre-service teachers who were not enrolled in MiTEc in previous semesters also stated similar comments during focus group discussions. They all were aware of the MiTEc and its nature and were emphasizing the benefits of the course in an indirect manner through the experience provided by their peers.

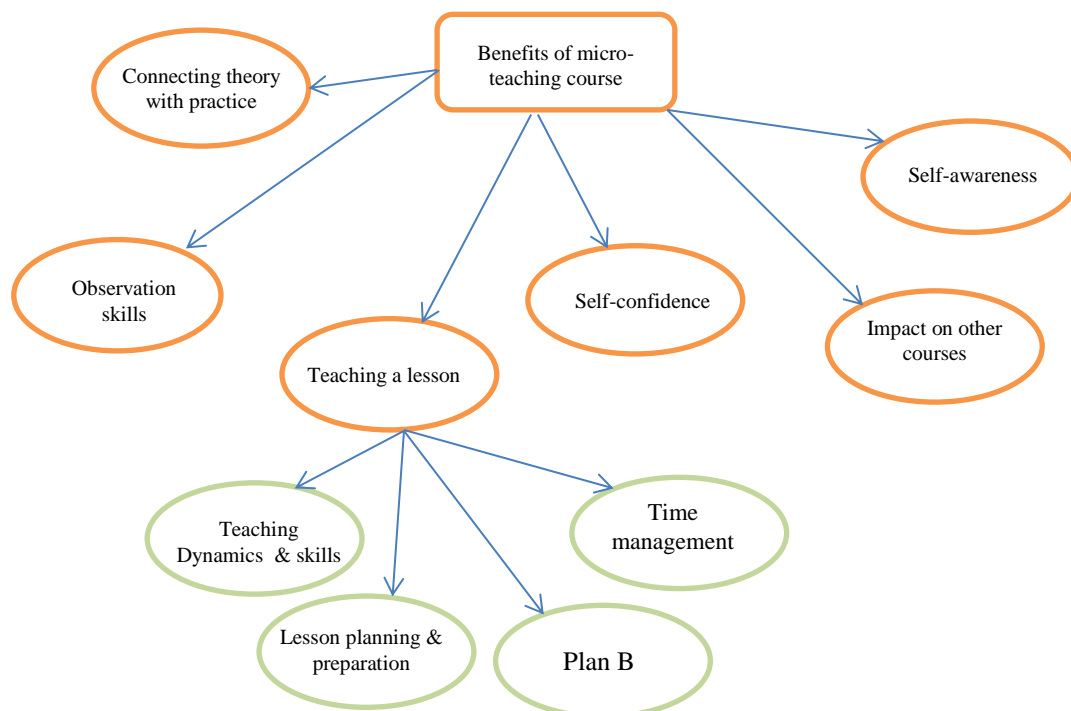


Figure 1: Identified themes and subthemes

Table 1: Summary of themes and subthemes

Theme	Subtheme	Exemplary quotes
Teaching a lesson	Lesson planning and preparation	I learned to be practical, I got a chance to practice and use what I have learned here (in microteaching)
	Teaching dynamics and skills	I used everything I learned in microteaching while I was teaching twice at the school during first term, how to call on students, how to communicate, how to use ppt in class, what to be careful about, body language, I got a chance to practice what I need to do during a whole lesson
	Time management	For me the biggest change was figuring out how to react to students and learning about timing of the lesson
	Plan B	During microteaching we talked about plan B, it happen to me at student teaching, and my original plan with videos did not work. If I didn't have a plan I would have nothing to teach and freeze
Connecting theory with practice		I learned asking questions appropriate for the purpose of the lesson, and design activities more successfully. We learn about these in other classes but it does not go beyond theory
Self-confidence		I was really scared to teach a lesson, through this course I figured if I'm prepared enough there will not be a problem, it was helpful for my self-confidence. I still watch my video ...
Self - awareness		Now I'm more relaxed and able to tell this is what I'm doing and it looks like this for other people, but before [microteaching] I didn't....
Observation skills		I believe I'm more capable and careful watching my mentor and his/her reactions in the classroom...discussions on videos helped me in terms of concrete observations.
Impact on other courses		The assignments we prepare are more flexible now....I'm able to prepare more flexible and less utopic assignments now that consider elements such as student level....for example during classroom management course the instructor gave us the case....and I can come up with appropriate behavior and reactions which I learned during microteaching course

Teaching a Lesson

Six main themes were identified based on the participants' responses. The comments categorized under the very first theme, *Teaching a Lesson*, were focusing on lesson planning and preparation, time management, plan B, and teaching dynamics and skills. Plan B involves foreseeing and planning for possible problems that might arise during a lesson and teaching dynamics and skills include asking questions and their quality, communication with students, teaching strategies, responding to students, choosing teaching materials, and testing teaching materials. During MiTEc, pre-service teachers were required to prepare a lesson and teach it for a given period of time such as 20 or 30 minutes. During the process they had to frame their lesson based on the grade level with the consideration of the length of the lesson and classroom environment and take necessary precautions for any complications that might arise.

Students who had not taken MiTEc identified lesson planning as challenging. For them the road from planning the lesson to actually teaching it was an arduous process. Some of the participants stated that they had not planned a complete lesson before and it was difficult and toilsome for them. For others time management, asking questions or classroom management were the issues that they found troublesome and needed to address.

According to participants, although they are expected to do presentations during their regular coursework as well, in comparison to teaching an actual lesson, the dynamics do not match. Regardless of the fact that MiTEc provided a mock middle school classroom environment and dynamics, pre-service teachers identified the teaching opportunity provided by it as beneficial for lesson planning, experiencing teaching dynamics, and self-awareness for one's teaching ability. For them, being able to practice improved their skills such as asking questions and allowed them to focus on what is necessary while planning and teaching a lesson.

For some of the pre-service teachers, pre-lesson preparation turned out to be a necessity that they had not considered in advance neither during MiTEc nor the Practice Teaching course. As some of them stated, they went ahead with their lessons without giving teaching materials and equipment for experiments a trial run. Since they had done particular experiments and activities in university courses, they were assuming that they would find similar dynamics in middle school classrooms. However, that was not the case and, as they stated, they ended up with problems and issues they had not foreseen beforehand. The outcome of such experiences for these students was, understanding the need and necessity of testing any materials they are planning to use in advance to assure success during the lesson.

As in pre-lesson preparation, another point that needed attention was having a backup plan (plan B). The necessity of having a plan B in case something goes wrong arose during pre-service teachers' microteaching experiences for three participants. This was also one of the topics discussed in class in MiTEc previously, which they identified as valuable. As one of the participants stated, during the Practice Teaching course, unexpected situations arose and she was not being able to use videos as planned due to technical problems but because she had foreseen such a possibility, she had a backup plan which allowed her to continue teaching the lesson.

Connecting Theory with Practice

The ability to put theory into practice is the second step in teacher preparation. Through practice prospective teachers can develop and master skills necessary in execution, which in turn is expected to be reflected in student achievement. In many cases making the connection from theory to practice is not as easy as expected or as natural as it would be anticipated. Connecting theory with practice appears to be a challenge for the majority of the pre-service teachers. Concrete experiences are needed to be able to make that connection. As stated, MiTEc was reported to serve as a bridge between theory and practice for pre-service science teachers by providing these needed concrete experiences. However for pre-service science teachers who did not take MiTEc and lack the opportunity to practice such skills in advance, the teaching experience course was reported to be challenging since they were having trouble making the connection between theory and practice.

Self-confidence

Pre-service teachers who took the MiTEc were found to have higher self-confidence in comparison to peers who did not take the course. They believed that they did a better job in communicating with and teaching middle school students and verbalized this belief with comments such as, *'I believe students who took microteaching are more successful in comparison to who have not.'* During interviews they identified the outcomes of their teaching as "successful" with statements such as, *'...now I'm more successful in....'* They have stated, middle school students prefer to work and study with them during projects and other school related work rather than with their peers who did not take the microteaching course. They believed they were more successful in making the connection

between theory and practice, identifying student needs, using body language and necessary teaching skills.

In addition, they stated that they provided feedback and help to peers who had not taken MiTEc previously. For some students, although they have not taken the course, suggestions from peers were helpful to overcome some of the issues they were facing in the school environment. Statements such as *'... tried to model friends who took MiTEc'* identified the communication and interactions among students. Some of the pre-service teachers who have not taken the MiTEc associated their school experience with comments such as, *'not so great or not successful'*. They expressed a desire to have taken the course. They also stated the value of their peers' help on issues they were facing. While some stated that it was helpful overcoming their anxiety and increasing their own self-confidence, some students stated that they tried to use friends' suggestions but *'still it was not a great experience'*.

The sense of failure in practice teaching in addition to lack of experience was identified as a supplementary factor to anxiety and low self-confidence among participants based on their statements. Sadler (2013) also highlights the relation between self- confidence and teaching context since self-confidence is "reflection of person's perception of their capacity to achieve a goal" (p.158). Based on the statements of a few of the participants, it can be interpreted that the positive and negative teaching experiences and their influence on students' self-confidence may be influential and predictors of future teaching behaviors. One of the pre-service teachers who took MiTEc in previous semesters commented, referring to his future practices, stating that, *'Our teachers tell us that once we start working we would feel like fish out of a pond. But I don't think I will feel that way'*. Contrary to his view another participant who had not taken MiTEc predicts that she *'will not be able to use the theoretical stuff'* she learned in her teaching. These may be the cases for other students as well.

Self-awareness and Observations Skill

Using videos was another aspect of MiTEc, which was also identified as a useful element in this study as well as previous studies. Use of videos has two facets and the benefits were identified to be two fold, accordingly. First of all, videos that were recorded in actual classroom settings were used and found to be useful in making associations with real classroom settings. They were helpful to pre-service teachers in improving their observation skills and allowed them to familiarize themselves with real classroom environments that they were going to be in during both school experience and student teaching courses. They were especially successful teaching aids to show pre-service teachers the student profile they will face and what kind of dynamics take place in an actual classroom setting, thus helping pre-service teachers to be prepared in advance. Being able to practice what to look for in the school environment through videos also help pre-service teachers' transition to school environment during the Practice Teaching course. They were able to acclimate to the school environment faster and conduct observations more efficiently in a much shorter time period. As one of the participants stated, they *'were more successful from the beginning in (their) observations at the school compared to friends who did not take microteaching and had trouble at the beginning'*.

The second use of videos was as a self- evaluation tool, which also helped for self-awareness purposes. For this purpose students recorded their own teaching experiences during MiTEc and were asked to watch and evaluate their own videos. This exercise allowed pre-service teachers to be aware of their own physical reactions as well as abilities. During MiTEc, immediately after teaching a lesson, pre-service teachers were asked to evaluate themselves. Pre-service teachers' responses point out the fact that initially they lack the awareness of their physical and vocal reactions in a classroom during teaching. Once they watch their video recorded during teaching, they recognize what they actually have done in practice. Such experiences allow students to recognize their own abilities and skills as well as what they need to improve.

Impact on other courses

Pre-service teachers' comments emphasize that the skills they have acquired or mastered during MiTEc were also useful and carried into other coursework in addition to the School Experience and Practice Teaching courses. They have stated that the presentations they have done were much more effective and received commendation from peers and they have identified MiTEc as a beneficial opportunity. Overall, according to the participants, pre-service teachers who took MiTEc were one step ahead and had more advantage during the Practice Teaching course.

Conclusion and Recommendations

Teacher education programs should be designed and must evolve in a way that teacher candidates receive the best possible education. By doing so better educational opportunities are provided for future generations. Founded on this idea, this study was conducted to evaluate the value and success of an elective course offered to pre-service teachers majoring in science education.

The findings of the study suggest that MiTEc provides beneficial opportunities to students for other courses including the School Experience and the Practice Teaching courses, which take place in real middle school environments. The benefits of the course were emphasized by both pre-service teachers who have taken MiTEc and those who have not. Communication and interactions between these two groups allowed pre-service teachers who have not taken the course to have a valid view on the course. MiTEc was giving an opportunity to participating teachers to experience 'what it means to teach a complete lesson with all the bells and whistles' and to learn about and practice lesson planning, classroom management, student teacher interactions. It also created a valuable opportunity to pre-service teachers to become self-aware about their own teaching abilities. Through watching their own teaching videos, they were able to recognize how their body language, voice tone and other communication skills as well as their teaching abilities. In addition, they were able to view how certain teaching strategies work in a classroom environment or how successfully they can execute them. However, probably the biggest benefit of the course was the opportunity it created for students to make the connection between theory and practice. The sooner such connection is made and put into practice, the more likely pre-service teachers will experience meaningful and more successful teaching moments. Such experiences may also be a determining factor for pre-service teachers' future practices. Although it was not a focus of this study to investigate the impact of positive and negative teaching experiences on future practices, it is definitely worth investigating such relations especially for pre-service teachers once they enter the workforce.

In terms of self-confidence in relation to teaching, it is a limitation of this study that it did not focus on exploring such relationship in depth and that only participants' comments and responses were reported. However, based on the data, it can be interpreted that opportunities allowing pre-service teachers to practice teaching in a controlled environment can increase self-confidence. Additionally, both positive and negative teaching experiences and their influence on students' self-confidence may be influential and predictors of future teaching behaviors and motivation. Further studies are recommended that focus on the relationship as well as on the impact of self –confidence on future teaching behaviors.

All of the participants in this study recommended this course to other pre-service teachers with the consideration of their experience in real school environment and the coursework they took during the four-year program. Overall, through this study, the elective microteaching course was identified as a successful attempt to create meaningful learning environments for pre-service teachers that in turn would help them in the process of becoming skillful, successful and self-aware teachers.

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Learning Styles and Problem Solving Skills of Turkish Prospective Teachers

Ilke Evin Gencel*

Canakkale Onsekiz Mart University

Abstract

Global changes in educational discourse have an impact on educational systems, so teacher education programs need to be transformed to better train teachers and to contribute to their professional development. In this process learning styles and problem solving skills should be considered as individual differences which have an impact in transformative and lifelong learning. In this context, this study aims to investigate the learning styles and problem solving skills of individuals training to become teachers. All participants (N=887) are education students at a state university in Turkey. This study revealed that the converging learning style was the most common among our sample of teacher candidates. Additionally, the learning styles of our participants did not differ in accordance with gender or academic department and the problem solving scores of all participants fell within the intermediate level range. Within this intermediate range, however, students who possessed the converging learning style tended to have higher scores on the problem solving measure than students possessing the other learning styles.

Keywords: Learning styles, problem solving skills, prospective teachers, teacher training

* **Ilke Evin Gencel** is an associate professor of Curriculum and Instruction at Canakkale Onsekiz Mart University. Her research focuses on instructional design, characteristics of teacher candidates, learning styles and strategies, experiential learning studies.

Correspondence: ilkegencel@comu.edu.tr

Introduction

With regard to education, the curricula which tend to produce the most positive results are characterized by a distinct focus on development of learning strategies and problem solving skills. The aim of such curricula is to produce students who are skilled at accessing information and using that information efficiently in problem solving processes. Curricula are implemented by teachers. In this context first of all teachers and prospective teachers must be aware of their own and their students' individual differences.

Problem solving skills are important for both daily life and academic achievement (Kennedy, Tipps, & Johnson, 2004). According to Heppner, problem solving is defined as the way to overcome difficulty when faced with obstacles. In other words, problem solving equates to coping with problems. In this process, individuals dedicate their cognitive and affective processes to the achievement of end goal. It has been proven that individuals who are not be able to effectively problem solve are more prone to anxiety and insecurity as well as being less equipped to understand the problems they are faced with (Heppner & Baker, 1997; Heppner, Baumgardner, & Jakson, 1985). Kolb (1984) states that learning preferences and learning styles have different effects on individuals' capability to understand problem as well as their chosen methods for solving them. Additionally, it has been emphasized that knowledge of one's own learning style is important for being effective problem solver (Akkoyunlu, Altun, & Soylu, 2008). In this regard, the concept of learning style which focuses on individual differences in learning has been considered the most important individual pattern in self-regulation and problem solving process. The awareness of learning styles can help both in designing teaching-learning processes and in developing problem solving skills (Sywelem, Al-Harbi, & Fathema, 2012).

The significance of individual variation in terms of problem-solving skills is obvious in certain educational systems which are shaped within the framework of life-long learning. In order to construct a teaching model which produces students who can successfully solve problems by using previously acquired information, it is advisable for teachers and teacher candidates to be aware of individual differences amongst their students and in comparison to themselves. Additionally, teachers must possess strong problem solving skills. For this reason, teaching-learning processes should be designed according to the principle of constructivism and should contribute to social and self transformation (Barrot, 2013).

Appropriate teaching-learning process planning skills are directly correlated with pre-service education (Ball & Forzani, 2011; Stewart, 2011). In this context, creating a profile of teacher candidates which addresses issues of individual learning style and problem solving skills and solution generation constitutes a major contribution to educational research. Creation of such profiles would prove effective for increasing teacher candidates' awareness of their own learning styles and problem solving skills, which in turn would lead to increased success during the learning process and during their interactions with students. In this respect, the aims of this research are to determine whether learning styles and problem solving skills of teacher candidates differ in terms of gender and their departments, to find out whether there is a relationship between learning style and problem solving skills, and to develop suggestions for educational reform on the basis of these findings. In addition to this, it is supposed that the results of this research will provide guiding information for teacher trainers in modifying the teaching-learning process. Moreover, it is assumed that this study is significant from the perspective of experimental studies such as designing and practicing activities that can develop new teaching approaches based upon learning styles and problem solving skills, and gathering data from Turkey for further intercultural and comparative research.

Research on learning styles has received considerable attention over the recent years. There are various taxonomies of learning styles; one of the most influential of these taxonomies is based on Kolb's experiential learning theory (Boosman, Meily, Pos, Lindeman, & Heugten, 2012; Joyce & Kantraidou, 2011; Kolb 1984; Shultz & Shultz 2004; Sywelem et al. 2012). Although it has been criticized that the same learning characteristics are considered in different categories and that individuals are classified according to their learning characteristics, it has been emphasized that

learning styles have an effect on learning, therefore it has been recommended that the amount of research in this field be increased, and the common findings be investigated further (Apter, 2001; Coffield, Moseley, Hall, & Ecclestone, 2004; Hadfield, 2006). Gregorc (1984) defines learning styles as the personally preferred way of acquiring information which gives some clues about the individual's personal ability. It also has been said that pupils' individual characteristics can render the same methods of instruction effective for some students and ineffective for others (Dunn & Dunn, 1992, p. 5).

According to Kolb (1984), the learning process occurs through experiences. Kolb considers learning as a four step process. First, individuals gain concrete experiences as a result of their natural environment, then they observe those experiences in different ways and reflect on them. This reflexion has an effect on the building of an abstract conceptualization. As a final result of this process, individuals attain principles and make generalizations. These generalizations serve as a guide for the individual's activities and advanced level learning. This process continues as a cycle; new experiences are gained and they serve a guide for the next stage of learning (Kolb, 1984; 1999; Kolb & Kolb, 2005). Thus, Kolb defines four ways of learning; concrete experience, reflective observation, abstract conceptualization and active experimentation.

The composition of these learning styles is stated as the accommodating learning style, the diverging learning style, the assimilating learning style and the converging learning style. The diverging learning style is characterized by a synthesis of concrete experience and reflective observation. Individuals who possess this learning style are able to look at concrete situations from different perspectives. Identifying problems and assessing them from different perspectives are their primary strength (Evin Gencel, 2006; Kolb & Kolb, 2005). The learning style called assimilating is the combination of abstract conceptualization and reflective observation. The previously mentioned learning styles are considered to be quite effective for organizing extensive large bodies of knowledge in a logical manner. While they are effective for planning and identifying problems, it is observed that they are insufficient for solving problems (Hein & Budny, 2000; Kolb & Kolb, 2005; Scott & Koch, 2010).

The converging learning style encompasses the learning strategies of abstract conceptualization and active experimentation. Individuals who possess this learning style are skilled at logical analysis and problem solving (Kolb, 1999; Sywelem et al. 2012; Evin Gencel, 2006). Finally, the accommodating learning style is associated with a reliance on concrete experience and active experimentation. Individuals who possess this learning style prefer to take advantage of their own experiences while solving problems (Aşkar & Akkoyunlu, 1993; Kolb, 1999; Scott & Koch, 2010).

It has been observed that the interest for research on prospective teachers' learning styles has increased in recent years. Research reveals that prospective teachers have multiple learning preferences. In the literature, there are many studies (Bahar & Sülün, 2011; Demir, 2008; Evin Gencel & Köse 2011; Gürsoy, 2008; Kazu, 2010; Merter, 2009; Özdemir & Kesten, 2012; Peker & Mirasyedioğlu, 2008; Perry & Ball, 2004; Tuna, 2008) proving that prospective teachers usually exhibit a preference for the converging and assimilating learning styles although there are also prospective teachers who possess the assimilating and accommodating learning styles (Akca, 2013; Baykara Pehlivan, 2010; Eyyam, Meneviş, & Doğruer, 2011; Merter, 2009) and learning styles of prospective teachers do not differ according to gender (Bahar & Sülün, 2011; Gürsoy, 2008; Özdemir & Kesten, 2012). Moreover, studies put forward that prospective teachers' learning styles are related to their self-efficacy (Evin Gencel & Köse, 2011; Baykara Pehlivan, 2010), academic success (Alghasham, 2012; Akca, 2013), attitudes towards technology (Dost & Sağlam, 2012), critical thinking levels (Güven & Kürüm, 2008) and scientific process skills (Duran, Işık, Mıhladı, & Özdemir, 2011). In addition, there are studies affirming that educators being informed about learning styles improves the quality of the learning environment (Hadfield, 2006; Honigsfield & Schiering, 2004; Saracho, 2003; Solvie & Sungur, 2003).

As is characteristic of learning styles, the approaches to and levels of problem solving skills differ greatly from individual to individual. The term “problem” is defined as the complexity faced in any situation, and the term “problem solving” as the process of overcoming that complexity. Heppner summarizes the process of problem solving in five steps. When individuals encounter a problem, they first specify a general approach for dealing with it. Then comes the second step; identifying the problem and limiting it. After brainstorming solutions to the problem, the individual chooses the best solution from among the options. In the last step, individuals assess whether the solution solves the problem or not (Cobb & Steffe, 2011). According to Heppner, individuals may also adopt the so called “Hasty Approach” in the problem solving process. For this approach they simply accept the first idea that comes to mind. Individuals who use the “Considerate Approach” first try to understand the problem completely, and think about the possible outcomes of their solution options. Individuals who adopt the “Avoidant Approach” fear that they will not be successful in solving the problem. Individuals who use the “Evaluative Approach” consider a variety of options in the process of problem solving. Moreover, individuals who adopt the “Self Confident Approach” constantly look for new solutions. Individuals who use the “Planned Approach” gather data periodically. The Hasty and Avoidant Approaches are regarded as inferior when compared to other approaches (Heppner & Peterson, 1982; Cobb & Steffe, 2011).

There have been findings in the literature which show that prospective teachers’ perception of problem solving skills is generally at medium level (Bayraktar, Güngörmüş, Gülbahçe, Şahin, & Bastık, 2011; Çapri & Gökçakan, 2008). There are findings claiming that prospective teachers’ problem solving skills, their self-esteem (Gürşen Otacıoğlu, 2008; Kesgin, 2006) and critical thinking skills (Yıldırım & Yalçın, 2008) are relational. The ability to effectively problem solve makes cognitive activities more enjoyable; however, it has been stated that teacher training programmes do not execute problem solving skills efficiently (Wade, Fauske, & Audrey, 2008). Additionally, for transformative learning, prospective teachers need to know their individual learning differences, and they should have effective problem solving skills to keep pace with rapidly changing learning opportunities. According to transformative learning theory, perspective transformation is the most critical kind of knowledge (McGonigal, 2005).

Perspective transformation is described by Mezirow (1991, p.167) as ” ...the process of becoming critically aware of how and why our assumptions have come to constrain the way we perceive understand, and feel about our world; changing these structures of habitual expectation to make possible a more inclusive, discriminating, and integrating perspective; and finally, making choices or otherwise acting upon these new understandings.” Additionally, Moore (2005) emphasizes that in the transformative learning process learners are able to reflectively transform their attitudes, beliefs and emotional reactions which constitute their meaning scheme. The research focus in this field has shifted from learning for information to learning for transformation (Le Fevre, Fritz, & Westhuizen, 2011). For developing these abilities learners should know their individual characteristics such as their individual learning style, and they need to be a good problem solvers. Various authors have emphasized that learning styles and problem solving abilities are key factors that can influence the transformative learning process (Cranton, 2006; Magro & Polyzoi, 2009; Taylor, 2007).

The number of research studies which address the learning styles and problem solving abilities of prospective teachers much smaller than the number of research studying these two points independently. Küçükkaragöz and colleagues (2009) stated that there is no relationship between learning styles, problem solving abilities and gender, Metallidou and Platsidou (2008) stated that prospective teachers mostly employ the active experimentation learning style, and that there are negative relationships between using analogy and visualization in active experimentation and problem solving. In a study by Carmo and the colleagues (2006), it is noted that visual students have low problem solving abilities. Şirin and Güzel (2006) found that there was a positive correlation between effective problem solving skills and the tendency towards a reflective observation learning style. Conversely, these studies noted a distinct negative correlation between problem solving skills and the tendency towards an abstract conceptualization learning style. The ability to problem solve is a learnable skill. First of all; teachers should definitely be model problem solvers. Teachers who employ

effective problem solving strategies can train learners to employ such strategies as well to master (Senemoğlu, 2002).

In order to be able to produce individuals who can solve problems and who are aware of their strengths and weaknesses, teachers and prospective teachers must be knowledgeable of these characteristics. It is considered to be important to specify prospective teachers' profiles in terms of learning styles and problem solving skills, and to scope out a solution if there is any deficiency.

In this context, the objectives of the current study are to investigate whether learning styles and problem solving skills of teacher candidates differ in terms of gender and their departments, to find out whether there is a relationship between learning styles and problem solving skills. Based on the objectives of the study, the following research questions were addressed:

- What kind of a distribution do prospective teachers indicate in terms of learning styles?
- Do the learning styles of prospective teachers differ in accordance with their gender and department?
- How do prospective teachers perceive themselves in terms of their problem solving skills?
- Do the problem solving skills of prospective teachers differ in accordance with their gender and department?
- Do the problem solving skills of prospective teachers differ in accordance with their learning styles?
- Is there any relationship between prospective teachers' problem solving skills and their learning styles?

Methodology

Participants

The data of this research was gathered from teacher candidates in the Faculty of Education at Canakkale Onsekiz Mart University in Turkey. The research group was composed of 887 teacher candidates. The participants were mostly female (69,4%) teacher candidates studying Early Childhood Education (ECE) (21,6%), Turkish Language Teaching (TLT) (17,9%), English Language Teaching (ELT) (11,7%), Music Education (ME) (4,7%), Japanese Language Teaching (JLT) (9,4%), physical education (PE) (2,8%), German Language Teaching (GLT) 4,1(%), Science Education (SE) (5,6%), Primary School Education (PSE) (6,4%), Art Education (AE) (4,8%), Computer and Instructional Technologies Teaching (CITE) (3,5%), Social Studies Teaching (SST) (7,3%).

Data Gathering Tools

Kolb's Learning Style Inventory (Version 3) developed by Kolb (1999) that adapted for use in Turkish by Evin Gencil (2007) consists of 12 statements about the learning preferences. The points taken from the scale are classified as "converging", "diverging", "assimilating", and "accommodating" in relation with preferences for "concrete experience", "reflective observation", "abstract conceptualization", and "active experience". The Cronbach alpha value has been found to be .76 for concrete experience, .72 for reflective observation, .81 for abstract conceptualizing, .76 for active experience, .79 for abstract conceptualizing-concrete experience, and .77 for active experience-reflective observation. The Problem Solving Inventory (PSI) developed by Heppner and Peterson (1982) adapted for use in Turkish by Şahin, Şahin and Heppner (1993) was used for the study. It is a Likert-type scale composed of 35 items ranking between 1-6 points. There are three filter items that were not graded in any way. The scale is composed of six sub-dimensions; hasty approach, considerate approach, avoidant approach, evaluative approach, self confident approach and planned approach. Reliability coefficients of the sub- dimensions are .73, .69, .74, .68, .62, .70 respectively and .79 for the whole inventory.

Data Analysis

In the data analysis process, frequency, percentage values, mean and standard deviation values were calculated, chi- square, one way analysis of variance and t- test were performed, pearson moment correlation coefficients were calculated. The homogeneity of variances were checked using the Levene test; when $p < .05$ was found, the nonparametric tests Mann Whitney-U Test and Kruskal Wallis H test were performed.

Findings

Table 1 represents the distribution of learning styles among the teacher candidates tested.

Table 1. *Percentage Distribution of the Participants in Accordance with Their Learning Styles*

Learning Style	f	%
Converging	493	55.6
Assimilating	178	20.1
Diverging	121	13.6
Accommodating	95	10.7
Total	887	100

Table 1 indicates that more than half of the prospective teachers (55.6%) prefer the converging learning style. This preference is followed by those of the assimilating learning style (20.1%), the diverging learning style (13.6%) and the accommodating learning style (13.6%). In order to determine whether or not the participants' learning styles differed in accordance with their gender or their departments, a chi- square test was performed. The results are provided in table 2.

Table 2. *Learning Styles and Chi-square Test Results in Accordance with Gender*

Learning Style		Accommodating	Diverging	Converging	Assimilating	Total
Gender						
Female	n	71	79	345	121	616
	%	11.5	12.8	56.0	19.6	100
Male	n	24	42	148	57	271
	%	8.9	15.5	54.6	21.0	100
Total	n	95	121	493	178	887
	%	10.7	13.6	55.6	20.1	100

$\chi^2 = 2.48$ $sd = 3$ $p = .47$

Table 2 indicates that there is no significant difference $X^2(3)=2.486$, $p>.05$ between participants' learning styles and gender. Both male and female students (56.0%; 54.6%) stated that they generally have converging learning styles. Table 3 presents the results of the chi-square test in terms of the variable of prospective teachers' learning styles according to the department in which each individual studies.

Table 3. *Learning Styles and Chi-square Test Results in Accordance with Department*

Learning Style		Accommodating	Diverging	Converging	Assimilating	Total
Department						
ECE	n	18	30	94	50	192
	%	9.4	15.6	49.0	26.0	100
ELT	n	11	12	59	22	104
	%	10.6	11.5	56.7	21.2	100
TLT	n	19	19	93	28	159
	%	11.9	11.9	58.5	17.6	100
ME	n	5	6	23	8	42
	%	11.9	14.3	54.8	19.0	100
JLT	n	6	13	44	20	83
	%	7.2	15.7	53.0	24.1	100
PE	n	4	7	11	3	25
	%	16.0	28.0	44.0	12.0	100
GLT	n	2	1	29	4	36
	%	5.6	2.8	80.6	11.1	100
SE	n	4	6	29	11	50
	%	8.0	12.0	58.0	22.0	100
PSE	n	5	10	33	9	57
	%	8.8	17.5	57.9	15.8	100
AE	n	3	4	24	12	43
	%	7.0	9.3	55.8	27.9	100
CITE	n	7	5	17	2	31
	%	22.6	16.1	54.8	6.5	100
SST	n	11	8	37	9	65
	%	16.9	12.3	56.9	13.8	100
Total	N	95	121	493	178	887
	%	10.7	13.6	55.6	20.1	100

$X^2 = 40.153$ $sd=33$ $p=.18$

According to table 3, learning styles do not differ significantly in accordance with department [$\chi^2_{(33)}=40.153, p>.05$]. Regardless of the department in which the participants study, they predominantly the converging learning style. Table 4 presents the mean points of participants' perceptions about their problem solving skills.

Table 4. *Descriptive Statistical Results of PSI Points*

Problem Solving Approach	N	Minimum	Maximum	\bar{X}	S
Hasty Approach	887	9	54	33.49	7.16
Considerate Approach	887	5	30	14.18	4.06
Avoidant Approach	887	4	24	16.92	4.36
Evaluative Approach	887	3	18	8.10	3.10
Self Confident Approach	887	7	42	21.33	4.92
Planned Approach	887	4	24	10.25	3.73
General Problem Solving	887	32	192	113.81	17.09

Table 4 indicates that prospective teachers often use the hasty, considerate, avoidant, self confident, and planned approaches. The mean score provided from the overall scale shows that the prospective teachers' perception of problem solving skills is closest to the "slightly positive" (85.4-112) interval. A t- test was performed on the data to specify whether a significant difference existed between participants' PSI points and their gender. The homogeneity of variances was checked with a Levene test, and when ' p' was found to be less than .05 in the Levene test, a Mann Whitney-U Test was performed, which is nonparametric.

Table 5 presents the results of the t- test in accordance with PSI points in terms of gender.

Table 5. *t- Test Results in Accordance with PSI Points in terms of Gender*

	Gender				sd	t	Homogeneity
	Female		Male				Levene
	(N=616)		(N=271)				
	\bar{X}	ss	\bar{X}	ss			
Hasty Approach	33.68	7.02	33.04	7.46	885	1.224	2.32
Considerate Approach	14.15	4.20	14.24	3.73		-0.307	4.80*
Avoidant Approach	17.03	4.32	16.66	4.45		1.190	0.98
Evaluative Approach	7.97	3.05	8.40	3.20		-1.907*	0.35
Self Conf. Approach	21.38	4.52	21.23	5.74		0.419	3.79*
Planned Approach	10.33	3.71	10.08	3.79		0.930	0.30
General Problem Solving	114.13	16.12	113.09	19.11		0.834	6.23*

* $p \leq .05$

According to table 5, female teacher candidates' mean points in sub-dimensions of hasty, avoidant and planned approaches are higher than those of the male teacher candidates. The difference between means is not significant. Male teacher candidates' mean points are higher than the female teacher candidates in the sub dimension Evaluative Approach and this is statistically significant [$t_{(885)} = -1.907$; $p \leq .05$]. Since the results of the Levene test indicate that the variances are not homogeneous in the general point distribution of PSI and the considerate and self confident, the non parametric Mann Whitney-U Test was performed. The results are provided in table 6.

Table 6. *Mann-Whitney U Test in Accordance with the General Distribution Point of PSI*

	Female (N=616)		Male (N=271)		U
	Mean of sequence	Total of sequence	Mean of sequence	Total of sequence	
Considerate Approach	442.89	272819.50	446.53	121008.50	82783.5
Self Confident Approach	451.56	278160.00	426.82	115668.00	78812.0
Problem Solving	451.84	278330.50	426.19	115497.50	78641.5

U=82783.500; $p > .05$

As table 6 indicates, there is not a significant difference between female and male teacher candidates in terms of the considerate ($U=82783.500$; $p>.05$) and self confident ($U=78812.000$, $p>.05$) approaches in problem solving. A significant difference in total point of prospective teachers' problem solving skills according to gender variable in terms of statistics has not been found ($U=78641,500$, $p>0,05$).

A One Way Analysis of Variance was performed on the data to specify whether participants' P.S.I points differ in terms of their departments. The results are presented in table 7. The homogeneity of variances was checked with a Levene Test, and when the F value was significant, the source of the difference was identified with a Scheffe test. When the result was $p<.05$ in the Levene test, the nonparametric Kruskal Wallis H test was performed. The difference between the hasty ($F=2.06$; $p<.05$), considerate ($F=3.99$; $p<.05$), avoidant ($F=5.24$; $p<.05$), evaluative ($F=3.94$; $p<.05$), self confident ($F=3.59$; $p<.05$), and planned approach ($F=5.22$; $p<.05$) in accordance with students' departments is significant. However, the total point of PSI does not indicate a significant difference in terms of students' departments ($F=1.49$; $p>.05$).

Since the Levene test indicated that the distribution of the group was nonhomogeneous in the avoidant approach, the nonparametric Kruskal Wallis H test was performed. To examine the source of the difference, the Mann Whitney U test was performed by forming dichotomous groups. The results are presented in Table 7.

Table 7. *The Result of Kruskal Wallis H Test About Nonhomogenic Sub-dimension in Accordance with the Department*

P.S.I.	Department	Mean of seq.	sd	X^2	Difference
	1. ECE	355.15			
	2. ELT	459.46			
	3. TLT	472.16			
	4.ME	388.35			
	5.JLT	518.30			1-2; 1-3; 1-5;
Avoidant	6.PE	424.12			1-7; 1-9; 1-10; 1-
Approach	7.GLT	567.18	11	57.26*	12; 2-11; 3-11; 4-
	8.SE	398.39			5; 4-7; 4-10; 5-8;
	9.PSE	483.35			5-11; 9-11; 11-12
	10.AE	535.73			
	11. CITE	346.81			
	12.SST	479.59			

* $p<.01$

The difference in the mean of sequence of the group is significant ($X^2(11)=57,26$; $p<.05$).

One Way Analysis of Variance was performed to identify whether participants' problem solving skills differ in accordance with their learning styles. The results are provided in Table 8.

Table 8. *The Results of One Way Analysis of Variance in Accordance with PSI in Terms of Learning Styles*

P.S.I.	Learning Style	N	\bar{X}	S	F	Difference	Levene
Hasty Approach	1.Accommodating	95	32.81	7.49	10.17*	2-4	0.93
	2. Diverging	121	31.50	6.38			
	3.Converging	493	32.37	7.15			
	4.Assimilating	178	34.61	6.97			
Considerate Approach	1.Accommodating	95	15.42	4.52	6.94*	1-3; 2-3	1.11
	2. Diverging	121	14.96	3.77			
	3.Converging	493	13.07	4.04			
	4.Assimilating	178	14.30	3.82			
Avoidant Approach	1.Accommodating	95	15.87	4.85	10.34*	3-4	2.06
	2. Diverging	121	16.00	4.50			
	3.Converging	493	16.12	4.09			
	4.Assimilating	178	17.63	4.36			
Evaluative Approach	1.Accommodating	95	9.10	3.55	3.76*	1-3	1.92
	2. Diverging	121	8.00	3.05			
	3.Converging	493	7.91	2.99			
	4.Assimilating	178	8.00	3.11			
Self Confident Approach	1.Accommodating	95	22.24	4.99	1.88		1.07
	2. Diverging	121	21.77	5.89			
	3.Converging	493	21.06	4.80			
	4.Assimilating	178	21.29	4.43			
Planned Approach	1.Accommodating	95	10.92	3.95	2.80*	1-3	2.46*
	2. Diverging	121	10.52	4.11			

General Problem Solving	3.Converging	493	9.90	3.68			
	4.Assimilating	178	10.57	3.42			
	1.Accommodating	95	112.95	18.54	2.82*	3-2; 3-4	1.28
	2. Diverging	121	116.14	20.15			
	3.Converging	493	111.16	15.54			
	4.Assimilating	178	114.53	16.52			

*p<.01

According to Table 9, there is a significant difference in prospective teachers' problem solving skills in accordance with their learning styles. Points of problem solving skills for the students who demonstrated a preference for the converging learning style are significantly higher than the points of the students who exhibited the diverging and assimilating learning styles. The hasty and avoidant approaches are mostly used by the participants who exhibit an assimilating learning style, while considerate, evaluative, self confident and planned approaches are used mostly by the students who have a converging learning style.

In order to determine whether or not there exists a relationship between learning styles and problem solving skills Pearson Moment Correlation coefficients were calculated. The results are presented in Table 9.

Table 9. *The Result of Pearson Moment Correlation between Participants' PSI Points and LSI*

	C.E.	R.O.	A.C.	A.E.	P.S.I.
C.E.	1.00				
R.O.	-.125**	1.00			
A.C.	-.173**	-.177**	1.00		
A.E.	-.218**	-.279**	-.89*	1.00	
P.S.I.	-.012	-.131*	-.111*	-.118*	1.00

**p<.01; * p<.05

As Table 9 indicates, it has been identified that there is a strong negative correlation between the problem solving skills on the one hand and reflective observation($r=-.131$), abstract conceptualization ($r=-.111$) and active experimentation ($r=-.118$) on the other hand. In other words, as students' reflective observation, abstract conceptualization, and active experimentation points increase the problem solving inventory points decrease.

Discussion

In this research, it has been identified that prospective teachers most often exhibit a converging learning style, and it is followed by the preferences for assimilating, diverging and accommodating learning styles in that order. In accordance with these findings, Bahar and Sülün (2011), Demir (2008), Ergür (1998), Garvey and colleagues (1984) also identified that the students in

their sample groups demonstrate a preference for the converging learning style. The findings of Ergür (1998) and, Bahar and Sülün (2011) about the distribution of prospective teachers' learning styles overlaps with this research in terms of the order of frequency for the various learning styles, converging being the most frequent followed by, assimilating, diverging and accomodating respectively. Küçükkaragöz and colleagues (2009) stated that teacher candidates specializing in the higher grades generally exhibit the converging learning style. Furthermore, Perry and Ball (2004), and Evin Gencil and Köse (2011) demonstrated that students studying in Maths and Science have converging learning style in general. However, there are a number of studies discovered a predominant preference for the assimilating learning style among their participants (Atay, İbiş, & Kartal, 2009; Çaycı & Ünal, 2007; Gürsoy, 2008; Hasırcı, 2006; Peker & Mirasyedioğlu, 2008; Tuna, 2008). However, excluding the studies of Atay, İbiş and Kartal (2009)'s, the converging learning style occupies the second position in the frequency sequence of all other studies. In this respect, the findings are not parallel, but they are not in total contradiction as the most common learning style used remains the converging learning style. In the teaching-learning process, implementing Kolb's experiential learning theory which provides appropriate options for students who have different learning preferences, can be useful for boosting the efficiency of the process.

In accordance with the literature (Atay et al. 2009; Bahar & Sülün, 2011; Demir, 2008; Gürsoy, 2008; Kılıç & Karadeniz, 2004; Köse, 2010; Küçükkaragöz, Deniz, Ersoy, & Karataş, 2009; Mutlu, 2008), it has been clarified that teacher candidates' learning styles do not differ in accordance with gender. Experiential learning theory is based on the assumption that learning styles occurs as a result of experience, more than as a result of genetic features. Additionally, the fact that there is no difference in terms of gender can be related to both genders' having similar experiences.

It has been identified that there is not a significant difference between teacher candidates' learning styles and their departments. It has been specified that no matter in which department the teacher candidates study, they show a predominant preference for the converging learning style. In congruence with these research findings, there are a number of studies which indicate that learning styles do not differ in accordance with participants' departments in the literature (Demir, 2008; Gürsoy, 2008; Mutlu, 2008). It has been found that teacher candidates' perception of problem solving is in the lower limit of the "quite negative" interval and close to the "slightly positive" interval. This finding can be interpreted as teacher candidates perceiving themselves as "mediocre level problem solver". Additionally, teacher candidates state that they "often" use the hasty approach, the considerate approach, the avoidant approach, the self confident approach and planned approach, while they "generally" use the evaluative approach in problem solving process. The frequent use of both the hasty and the avoidant approach can be charaterized as having negatice effect on the problem solving process. The findings in the literature generally agree with those of this study.

It has been identified that there is no difference in teacher candidates' general problem solving skills in accordance with their gender and there is a significant difference in the sub-dimension of the evaluative approach regarding female students. The significant finding that female students use the evaluative approach more than male students which is characterized as having a positive effect on the problem solving process, overlaps with the findings of Aksan (2006) and Ferah (2000). In this respect, more quantitative and qualitative research findings are needed in this field.

In this study, teacher candidates' perceptions of their general problem solving skills do not differ in accordance with their departments; however, there are some differences in terms of sub-dimensions. It has been found that the hasty approach, which is regarded as a negative characteristic in problem solving, is used by German Language Teaching, Turkish Language Teaching, and Social Sciences Teaching students most frequently and that it is used by Music Education and Early Childhood Education students least frequently. Furtherrrmore, it has been specified that the avoidant approach is used by German Language Teaching, Primary School Education and English Language Teaching students most frequently, and that it is used by Early Childhood Education and CITE students least frequently. The fact that students of Early Childhood Education are more patient in the problem solving process may originate from the fact that they deal with young children. On the other

hand, the students of English Language Teaching department use the considerate and evaluative approaches more. Physical Education department students use the planned approach most widely. This may originate from the fact that they take part in individual and team sport activities.

In this study, it has been found out that the students that exhibit the converging learning style perceive problem solving skills in a more positive way than other students. It has been stated that the decision making and problem solving abilities (Kolb, 1984; 1999) of individuals with the converging learning style are more advanced. The perception of problem solving skills of teacher candidates with the diverging learning style is at a low level. Individuals who use that learning style prefer observing rather than putting a plan into action (Kolb, 1999). In this respect, the findings overlap with the features of learning styles.

The findings indicate that the teacher candidates who employ the reflective observation, abstract conceptualization and active experimentation learning styles perceive themselves as sufficient problem solvers. In the reflective observation learning style, individuals reflect on their ideas about an issue, question how the realities have come into existence and make decisions accordingly. Needless to say, these abilities are effective in the problem solving process. On the other hand, in the abstract conceptualization learning style, individuals look for logical reasons behind concepts and cases, and develop rules and theories. These kind of activities also contribute to problem solving ability in a positive way. The Active experimentation learning style involves the ability to adapt ideas and rules for new situations.

Conclusions and Implications

In this study, it has been found out that there is a relationship between teacher candidates' problem solving skills and their learning styles in accordance with their own perceptions. Moreover, examining the relationships between these variables through quantitative and longitudinal studies may make great contributions to the field. These findings should be used for developing transformative teacher education programs which offer students an education that goes beyond mere knowledge acquisition.

It has been identified that participants most often exhibit the converging learning style. The preference for this style is followed by those of the assimilating, diverging and accommodating learning styles respectively. In other words teacher candidates exhibit different learning characteristics. In the teacher training process, the strengths and weaknesses of each learning style should be taken into consideration. Individuals that have multiple learning preferences should be provided with tools to help them effectively manipulate their learning preferences for each learning environment.

While it has been expected that problem solving skills of teacher candidates are advanced in the 21st century, it has been identified in our study that the problem solving skills of our participants were actually at the intermediate level. Implementations for improving problem solving skills should be used in teacher education programs. Firstly, theoretical information should be given through informative meetings and seminars about problem solving. Teacher candidates' abilities should be developed through case study methods, brainstorming technique, problem solving methods and problem-based learning models which focus on specific topic. Descriptive studies aimed at figuring out the common problem solving skills associated with teacher trainers as well as experimental studies for developing their problem solving skills may contribute to the field.

The perception of the problem solving skills of the teacher candidates who exhibit the assimilating and accommodating learning styles is at a low level. Aside for this it has been ascertained that the hasty and avoidant attitudes, which are accepted as negative features are employed more frequently. In the teaching-learning process, activities for developing problem solving skills should be carried out through homogeneous and heterogeneous small group work. Such activities will help in overcoming the aforementioned deficiencies exhibited by prospective teachers. In this respect,

experimental studies can be planned which aim at determining the effect of education based on Kolb's experiential learning cycle. Finally, the researcher hopes that these findings will inspire further research and discussion on the most effective ways to educate prospective teachers in terms of problem solving skills and and it is assumed that the findings will make a contribution to the field by providing data for future intercultural and comparative research related to the subject matter.

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Prospective Mathematics Teachers' Opinions about Mathematical Modeling Method and Applicability of This Method

Levent Akgün*

Atatürk University

Abstract

The aim of this study is to identify prospective secondary mathematics teachers' opinions about the mathematical modeling method and the applicability of this method in high schools. The case study design, which is among the qualitative research methods, was used in the study. The study was conducted with six prospective secondary mathematics teachers who were taking a "teaching practice" course. In the "Teaching Practice" course, mathematical modeling method was introduced to these selected prospective teachers and activity examples appropriate to this method were presented to them. Then, the prospective teachers prepared examples similar to the activity examples that were presented to them, and they implemented these examples in the schools where they served their internship. The semi-structured interview and observation forms were used as data collection tools in the study. An attempt was made to identify prospective secondary mathematics teachers' opinions about mathematical modeling method and the applicability of this method via interviews, whereas an attempt was made to identify their efficacy in application the mathematical modeling method via observations. Descriptive analysis and content analysis methods were used in analyzing the data. In view of the study, it was found that many of the prospective teachers correctly understood what mathematical modeling meant, but they were not able to fully implement this method in classrooms. When the prospective teachers' opinions about classroom applications of the mathematical modeling method were examined, it was observed that the reasons for the experienced difficulties are the fact that there was not enough time and classroom management was difficult. As for the positive aspects of mathematical modeling, the prospective teachers stated that the mathematical modeling set forth the applicability of mathematics in daily life. Furthermore, all prospective teachers stated that they consider featuring problems that involve this method in their own courses in the future, but some of them stated that they would not be able to use it since its application is difficult and time consuming.

Keywords: Mathematical Model, Mathematical Modeling, Prospective Mathematics Teacher

* Levent Akgün is an assistant professor of mathematics education at Atatürk University. Dr. Akgün is interested in research topics such as mathematical modeling, the concept of variable in mathematics and Programme for International Student Assessment (PISA).

Correspondence: levakgun@atauni.edu.tr

Introduction

Today, where science and technology are rapidly developing, in order for individuals to cope with these developments, they must have equipment with which they can interpret the information and utilize it in their daily lives. The quality of education given to students, and the presented problem solving experiences, hold importance for raising individuals with these qualities. In this respect, among the aims of the high school mathematics education program in our country are developing the mathematical knowledge, thinking, skills and attitudes that students will need in discovering today and the future, and solving daily life problems that they encounter and associating these with other disciplines (Ministry of National Education [MEB], 2011). However, since mathematics is given in the classrooms as an abstract pile of rules that is unrelated to daily life and that must be memorized, most students do not know how they may encounter the subjects which they study in mathematics in daily life and the functions of these subjects in daily life, and they regard mathematics as only a course that is given in school. Featuring real life problems in mathematics courses can ensure overcoming such difficulties and fulfilling the objectives of the teaching program. For this reason, it is important for students to solve mathematics problems, which help them understand the relationship between daily life and mathematics, in mathematics teaching (Kaiser, 2005). Mathematical modeling has a significant role in forming the relationships between mathematics and daily life problems. This is because mathematical modeling is the process of solving real life problems (Özer-Keskin, 2008). Models and modelling perspective requires a process of modelling in which the students go under the cycles of model construction, evaluation and revision to develop a mathematical model in the face of a given problem (Chan, 2009). Mathematical modeling has been viewed from various perspectives in the mathematics education literature (Greer, 1997; Gravemeijer, 1999; Lesh and Doerr, 2003; Van den Heuvel-Panhuizen, 2003). A focus on mathematical modeling involves three important shifts in the approach to the teaching and learning of mathematics, namely, in (1) the nature of the quantities and operations that are useful, (2) the use of contexts that will elicit the creation of useful systems (or models), and (3) the development and refinement of such models in ways that are generalisable (Doerr and English, 2003).

The concepts of the mathematical model and mathematical modeling are concepts that are frequently confused with each other. Mathematical model is to imitate reality using mathematical language (Bender, 1978). Mathematical concept segments such as variables, constants, functions, inequalities, formulas and graphs can be given as examples of mathematical models (Meyer, 1984). On the other hand, mathematical modeling is to simplify and abstract real life problems or to transform these problems into a mathematical form (Özturan-Sağırlı, Kırmacı & Bulut, 2010). In other words, mathematical modeling is the process of carrying the problem situations, which exist or which are built in the areas outside the mathematics world, to the mathematics world and transforming these problem situations into mathematical terms and mathematical solutions (Güzel & Uğurel, 2010; Perrenet & Zwaneveld, 2012). Modeling problems differ from routine problems as they require deep and high mathematical thinking and they are based on richer information in terms of content (Eric, 2010). According to Özer-Keskin (2008), the stages in the mathematical modeling process are as follows: understanding the problem, selecting the variables, forming the model, solving the problem and interpreting the solution in terms of real life. Each of these stages interacts with the other. Moreover, these stages do not have to follow a linear order. The kinds of mental activity that individuals engage in as modellers attempt to make the transition from one modelling stage to the next are given by the broad descriptors of cognitive activity 1 to 7 in Figure 1 (Stillman, Galbraith, Brown & Edwards, 2007).

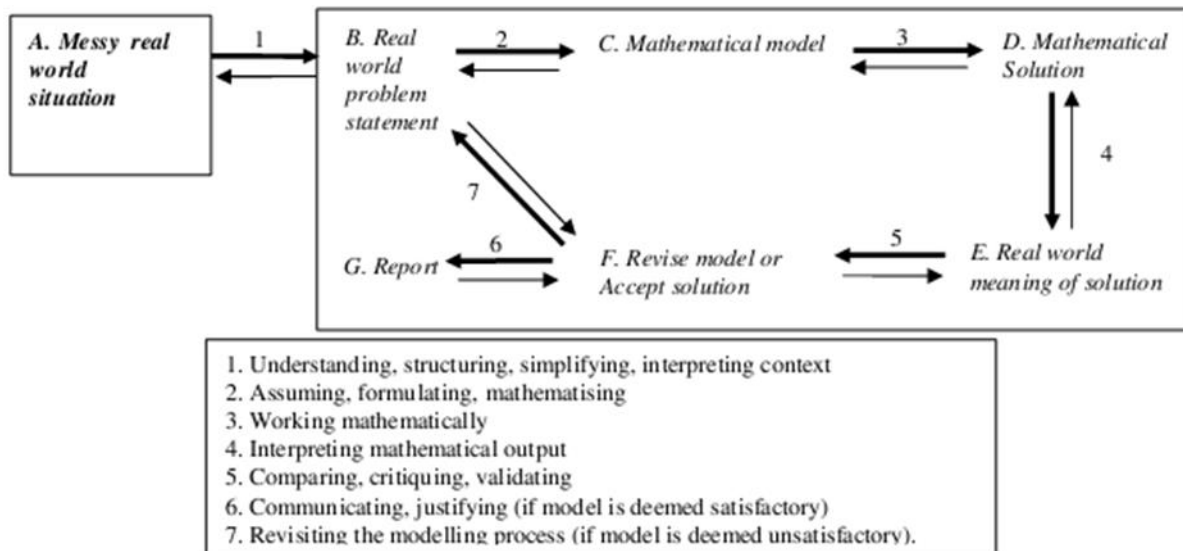


Figure 1. Modelling Process.

The light arrows that are in the reverse direction to the modelling cycle are included to emphasise that the modelling process is far from linear, or unidirectional, and to indicate the presence of reflective metacognitive activity (Maaß, 2006).

Mathematical modeling is a principled activity that has both principles behind it and methods that can be successfully applied. The principles are over-arching or meta-principles phrased as questions about the intentions and purposes of mathematical modeling. These meta-principles are almost philosophical in nature. These methodological modeling principles are also captured in the following list of questions and answers (Dabbaghian, 2015):

- Why? What are we looking for? Identify the need for the model.
- Find? What do we want to know? List the data we are seeking.
- Given? What do we know? Identify the available relevant data.
- Assume? What can we assume? Identify the circumstances that apply.
- How? How should we look at this model? Identify the governing physical principles.
- Predict? What will our model predict? Identify the equations that will be used, the calculations that will be made, and the answers that will result.
- Valid? Are the predictions valid? Identify tests that can be made to validate the model, i.e., is it consistent with its principles and assumptions?
- Verified? Are the predictions good? Identify tests that can be made to verify the model, i.e., is it useful in terms of the initial reason it was done?
- Improve? Can we improve the model? Identify parameter values that are not adequately known, variables that should have been included, and/or assumptions/restrictions that could be lifted. Implement the iterative loop that we can call “model-validate-verify-improve-predict.”
- Use? How will we exercise the model? What will we do with the model?

This list of questions and instructions is not an algorithm for building a good mathematical model. However, the underlying ideas are key to mathematical modeling, as they are key to problem formulation generally.

The modeling process is regarded as a problem solving activity that is appropriate to the purpose of mathematics teaching (Kertil, 2008). Mathematical modeling also plays a great role in making students good citizens and ensuring that they participate in social developments (Blum & Ferri, 2009). This is because mathematical modeling increases the creativity of students, affects their attitudes towards problem solving, helps them understand mathematical concepts and ensures that they have a better understanding of the world (Blum, 2002; Blum & Ferri, 2009; Kim & Kim, 2010). In modeling activities, students typically work in small groups where they are required to develop shareable products that contain mathematical representations and explanations (English, Fox & Watters, 2005; Fox, 2006; Eric, 2010). As a result, students' skills in using mathematical language, and their mathematical communication skills, increased in the mathematical modeling process. Mathematical modeling assists teachers in recognizing mathematical thinking, skills and the abilities of their students (Fox, 2006). The effect of prospective mathematics teachers' knowledge and skills in mathematical modeling and the mathematical modeling method on prospective mathematics teachers' academic success, self-regulation, learning mathematics, beliefs on mathematics and problem solving skills were examined in many studies conducted with prospective mathematics teachers (Erarslan, 2011; Çiltaş, 2011; Güzel & Uğurel 2010; Kertil, 2008; Lingefjärd, 2002; Özer-Keskin, 2008; Özturan-Sağırlı, 2010; Türker, Sağlam & Umay, 2010).

Many countries tend to feature the mathematical modeling in their teaching programs. However, only several modeling examples are featured in mathematics courses and almost none of the teachers has experience in mathematical modeling (Blum & Ferri, 2009; Frejd, 2012; Kawasaki, Moriya, Okabe & Maesako, 2012). Furthermore, many teachers are not aware of mathematical modeling and its importance in teaching (Çiltaş, Deniz, Akgün, Işık and Bayrakdar, 2011; Siller & Kuntze, 2011). Apart from these studies, Kaiser and Schwarz (2006) offered this opportunity to prospective teachers in their study, in which they examined prospective teachers' ability to implement the mathematical modeling in schools, and they concluded that complicated modeling examples could be implemented in schools. In another study of theirs, Schwarz and Kaiser (2007) focused on the mathematical modeling activities conducted by prospective teachers in schools, and they examined the experiences of prospective teachers regarding modeling in schools in terms of the given examples. In their study, Ferri and Blum (2009) examined prospective teachers' opinions on the modeling process and the difficulties that they experienced throughout this process.

Therefore, it is important to introduce the mathematical modeling method, which has a significant place in mathematics teaching, to prospective teachers in their undergraduate study, and it is also important for them to find the opportunity to implement this method in schools. Otherwise, the integration of mathematical modeling into courses may become difficult. To reveal prospective mathematics teachers' efficacy in application the mathematical modeling method will provide significant information in enabling prospective teachers to realize where they fall short and identifying what they may encounter during application this method in their classrooms in the future.

What makes our study different is the fact that there is no study identifying prospective mathematics teachers' opinions on the applicability of this method and which examines their efficacy in application their acquired mathematical modeling skills in the classroom environment in consideration of the mathematical modeling method and the current high schools in our country following the mathematical modeling teaching that is offered to prospective mathematics teachers.

In this study, it is aimed to identify prospective secondary mathematics teachers' opinions about the mathematical modeling method and the applicability of this method in high schools.

Method

Research Design

In this study, the courses in the teaching practice were observed using the semi-structured observation form in order to identify prospective mathematics teachers' efficacy in application the mathematical modeling method, and interviews were conducted with the prospective teachers about

the applicability of the mathematical modeling method. When looked at from this perspective, case study design, which is among the qualitative research methods, was taken as basis in this research. This is because case study is a method in which one or more situations, environments or other interdependent systems are examined in detail (McMillan, 2000); a current phenomenon is studied in its own real life framework; and the questions “how” and “why” are examined in cases where the researcher has little control over the situations (Yin, 2002).

Participants

The convenience sampling technique, which is among the purposive sampling methods, was used in selecting the participants. The convenience sample is to choose the case that is near and easily accessible (Yıldırım & Şimşek, 2008). The research was conducted with six prospective teachers who were studying on the high school mathematics teaching program and who were taking a teaching practice course. Two of the prospective teachers are females and four are males. The prospective teachers were given the codes A1, A2,..., A6 in order to keep their identities confidential.

Instrument and Process

The semi-structured interview and semi-structured observation forms were used as data collection tools in the research. An attempt was made to identify prospective mathematics teachers' opinions about mathematical modeling method and the applicability of this method via conducted interviews. Modeling efficacy requires that the modeling processes are conducted in a suitable manner (Maaß, 2006). That is to say, it is important to follow the steps in the mathematical modeling process. For this reason, an attempt was made to identify the prospective teachers' efficacy in application the mathematical modeling method in the classrooms by considering the mathematical modeling stages (understanding the problem, selecting the variables, forming the model, solving the problem and interpreting the solution in terms of real life) via conducted classroom observations. Furthermore, it is aimed to verify the conducted interviews with observations. The interview questions, which were featured in the studies of Aydın (2008), Çiltaş (2011), Çiltaş et al. (2011), Doruk (2010), Lingefjärd (2007), Özer-Keskin (2008) and Özturan-Sağırlı (2010), were tested in preparing the interview questions whereas the studies of Çiltaş et al., (2011), Özer-Keskin (2008) and Özturan-Sağırlı (2010) were used in preparing the observation form. While preparing the observation forms and interview forms, these forms were checked by two experts and revisions were made in order to make them suit our purpose. The study was implemented in the “Teaching Practice” course in the spring semester of the 2011-2012 academic year. In this application, firstly six prospective teachers were selected. The mathematical modeling method was introduced to these selected prospective teachers for five weeks and activity examples that involved mathematical modeling method were presented to them. The prospective teachers were divided into groups of two in the performed activities. Group members firstly tried to solve the activity individually for approximately five minutes and then they studied as a group for approximately 15 minutes. Guidance was avoided as much as possible while giving feedback to the students in order to enable them to reach the results on their own. The prospective teachers shared the results, which they obtained, on the blackboard. While the prospective teachers were presenting the results that they obtained, it was observed that some groups reached the same results through different ways. Following the activities, a discussion was made regarding prospective teachers' preparing mathematical modeling activities and application these activities in schools. In this process, each prospective teacher prepared two activities that involved problems for mathematical modeling method in the teaching practice courses, and they implemented these activities in the schools where they served their internship. Prospective teachers' efficacy in application their activities in accordance with the mathematical modeling method in high school classrooms was observed.

Data Analysis

Content analysis and descriptive analysis methods were used in analyzing the data obtained from the interviews and observations conducted in order to identify prospective secondary mathematics teachers' opinions about mathematical modeling method and their efficacy in application this method in schools. The data obtained from the conducted interviews was transcribed in the same

day. The category and code list was formed for the content analysis of the transcribed data. The frequencies of these codes were identified. While forming the codes, all transcripts were initially read individually, then question by question, and lastly codes, categories and frequencies were identified. Then, these transcripts were read individually again, and an attempt was made to examine prospective teachers' opinions in a holistic manner. Frequencies signify the number of prospective teachers who have each opinion. The formed category-code list was checked by researchers who are experts in their fields, and revisions were made to some codes. In the conducted coding, it was observed that the ratio of harmony among the researchers were considerably close to each other. Moreover, the reliability of the study was maintained by giving excerpts from the data that was obtained from the interviews. Classroom observations were conducted for the purpose of identifying prospective teachers' efficacy in application this method. The data obtained from the observations were analyzed via descriptive analysis by paying attention to the stages within the mathematical modeling process. Data was collected from more than one data sources, and obtained data was checked by two expert researchers in order to maintain the internal validity of the study. An attempt was made to identify the features of the participants and the process in detail in order to maintain the external validity. An attempt was made to give the obtained results in accord with the data in order to maintain the internal reliability of the conducted study. Data collection tools, raw data, the coding performed on the analysis results and reporting were checked by an expert researcher in order to maintain the external reliability of the study.

Results

This section sets forth the findings obtained from the data that was collected via the semi-structured interviews conducted with prospective secondary mathematics teachers and semi-structured observations. The questions within the semi-structured interviews were studied in this section. Each participant was given a number in order to keep the identities of the participants confidential. This numbering was formed in the form of A_x for the prospective teachers.

Categories, codes and frequencies regarding the codes, which were obtained from the analysis of interview data, are given in Table-1.

Table 1. Categories, codes and frequencies regarding prospective mathematics teachers' opinions

Category	Code	Frequency
mathematical model	equation	2
	function	1
	relationship between mathematics and daily life	2
	mathematical solution to daily life problems	3
mathematical modeling	process	5
	mathematical solution to daily life problems	1
method in application mathematical modeling process	application the mathematical modeling steps	4
mathematical modeling problems and other mathematics problems	mathematical solution to daily life problems	2
	comprehensive	3
	interesting	2
	difficult	3
	not prototype	2
	the same with other activities	1
its applicability in high school	applicable	3

	not applicable	3
contributions of application process	relationship between mathematics and daily life	2
	preparing for the course	2
	application the mathematical modeling	3
	communication	1
	classroom management	1
	permanent learning	1
	different perspective	2
difficulties experienced in school applications	time	3
	classroom management	2
	number of students per classroom	2
	student level	1
	structure of the groups	1
	no difficult	1
Mathematics teaching in universities	mathematical modeling course	4
	applicability of mathematics	2
use in the future	plan to use it	3
	plan to use it rarely	3
positive aspects of mathematical modeling	educational	2
	applicability of mathematics	3
	interesting	2
	active participation	2

The answers given by the interviewed prospective teachers regarding the meaning of the mathematical model concept were coded under the “Mathematical Model” category as follows: *equation, function, relationship between mathematics and daily life, mathematical solution to daily life problems.*

The opinion of A6, who thinks that the mathematical model is an equation or a function, is as follows:

“The mathematical model can be regarded as – how can I say – an equation that has been actually mentioned under the given formula till now. As students, we learned it not with a mathematical model but with questions in the form of writing a function related to it or writing a general statement related to it or finding its formula.”

The opinion of A1 for the code “relationship between mathematics and daily life”, which was studied to form a relationship between mathematics and daily life, of the mathematical model is as follows:

“In my opinion, in order to associate the mathematical model with daily life, we must not only ask questions and find solutions but also contemplate on how to add something from daily life and how to model daily life mathematically. For instance, we can liken a function to a factory.”

Here, A1 regarded the mathematical model as associating mathematics with daily life. However, he was not able to give the definition of the mathematical model in his statement. That is

because he thought of the mathematical model as “likening a function to a factory”. It is clear that this example does not fit into mathematical model examples.

While defining the mathematical model, many prospective teachers without knowing described mathematical modeling. For instance, the opinion of A3, who thinks that the mathematical model is the mathematical solution to daily life problems, is as follows:

“I think that the mathematical model is a way of generating solutions for the real life problems by translating them into mathematical language.”

When the applications of the prospective teachers were observed, it was seen that they used equations, formulas, tables and figures as mathematical models. For instance, in his first application, A1 used a graph, which presented year-based population growth, as a mathematical model.

The answers given by the interviewed prospective teachers regarding the meaning of mathematical modeling concept were coded under the “Mathematical Modeling” category as follows: *process and mathematical solution to daily life problems.*

The opinion of A3, who thinks that the mathematical modeling is a process, is as follows:

“In my opinion, we can define mathematical modeling as the process of preparing the mathematical model, that is to say, the process of modeling.”

The opinion of A2, who thinks that the mathematical modeling is the mathematical solution to daily life problems, is as follows:

“The mathematical model is the equation that we draw, but modeling is to express and solve a daily life problem with mathematical expressions.”

In view of these statements, it was observed that the prospective teachers define mathematical modeling as the process of solving real life problems.

Since it was considered in the conducted interviews that the answers given by the prospective teachers about the meaning of the mathematical model actually defined mathematical modeling, they were asked whether the mathematical model and mathematical modeling are the same thing. The prospective teachers stated that these concepts are indeed different from each other. The opinion of A3, who defined the mathematical model and mathematical modeling in a similar way on this subject, is as follows:

“The mathematical model and mathematical modeling are not the same thing. The mathematical model can be a function or a rule whereas mathematical modeling is a level and a process.”

When we look at this statement, it can be stated that he could distinguish between the concepts of the mathematical model and mathematical modeling, but he was confused since these concepts are very similar to each other.

When the above given statements were examined, it was observed that the prospective teachers were generally able to define mathematical modeling. However, it was witnessed in the conducted observations that they were not able to fully use this in classroom applications. In the classroom observations and in two applications, which were performed in order to reveal prospective teachers’ efficacy in application the mathematical modeling activities, we can say the following regarding the use of mathematical modeling by the prospective teachers:

For the first application, it was observed that only two (A1 and A2) of the six prospective teachers were able to fully implement mathematical modeling. Furthermore, it was observed that one

prospective teacher (A5) did not fully implement mathematical modeling whereas three prospective teachers (A3, A4 and A6) had inadequacies. It was observed that those inadequacies resulted from the fact that they were not able to interpret the formed model in terms of real life. For the second application, it was also observed that only two (A1 and A3) of the six prospective teachers were able to fully implement mathematical modeling. It was observed that three prospective teachers (A1, A4 and A5) were not able to implement mathematical modeling whereas one prospective teacher (A6) implemented it with deficiencies. When we look at both applications, we can state that only A2 was able to fully implement mathematical modeling in both of them.

The answers given by the interviewed prospective teachers regarding the method of application mathematical modeling process were coded under the “method of application Mathematical Modeling Process” category as follows: application the mathematical modeling steps.

The prospective teachers were not able to fully express the mathematical modeling steps. The opinion of A5, who thinks that these steps are composed of understanding the problem, selecting the variable and forming the mathematical model, is as follows:

“First of all, it is absolutely important to understand the question. We evaluate the data. Then, we try to understand in what kind of an order it functions. Then, as I have just stated, we try to transform this order into a form from which we can move towards a generalization by creating a formula or a function.”

The opinion of A2, who thinks that the steps of mathematical modeling are to select a variable and then to make a certain generalization, is as follows:

“Firstly, variable selection is important. After selecting the appropriate variable, I try to substitute it into the expression several times, that is to say, for several values. I try it for real values. Then, I check whether I can reach a generalization from the results that I tried.”

In the conducted classroom observations, it was observed that the majority of the prospective teachers did not fully use the steps followed in the mathematical modeling process. Among the prospective teachers, A1, A3 (first application), A4 (second application), A5 and A6 (first application) followed the steps of understanding the problem, selecting the variables, understanding the mathematical model and solving the mathematical model from among the mathematical modeling steps, but they did not perform the step of interpreting the mathematical model in terms of real life. A2, A3 (second application), A4 (first application) and A6 (second application) followed these steps. In view of these findings, we can state that the prospective teachers generally had deficiencies in the step of interpreting in terms of real life from among the steps of mathematical modeling. Furthermore, it was observed that the prospective teachers, who were not able to fully define the steps of mathematical modeling, followed these steps in the application process. Thus, it can be stated that the prospective teachers indeed knew these steps, but they were not able to fully define them.

The answers given by the interviewed prospective teachers regarding the comparison between mathematical modeling activities and other activities were coded under the “Problems in Mathematical Modeling Activities and Other Mathematics Problems” category as follows: *mathematical solution to daily life problems, comprehensive, interesting, difficult, not cliché and same with other activities.*

The opinion of A4, who thinks that the problems in mathematical modeling activities are more difficult when compared to other mathematics problems, is as follows:

“In the problems of mathematical modeling it is a little more difficult to identify the similar variables. We may find some clues from there according to the problem.”

The opinion of A1, who thinks that the problems in mathematical modeling activities are not cliché, is as follows:

“There are certain cliché in problem solving. This is not the case with mathematical modeling. We form the model on our own. However, when you come across a problem, the solving process of this problem is cliché. It is done directly by us. It can be performed even if we really do not understand the logic behind it.”

The opinion of A2, who thinks that the problems in mathematical modeling activities are more comprehensive when compared to other mathematics problems, is as follows:

“I mean they are similar in some subjects. For instance, they are similar in the calculation of turn of work days of nurses and doctors in the subject of modes. However, the mathematical model can generate problems from much larger, much more comprehensive and much more different fields. Problems in some subjects in schools are similar to this, but we cannot state that they are exactly the same.”

The opinion of A3, who thinks that the problems in mathematical modeling activities are the mathematical solution to real life problems and they are interesting when compared to other mathematics problems, is as follows:

“Of course, mathematical modeling activities are more effective compared to other activities and other problem solving activities. That is because the things which are solved with models are the problems that we come across in real life. They can attract more attention from students and appeal to their needs more.”

According to the above-mentioned findings, the prospective teachers stated that the problems in mathematical modeling activities are more interesting, comprehensive and related to daily life when compared to other mathematics problems. However, A6 stated, as written below, that the problems in mathematical modeling activities are the same thing as other mathematics problems:

“No, I think there is no difference among them. The other ones are also activities. That is to say, we were doing the same thing in other problems. However, we did not know that its name was mathematical modeling until now. We were finding a generalization or a function.”

The answers given by the interviewed prospective teachers regarding the contributions the mathematical modeling method process had made to them were coded under the “Contributions of the Application Process” category as follows: *relationship between mathematics and daily life, preparing for the course, application the mathematical modeling, communication, classroom management, permanent learning and different perspective.*

The opinion of A1, who states that the application process guides them into thinking differently and contributes to forming a real life relationship, is as follows:

“First of all, the mathematical modeling method enabled me to think differently. We have a habit that dates back to high school. We follow certain steps and suggest a solution when we come across a cliché problem. However, when we come across a question or an activity in mathematical modeling, we look for what it wants from us and what we must do. It associates mathematics with real life through real life problems.”

The opinion of A3, who states that the application process contributes to classroom management and mathematical modeling application, is as follows:

“What is a model? What is modeling? What must be taken into account while performing modeling or while application modeling or the model in the classroom? How can I maintain classroom order, classroom discipline and classroom management while performing modeling? I have learned these kinds of things. It benefitted me in such things. In other words, I have learned how to give a course with a different method. It benefitted me this way.”

The opinion of A6, who states that the application process facilitates coming to the course prepared and teacher-student communication as well as student-student communication, is as follows:

“For instance, it enables us to maintain a healthier communication with the students during that process. The communication between me and the students as well as the communication among them are strengthened.”

“It motivated me to come to the course prepared. That is what all teachers do in our time. It is something beyond the sense of giving the course with what you know already instead of preparing for the course at all. You try to accomplish something and you make an effort in doing so. In its preparation stage, you undoubtedly contemplate whether or not the student can reach a solution about it.”

The opinion of A2, who states that the application process contributes to permanent learning and forming the relationship between mathematics and daily life, is as follows:

“I mean mathematics is an abstract thing in terms of what you know. You know many things, but you do not use these things in real life. However, I realized with the model that we could indeed solve all our daily life problems by knowing mathematics. It maintains permanence in what we learn. We can transfer what we know to daily life. In other words, we learn for living. I have found it more applicability and useful.”

In this statement, A2 expressed that the application of the mathematical modeling method in schools contributes to forming the relationship between the mathematics course and daily life, thereby maintaining a permanent learning.

A2's opinion shows parallelism with the opinion of the high school students in the group who stated that they learned more permanently by seeing the applicability of the mathematics course in daily life right after the applications when we asked them what they thought of these applications.

When the answers given by the interviewed prospective teachers on whether or not they will use the mathematical modeling method in their courses were examined, it was observed that all of them stated that they would use this method in their courses. However, when the given statements were examined, it was observed that the frequency of the use of this method could change. The data obtained from the interviews were coded under the “future use” category as follows: *I plan to use it and I plan to use it rarely*. All prospective teachers stated that they would use this method in their courses in the future.

A3, who plans to use the mathematical modeling method in his courses in the future, stated the following:

“Yes, I plan to use it. That is because I do not want the students to perceive mathematics as something that is disconnected with daily life, that has no relation with daily life, and as if someone formed a range of rules for them to experience difficulty. I want them to realize that mathematics is a branch of science that can be utilized within daily life and in every field of life. I plan to use the modeling method for them to become more effective and more active in the courses.”

Here, A3 stated that the reason for using the mathematical modeling is that the students realized that mathematics has a relationship with daily life and they became more active in the course during this process.

A4, who plans to use the mathematical modeling method rarely in his courses in the future, stated the following:

“I think I will use it very rarely. That is because it would slow the curriculum. I mean we were able to solve only two questions. Besides, it is a little difficult to prepare. If there are suitable subjects

in the future, I can perform it since I think that it functions very well. Moreover, we were able to discuss only two questions due to its difficult application while we normally solve ten questions in a normal course hour. Although it has options, I think I will not use it very much since it progresses slowly.

A4 stated that he would use the mathematical modeling very rarely in the future since its process is time consuming and its application is difficult.

Since the prospective teachers stated the positive aspects of the mathematical modeling in the conducted interviews, a category named “positive aspects of the mathematical modeling” was formed. *Educative, applicability of mathematics, interesting and active participation* codes are featured in this category.

The opinion of A4, who thinks that the mathematical modeling is interesting and it ensures active student participation, is as follows:

“It attracts more attention than a teacher solving problems on the blackboard. It makes the student participate in the course more.”

The opinion of A1, who thinks that the mathematical modeling is easily educative, is as follows:

“There are some concepts that the students experience difficulty in learning. However, I think we can convey these concepts more comfortably to the student by performing mathematical modeling...”

The opinion of A3, who thinks that the mathematical modeling is practicable in daily life, is as follows:

“I do not want the students to perceive mathematics as something that is disconnected to daily life, that has no relation to daily life, and as if someone formed a range of rules for them to experience difficulty. I want them to realize that mathematics is a branch of science that can be utilized within daily life and in every field of life.”

Apart from the opinions of the prospective teachers, when the students in the study group were asked what they thought of this application right after the conducted classroom observations, they stated that they found the applications generally entertaining, enjoyable, motivating, exciting, useful and educative. Furthermore, they stated that such activities must be performed from time to time; they can visualize some subjects in their minds more clearly and they understand them better when they see that they are used in real life. Lastly, they stated that working in groups is very useful.

In view of the feedbacks from students and the conducted observations, we can state that the applications of the prospective teachers had positive aspects such as revealing the applicability of mathematics and attracting the attention of students.

In accordance with the analysis of the prospective teachers’ opinions, the difficulties experienced in school applications of mathematical modeling method were coded under the “Difficults Experienced in School Applications” category as follows: *classroom management, student level, number of students per classroom, time, structure of the groups and no difficult*.

A2 stated the difficulties that he experienced in school applications regarding the number of students per classroom, student levels and structure of the groups as follows:

“For instance, the number of students in the classroom, for which we were responsible, was high. We were able to check their answers one by one. However, I do not know what will happen when the number exceeds 20. That is to say, it is difficult to find the mistakes of each of five groups. There is another issue regarding the groups. Let’s say that we formed the groups randomly. These groups must

be heterogeneous, and students must be accustomed to group work. For instance, only one student performed all activities in a group of ours while the other two students stated that they were looking at what he wrote. They talked, but they did not write anything. Thus, those two students remain completely passive in the course. We perform this application in order for the students to become active. However, since the students are not accustomed to this application, they say that they have an answer as a group, but they do not make an effort to write; they just talk. Moreover, the course becomes considerably unproductive for passive students. That is because the application depends on the solution of the teacher. All students talk concurrently. The student profile is important. The efficacy and classroom management skills of the teacher is very important. A teacher's good command of the application beyond his field knowledge is also important. I was not able to do it, for instance. I think that I experienced many problems because of that.

In the conducted observations, it was witnessed that A2, A4 and A5 experienced difficulty in classroom management, particularly in maintaining silence in the classroom. Moreover, it was observed that the applications were generally time consuming. The opinion of A2 on this issue is as follows:

"Yes, I experienced great difficulty, particularly in planning the duration of the course. It takes a lot of time to present the subject, to feature simple problems that a normal student can understand and to move on to the modeling. The preparation stage of the modeling also takes a very long time. The physical conditions of the school are also not suitable for group work. It takes 5-6 minutes for the students to form the groups. That's it. I think it is difficult to implement in crowded classrooms considering students' discussions, reaching a verdict and explaining that verdict."

The opinion of A1, who stated that he did not experience difficulty in the classroom applications, is as follows:

"I did not experience much difficulty in the classroom while application the activities."

However, when the application of A1 was observed, it was seen that he experienced a great difficulty in switching between subjects.

When the above given statements were examined, it was observed that only one prospective teacher (A1) stated that he did not experience difficulty in mathematical modeling applications. The prospective teachers stated the difficulties that they experienced as follows: high number of students per classroom, difficulty of classroom management and the fact that not all students participated in the activities due to the structure of the groups. Apart from these, they stated that the difficulty that they most frequently experienced was the fact that it was time consuming to implement this method.

The answers given by the interviewed prospective teachers regarding the applicability of mathematical modeling method in high schools were coded under the "Its Applicability in High schools" category as follows: *applicable* and *not applicable*.

The opinion of A3, who thinks that the mathematical modeling can be implemented in high schools, is as follows:

"I think it can be implemented. Why? Because it does not require an extra cost. It is just that the classrooms are rendered into group order if the collaborative teaching technique is to be used. However, there is a problem here: teacher efficacy. As long as teacher efficacy is at a level to implement the modeling, curriculums and physical structure of the classrooms are convenient to do this. Everything is convenient. This model can be implemented."

The opinion of A2, who thinks that the mathematical modeling cannot be implemented in high schools, is as follows:

"The mathematics course hour is limited. I served my internship in the school for two years. During these two years, I observed that teachers were in a rush to complete the subjects. Besides, our

system is based on examinations and since this modeling type does not come up in examinations, this method is not used by our teachers at all."

A2 stated that this method could not be implemented in high schools since the problems appropriate to this method are time consuming and they do not come up in the examinations.

Prospective teachers' opinions on the nature of the education that must be given in universities in order for prospective teachers who will be mathematics teachers in the future to use the mathematical modeling method at some point were collected under the "Mathematics Education That Must Be Given in Universities" category. The codes *mathematical modeling course* and *applicability of mathematics* are featured in this category.

Here, the code *mathematical modeling course* is discussed with the idea that the mathematical modeling course and its applications must be featured in the education given in universities whereas the code *applicability of mathematics* is discussed with the idea that the applicability of mathematics in daily life must be emphasized.

A3 stated the following about featuring mathematical modeling course and its applications in universities:

"We learn all subjects in theory in universities, but an education must be given towards further practice. I do not know whether or not the modeling can be a separate course. However, I believe that the prospective teachers themselves must implement this method in the classrooms so that they can see the advantages and disadvantages of this method, whether or not it can be implemented, and how it can be implemented. After all, theoretical information does not serve any purpose. It must be put into practice. Thus, education must be oriented towards practice."

Here, A3 stated that the information about the mathematical modeling in universities must be oriented towards practice rather than being theoretical information.

A1 stated the following about emphasizing the applicability of mathematics in daily life in universities.

"As I said, if mathematics is given in universities not only as the meanings of countless subjects but also to reveal what it tries to tell us, we can further facilitate the mathematical modeling process. For instance, what is function? We must know that it does not only consist of a definition. We must know where it can be used in daily life..."

As can be observed from the above given statements, A1 stated that not only mathematical concepts but also how they are used in daily life must be explained in universities.

Conclusion and Discussion

It is important to earn the prospective teachers this efficacy in order for the mathematical modeling method, which has an important place in mathematics teaching, to be implemented in high school education at the desired levels and to serve its purpose. Therefore, this study examined prospective teachers' opinions about mathematical modeling and their efficacy in application this method.

According to the findings obtained from the interviews that were conducted with the prospective teachers after classroom applications, it was revealed that prospective teachers regard the mathematical models as equations, functions, the relationship between mathematics and daily life and mathematical solution to daily life problems. As stated by Meyer (1984), we can argue that many of the prospective teachers regard the mathematical models as mathematical concept segments such as variables, functions, equalities and inequalities. However, when A1's example, in which he explained

the mathematical model as associating mathematics with daily life, was examined, it was observed that he likened a mathematical concept to a real life condition, and that was not an appropriate example to mathematical model concept. When the school applications of the prospective teachers were observed, it was seen that they used equations, formulas, graphs, tables and figures as mathematical models. When the statements given by the prospective teachers regarding the mathematical modeling were examined, it was found that they regarded the mathematical modeling as a process and mathematical solution to daily life problems. When the statements given by the prospective teachers were examined, it was observed that they agreed with the opinion of Özturan-Sağırlı (2010) which stated that mathematical modeling represented solving real life problems via mathematical terms. When the statements given by the prospective teachers regarding the mathematical model and the mathematical modeling were examined, it was observed that the mathematical modeling while giving the definition of the mathematical model.

Although the prospective teachers were able to define the mathematical modeling, they were not able to fully implement it in classroom applications. According to the findings obtained from the observations, only one out of six prospective teachers exhibited a more suitable last application than first application in terms of mathematical modeling. It was observed that the deficiencies of the prospective teachers in presenting the activities in the classroom were generally experienced in interpreting the mathematical model into real life.

The prospective teachers stated that the problems in the mathematical modeling activities were more comprehensive, interesting, difficult, not clichéd and related with daily life when compared to other mathematics problems. Only one prospective teacher stated that these activities are the same as ordinary problems. In his study, Bonotto (2010) concluded that mathematical modeling problems increase students' interest in the course and make it easy for them to form a relationship with life outside the school. On the other hand, in his study, English (2006a) concluded that modeling activities are real life problems that attract the interest of students, and these problems are more comprehensible for students. Similarly, in his study, Fox (2006) concluded that students take an interest in complicated and difficult modeling activities.

In the conducted interviews, it was observed that the application contributed to the prospective teachers as follows: forming a relationship between mathematics and daily life, coming to course prepared, increasing communication in classroom environments, maintaining permanent learning, application the mathematical model in classroom and thinking differently. In his study conducted in order to determine whether or not mathematical modeling increased communication, English (2006b) observed that students freely expressed their opinions in written and verbal forms, and he stated that this condition provided the students with communication skills. Regarding the positive aspects of the mathematical modeling, the prospective teachers stated that it was interesting, it maintained active student participation, it was easily educative and it ensured the applicability of mathematics in daily life. When the student groups were asked what they thought of these activities after the completion of the activities, they stated that the activities were enjoyable, entertaining, assisting in permanent learning and motivating. In his study, Frejd (2012) concluded that the mathematical modeling holds an important place for students to learn the applicability of mathematics in daily life. Furthermore, it was concluded in some studies that prospective teachers (Zbiek & Conner, 2006) and students were motivated in the mathematical modeling process (Ferrucci & Carter, 1999).

In the interviews conducted regarding the difficulties that were experienced in application the mathematical model, it was observed that these difficulties were mostly due to inadequate time whereas other difficulties were as follows: high number of students per classroom, difficult classroom management, low student level in the group and homogeneous structure of the groups. It was observed in the conducted observations that the prospective teachers experienced difficulties in classroom management and transition between subjects, and their application, was time consuming. In their studies, Schwarz and Kaiser (2007) and Blum (1991) stated that it was time consuming to implement the mathematical modeling activities. In their study, Ikeda and Kaiser (2005) stated that teachers had trouble since they had little previous experience in modeling. In their study, Blum and Ferri (2009) the

application of mathematical modeling was difficult for both teachers and students due to disputes on education and the space among daily school applications.

The prospective teachers, who participated in the interviews, thought that the mathematical modeling method could be or could not be implemented in high schools. In his study, Kaiser (2005) concluded that it was possible to implement complicated modeling examples in schools. In their study conducted with prospective teachers, Kaiser and Schwarz (2006) concluded that the mathematical modeling could be implemented in schools. The prospective teachers who thought that it could not be implemented stated that this method could not be implemented in high schools due to the fact that it was time consuming and the problems appropriate to this method were not asked in the examinations. In their study conducted to determine whether or not the examples appropriate to mathematical modeling were asked in the examinations, Kawasaki et al. (2012) stated that the mathematical modeling were not appropriate to the examinations in their countries, and the mathematical modeling must be effectively implemented by paying attention to the educational traditions.

When they were asked whether or not they would use this method in their courses in the future, the prospective teachers stated that they would want to use this method due to its applicability in daily life. However, some prospective teachers stated that they would use this method very rarely since the method was time consuming and classroom management was difficult. In the conducted interviews, the prospective teachers stated that courses on the application of mathematical modeling must be given in universities for the mathematics teachers of the future and the place of mathematics course in daily life must be emphasized. In the research conducted to determine the role of mathematical modeling in Japan and Germany, Ikeda and Kaiser (2005) found that teachers in Japan did not plan to use such applications in the future whereas teachers in Germany planned to use such applications more as such examples are given in the examinations more.

Although the prospective teachers found the opportunity to learn the mathematical modeling method in this process, it was observed that some difficulties were experienced and the prospective teachers had some deficiencies. The reasons for these difficulties can be listed as follows: the prospective teachers and students encountered such an application for the first time, the number of students per classroom was very high in high schools and there were many subjects in a special mathematics course. A content in which the prospective teachers can learn and implement the mathematical modeling must be featured in the faculties of education for the prospective teachers in order for mathematical modeling, which helps our students associate mathematics with real life, to be implemented better in schools and for prospective teachers to correct their deficiencies. In order to bring these accomplishments to high schools, the intensity of curriculums and the number of students per classroom must be reduced. As also stated by Eric (2010), more studies are required in this field in order to maintain a proper balance among modern and traditional approaches; to establish a connection between theory and practice; and to raise teachers.

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Assessing E-Learning Tools in an Academic Environment: A Study of Availability and Use among Undergraduate Students in a Nigerian University

Goodluck Ifijeh, Ifeakachuku Osinulu, Ugwunwa Esse
Covenant University, Nigeria

Egbe Adewole-Odeshi
University of Uyo, Nigeria

Michael Fagbohun
University of Ibadan, Nigeria

Abstract

This study investigated the availability and use of e-learning tools as emerging paradigms in Covenant University, Nigeria. The study population comprise of 7000 undergraduate students, out of which 1000 was used as sample. Questionnaire was used as data collecting tool for the study. A total of five hundred and eleven questionnaires were filled and returned. The study revealed that an appreciable number of e-learning tools were available and in use in the University. Notable among them is an electronic learning management system – Moodle. Most of the respondents (61.8%) indicated that they used the e-learning tools mostly for downloading lecture notes. The study further revealed that there was no significant relationship between students' level of study (class) and their use of e-learning tools. Also, no significant relationship between use of e-learning tools and academic performance was established. Majority of the respondents (54%) identified inadequate internet access as the biggest challenge to students' use of e-learning platforms. The study was concluded with recommendations that could enhance the use of e-learning platforms in Universities in Nigeria.

Keywords: E-learning, Undergraduates, Covenant University, Nigeria, E-learning platforms, Universities

Introduction

Innovative learning systems based on various electronic technologies have been in use for many years. Numerous terms have been used to describe these various learning systems, such as computer-mediated learning, web-based training and most recently, e-Learning. Since 1990, a dramatic shift to Internet-based learning has vastly expanded the world of open and distance learning, leading to what has been referred to as Electronic Learning (E-learning) (Anaraki, 2004)

E-learning refers to the use of information and communication technologies (ICTs) to enhance and support teaching and learning processes. It is the instructional content or learning experiences delivered or enabled by electronic technologies and it incorporates a wide variety of learning strategies and technologies. (Sife, Lwoga and Sanga, 2007). Functionally, e-learning includes a wide variety of learning strategies and ICT applications for exchanging information and gaining knowledge. Such ICT applications include television and radio; Compact Discs (CDs) and Digital Versatile Discs (DVDs); video conferencing; mobile technologies; web-based technologies; and electronic learning platforms such as Learning Management Systems and Course Management System (Sife, Lwoga and Sanga, 2007). E-Learning can be either synchronous or asynchronous. Synchronous e-learning requires simultaneous participation of all learners and instructors at distributed locations. It refers to any learning event delivered in real-time to remote learners and includes immediate, two-way communication between participants. It can be considered scheduled delivery of learning and may take the form of multicasts, video conferencing, and virtual classrooms, etc. (Mehrotra, Hollister, & McGahey, 2001).

Covenant University, which is the case study for this research makes use of the Moodle Learning Management System among other e-learning platforms. A Learning Management System (LMS) is an e-learning platform which is a collection of online software applications, packaged together to deliver teaching and learning in either a distance education or an on-campus mode. They harness the individual technologies and put them together in one package that can then be used by teachers and learners in a variety of ways. In addition, LMSs offer a number of administrative tools to facilitate the management of courses and student accounts, grade books, usage statistics, content authoring, timed release of materials, calendars, personal information and integration with other administrative systems (Petrovic and Kennedy, 2005). Learning Management Systems are either Open Source or Proprietary. Moodle is an example of an open source Learning Management System which can be used for effective online learning.

Students and teachers are the key actors involved in the use of an e-learning platform. It is therefore very important to evaluate the acceptance and use of E-learning Platforms. According to Posea, Matu and Cristea (2007), "The evaluation of e-learning systems is important for all the actors involved in their development and use. Teachers and students need to evaluate the benefits of using e-learning in comparison with the classical methods of learning." This study therefore evaluates the use of e-learning platforms including Moodle among undergraduate students of Covenant University.

Covenant University

Covenant University is a Christian Mission University located in Ota, Ogun state, Nigeria. The University which is owned by the World Mission Agency, an arm of Living Faith Church Worldwide, started academic activities as one of the foremost private Universities in Nigeria in 2002. It is reputed to be the best information and communication technology (ICT) driven University in Nigeria. The University is made up of four colleges – Leadership and Development Studies, Science and Technology, Business and Engineering. The four colleges cater for about 7000 undergraduate students.

Statement of Problem

Covenant University is an information and communication technology (ICT) driven institution. In the past two years, the University has invested huge amounts of money on the acquisition, installation and management of e-learning platforms, with the aim of enhancing teaching, learning and research. Currently, the management of the University is driving the integration of e-learning platforms with traditional teaching and learning methods, with emphasis on the former. The last year has seen a revolutionized learning and teaching environment in Covenant University, since the adoption of the Moodle teaching platform,

The Moodle system of learning and lecture delivery has been roundly embraced with over 450,500 activities, with a projection that by the commencement of the first and second Semesters of 2013/2014 academic session, the Virtual Learning Environment of the University would have attracted as much as 2.5 million activities. This study serves to evaluate these claims. It therefore examines the use of the e-learning platforms available in the university. It also examines the impact of e-learning platforms on students' academic performance.

Objectives of the Study

The objectives of this study are to:

- i. Identify the e-learning tools available to students in Covenant University
- ii. Ascertain the frequency of students' use of e-learning tools
- iii. Identify which of the e-learning tools is used the most by students
- iv. Determine the purposes for students' use of e-learning tools
- v. Identify the challenges encountered in using e-learning tools among students in Covenant University

Hypotheses

- i. There is no significant relationship between use of e-learning tools and students' level of study
- ii. There is no significant relationship between students' academic performance and use of e-learning tools

Literature Review

Increase in the use of information and communication technology (ICT) as a result of advancement in internet provides a new trend for higher institutions to introduce new teaching and learning technologies (Ayanda, Eludiora, Amassoma and Ashiru,2011). Learning technologies have been evolving over the last two or three decades, and have gone through many phases and approaches. A specific learning approach that combines blended and hybrid learning to learning that is entirely online is referred to as e-learning. These innovative learning systems try to support learners in expanding their knowledge by providing structured learning content and intercommunication facilities to specific topics (Nichols,2003;Ellis,2004; Hedge and Hayward,2004) E-learning can encompass disciplines such as collaboration, traditional learning and content management (Gartner, 2002). It is also considered as a modern type of distance education that is delivered via the use of computers, Internet and multimedia presentation (Lau, 2000).

The environment of higher education is evolving. Rising costs, shrinking budgets, and increasing needs for distance education (New Media Consortium, 2007) are causing educational institutions to re-examine the way that education is delivered. In response to this changing

environment, e-learning is being implemented more and more frequently in higher education, creating new and exciting opportunities for both educational institutions and students. E-Learning is not particularly new but the advancing technology is bringing a new approach to learning. Use of ICT in education made its debut quite early in the life of computers, in the form of CAI (Computer Aided Learning) and CAL (Computer Aided Instruction) systems implemented on single-user systems in the 1960s (Merrill, 2002). With advances in IVTs-, networking, Internet, Web, CDs, Mobile telephony- which is the dominant focus of use of ICT in educational technology has in recent times been expressed in e-learning systems.

E-learning activities in developed countries continue to grow day by day. Connolly and Stransfield, (2007) carried out surveys on the use of e-learning in training and professional development in Europe and America; the result shows that many universities in Europe and America are using e-learning platforms for teaching and learning. Another report by CEDEFOP, (2001) in Europe shows that 14 percent of total spending by users of training went to e-learning related content in 2001-appreciable more than two years earlier when the figure was 10 percent. In sub Saharan Africa, only a few countries such as Kenya, Ghana and Uganda could boast of success stories with limited but appreciable impact achieved through specific e-learning models (CEDEFOP, 2001)

In Nigeria, very few universities have the facilities for e-learning, though, what is obtainable is at the lowest aspect of ICT such as print, audio/video tapes and digital radios (World Bank, 2002). However, a semblance of e-learning exist, at the departmental levels rather than institutional, and these departments are more in the medical, engineering, environmental sciences, computer science or informatics, where the synergy between research and teaching is strongest, and the development and delivery are most accessible (Curran and Fox, 1999). This position is not a surprise, because Nigeria had no specific policy for ICT in education. It is only in February 2007 that the Federal Ministry of Education created its ICT department (Wiki Educator, 2008). The slow pace in e-learning development may have in part accounted for the low rating of Nigerian universities globally in terms of impact and productivity in web-related activities. Interestingly, no Nigerian University has been ranked among the first 50 in the world in terms of web size, papers, rich files and scholarship. In Africa, a Nigerian University took the 44th position while in the world it ranked 5, 834 (InterLab, 2007). According to Saint (1999), the core medium of instruction on the African continent remains print, with other technologies acting as a supplementary means of delivery. There are some surveys that have been carried out in Nigeria on e-learning. In 2007, Obashoro-John carried out a survey on e-learning provision and their implications for quality development and assurance. The survey concentrated on three universities located in the Lagos area. The findings indicated that availability and adequacy of e-learning resources (Human and Materials) and infrastructure against some minimum benchmarks is low. Folorunso, Ogunseye and Sharma (2006) found that mass unawareness, low computer literacy level and cost were identified as critical factors affecting the acceptability of e-learning by students and lecturers of Nigerian Universities. In addition, access to connectivity to internet has remained one of the major challenges in many developing countries such as Nigeria. In 2007, Bassey et al investigated the Nigerian graduating students' access to e-learning technology in universities in South-South Nigeria. Result of the survey indicated that the number of graduating students in Nigerian higher institution who have access to e-learning technology was negligible

According to Olasina (2012), who carried out a study on Student's e-learning/ m-learning experiences and impact on motivation in Nigeria, discovered from his findings that Students considered e-learning/m-learning resources' usage helpful in individualizing their academic work and ultimately as viable educational tools that have the potential to bring about different improvements to their institution and classrooms. A high percentage of students want e-learning resources to be applied to teaching of all courses offered in the university. All the results reported draw a conclusion which is also stated in the literature by many researchers: the goal of the integration of e-learning and m-learning resources into students' learning, like in all other areas, has yet to be reached.

Interestingly, none of these studies considered private Universities (including Covenant University); this study on Covenant University (a private University) therefore hopes to bridge the gap in literature and perhaps serve as an update on current happenings in the world of e-learning in Nigeria.

Research Methodology

The research design for this study is survey (descriptive), which is a systematic approach of collecting data to find out respondent's opinion. Survey as a research method is used in studying a segment of the population for the purpose of making assertion about the nature of the entire population from which the sample has been selected.

The sampling procedure/ technique used for the study is the stratified random sampling. This sampling technique was adopted because the population was divided into homogeneous groups known as strata and samples were drawn from each stratum using the simple random sampling technique. Each stratum is represented by course and level of study. The stratification ensures that each type of a population member is included in the sample and hence yields higher precisions even though the total number of people in each stratum may vary.

The population comprises of about 7000 undergraduate students of Covenant University and a sample of 1000 students was used for the study. The data from these students was collected through the use of questionnaire. Out of the 1000 students used as sample, 511 completed and returned their questionnaires. The data analysis was carried out with the use of descriptive statistics and test of hypothesis.

Data Presentation and Interpretation

Objective 1: Which e-learning tools are available to students in Covenant University?

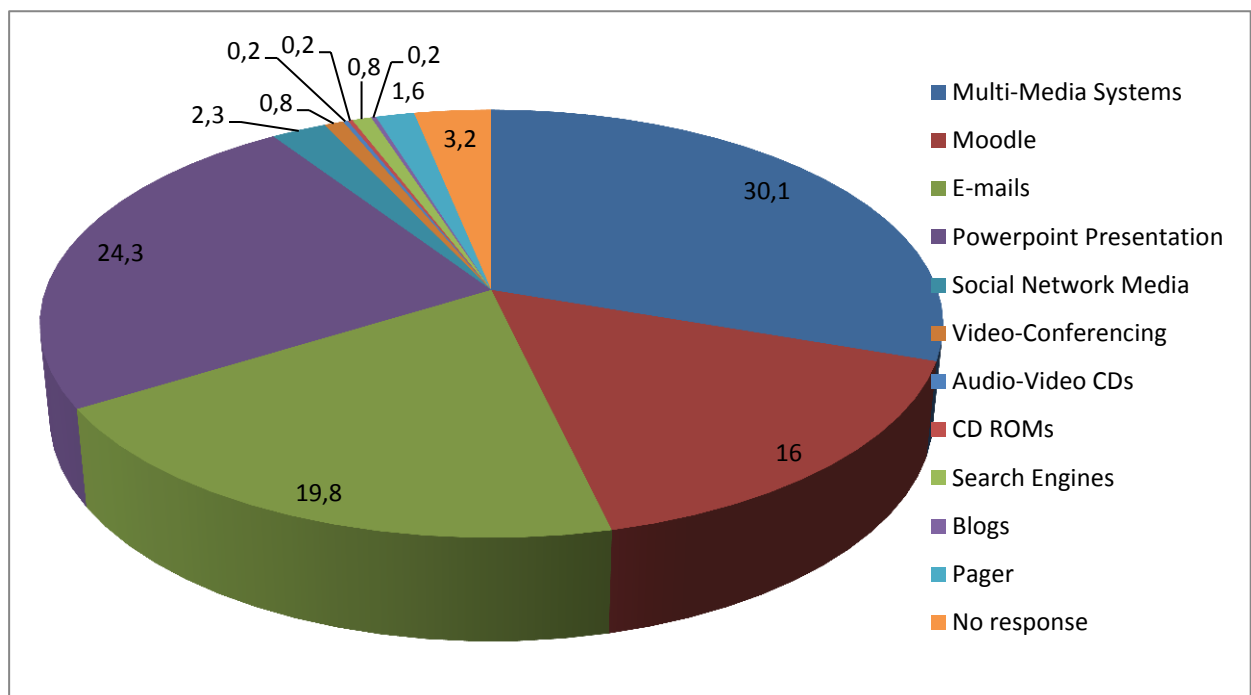


Figure 1: Availability of e-learning tools

Figure 1 shows that there are various e-learning tools in Covenant University. Multimedia system is the most available e-learning platform in Covenant University with a frequency of 154(30.1%) while Audio-Video CDs, CD ROMs and Blogs were the least available e-learning platforms in Covenant University with a frequency of 1 respectively (0.2%).

Objectives 2 and 3: Ascertain the frequency of students' use of e-learning tools and the most used e-learning tool.

Table 1: Frequency of students' use of e-learning tools

Use of e-learning platform	Always		Occasionally		Seldom		Never		No response		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Multimedia	148	29.0	139	27.2	80	15.7	91	17.8	53	10.4	511	100.0
Moodle	285	55.8	100	19.6	132	25.8	36	7.0	72	14.1	511	100.0
E-mails	127	24.9	125	24.5	34	6.7	43	8.4	24	4.7	511	100.0
PowerPoint	171	33.5	100	19.6	132	25.8	36	7.0	72	14.1	511	100.0
Social media	202	39.5	108	21.1	60	11.7	89	17.4	52	10.2	511	100.0
Audio-Video CDs	32	6.3	84	16.4	91	17.8	227	44.4	77	15.1	511	100.0
CD-ROMs	48	9.4	76	14.9	81	15.9	232	45.4	74	14.5	511	100.0
Search Engines	237	46.4	109	21.3	38	7.4	77	15.1	50	9.8	511	100.0
Blogs	131	25.6	152	29.7	64	12.5	114	22.3	50	9.8	511	100.0
Pager	44	8.6	75	14.7	107	20.9	238	46.6	47	9.2	511	100.0

Students were asked to mention the frequency of use of e-learning tool with five options always, daily, occasionally, seldom and never. Table 1 revealed that majority of the respondents (55.8%) used Moodle Learning Management System always and had the most frequency of usage, (30.1%) of the respondents used E-mails occasionally, Powerpoint (25.8%) always, (46.6) of the respondents never used Pager e-learning platform while just few (6.3) always used Audio-Video CDS.

Objective 4: Determine the purposes for students' use of e-learning tools

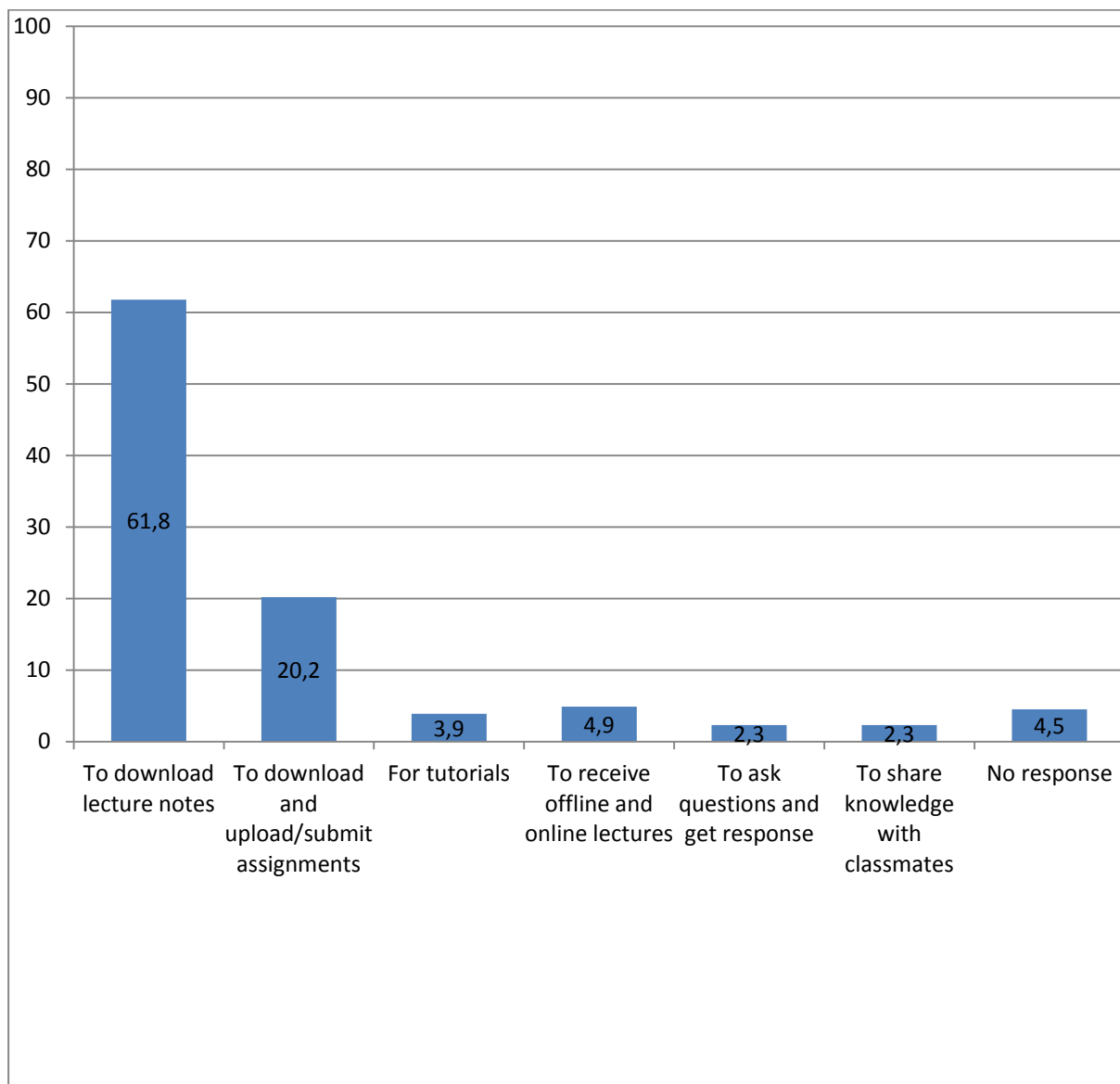


Figure 2: E-learning Tools - Purpose of Use

Figure 2 shows the purpose for student's use of e-learning tools. The major purpose for using e-learning tools is to download lecture notes. This is revealed in figure 2, having 61.8%. Other purposes include; downloading and uploading /submitting assignments. (20.2%), for tutorials (3.9%), To receive offline and online lectures (4.9%), To ask questions and get response (2.3%), To share knowledge with classmates (2.3%).

Objective 5: Challenges students encountered during usage of e-learning tools

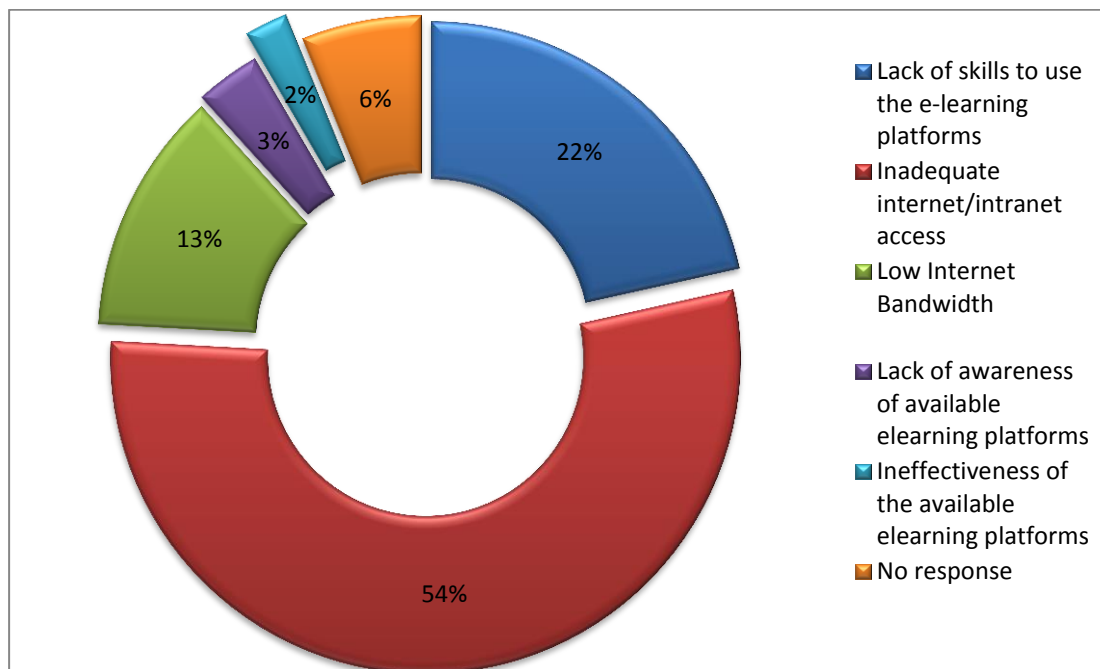


Figure 3: Challenges Encountered in using e-learning tools among students in Covenant University

Figure 3 shows the challenges encountered in the course of using an e-learning tool. The major challenge encountered by students is inadequate internet/intranet access (54%). Also 22 % indicated that they lack the skills to use the e-learning tools. Other challenges include low internet Bandwidth (12.3%), Lack of awareness of available e-learning tools (3.3%) and also ineffectiveness of the available e-learning platforms (2.2%)

Hypothesis

- i. **There is no significant relationship between use of e-learning tools and students' level of study**

Table 2: Chi-Square Tests for Hypothesis 1

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51.379(a)	20	.000
Likelihood Ratio	56.144	20	.000
Linear-by-Linear Association	3.711	1	.054
N of Valid Cases	508		

From the table above, $P=.000$. This tells us that there is no statistically significant relationship between the use of e-learning platforms and students' level of study. This directly implies that students irrespective of their levels made use of e-learning platforms.

- ii. **There is no significant relationship between students' academic performance and use of e-learning tools**

Table 3: Chi-Square Tests for Hypothesis 2

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	97.363(a)	55	.000
Likelihood Ratio	61.510	55	.254
Linear-by-Linear Association	6.764	1	.009
N of Valid Cases	504		

From the above table, $P = .000$. This tells us that there is no statistically significant relationship between academic performance and available e-learning platforms. This implies that the use of e-learning platforms did not show any significant relationship with enhancement of students' academic performance.

Discussion

This study evaluates the availability and use of e-learning tools among undergraduate students in Covenant University, Nigeria.

The study discovered that there were various e-learning tools available to students. However, the most available was the multimedia system. This agrees with Cheung, Kundur and Senior (2010) who postulated the proliferation of multimedia systems and their importance especially in education institutions. Students use multimedia systems in their daily academic activities like writing assignments, presentation of term papers and seminars (Eryaman, 2007). Taking cognizance of the importance of multimedia, Covenant University management have acquired numerous multimedia systems to serve the teaching and learning needs of members of the University Community.

A further investigation revealed that respondents, as shown in figure 2, indicated they used e-learning tools the most for downloading lecture notes. This supports the assertion of Wagner, Hassanein and Head (2008) that e-learning platforms could be used asynchronously to download recorded information including lectures. A probe into the finding shows that this could be because students are required to download lecture notes and tutorials through the University's various e-learning platforms using intranet and internet facilities.

On challenges students encounter in the use of e-learning tools, the study revealed inadequate internet/intranet access as the greatest challenge (54%). It was discovered that this was principally due to inadequate computer systems provided in the University's cybercafés and media centres. A further probe also revealed that even when the computer systems are available, students' access to the internet was limited as each student was allotted six (6) megabyte of data monthly; once this is exhausted, access to the internet is denied. The findings of Udende and Azeez (2010) agreed with this position. Another major challenge encountered by the students was lack of skills to use the e-learning platforms. Grant, Malloy and Murphy (2009) underscored the importance of requisite skills in computer usage. It is therefore not surprising that the respondents identified lack of computer skills as a challenge to the use of e-learning platforms.

The first hypothesis tested the relationship between students' level of study (class) and use of e-learning tools. It was discovered that there was no significant relationship between the two variables. This is because the University's model of teaching and learning compels students to make use of the e-

learning tools irrespective of their levels or classes. This is in agreement with Otunla (2013) who in her study of undergraduates' access to internet resources found out that level of study or class played no role in students' use of internet resources. The second hypothesis tested the relationship between use of e-learning platforms and academic performance. Academic performance as used here refers to score or grade acquired for each course during the semester (or term). Interestingly, unlike previous studies which indicated that use of e-learning platforms could improve academic performance (Udende and Azeeze (2010), and Otunla (2013)), this study revealed that the respondents indicated that the use of e-learning tools did not help them to improve on their score or grade for each of their courses. However, the students agreed that e-learning platforms help to facilitate writing and submission of assignments, term papers and researches. This result may change with time, as the use of e-learning platforms among undergraduates is still at an infant stage in Covenant University. Almena, Cejudo and Lozano (2013) in their study posited that the contributions of e-learning platforms to academic performance can only be appreciated over a period of time.

Recommendations and Conclusion

This study offers several implications for practice and research. First, there is a need for Universities in Nigeria to provide adequate e-learning platforms and utilize them in the teaching and learning processes. This should go beyond the mere use of e-mails and social networks to the deployment of electronic learning management systems that are geared towards the attainment of goals, objectives, and expectations for the learners. Continuous experimentation with different platforms that are most effective for online learning will also help facilitate the attainment of goals, objectives and expectations of learners.

Second, adequate internet bandwidth is part of the necessary infrastructure needed for implementation of e-learning. Inadequate bandwidth adversely affects teaching and learning using technological platforms. However, institutional bandwidth can be conserved using bandwidth optimisation. The proposed two - level bandwidth optimization model by Suhail and Mugisa (2007) is recommended. At first level, there is the optimization of available institutional bandwidth by controlling bandwidth hungry applications and uses, and at second level by optimizing media performance. Optimization of media performance entails optimizing various media types like text, graphics, animation, audios and videos. In spite of the possibilities in optimization, Suhail and Mugisa (2007) opined that Higher Education Institutions must meet minimum standards in internet bandwidth provision in order to operate e-learning platforms effectively and efficiently.

Finally, there is the need for continuous research related to e-learning platform strategies in a variety of contexts to enable the advancement of best practices in the dynamic world of e-learning. Expectedly, the growth of the internet and online learning will continue and as indicated in this study, it will come with challenges. Experiences will be unique to both individuals and institutions. As educators and learners become more adept to e-learning platforms, it will remain imperative that best practices associated with these learning environments continue to be explored.

Limitation and Future Research Direction

This study considered undergraduates' use of e-learning platforms in Covenant University, Nigeria. Its findings may not be considered as generalised conclusions for all other institutions. This limitation was inevitable as the authors could not identify any other institution with appreciable number of e-learning platforms like Covenant University within Southwest Nigeria (where Covenant University is located). However, other institutions can learn from the findings when setting up their own platforms. The study could also serve as an update to researchers and scholars on the use of e-learning in Universities in Nigeria. The authors hope to carry out a study of a more generalised and comparative nature in future.

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Reasons of Teachers for Applying for Graduate Programs and Their Expectations from Programs

Berrin Burgaz*,

Hacettepe University, Turkey

Seval Kocak**

Hacettepe University, Turkey

Abstract

This study aims to find out teachers' motivation for applying for graduate programs and to explore their expectations from the programs and their ideas regarding the necessity of such programs for teachers. The paper is based on a qualitative research method and draws its data from focus group interviews. The study used the criterion sampling method which is categorized under purposive sampling for the selection of participants. The participants are 20 teachers who wish to apply for graduate programs in the Institute of Education Sciences. Descriptive analysis has been used for the interviews whereas for the quantitative expression of the data, content analysis has been employed. The findings show that teachers want to pursue graduate education for reasons of professional and personal development as well as for personal/social reasons. Teachers also believe that they could compensate the insufficient in-service training with graduate programs and state that they could access higher quality training and education through graduate programs. The study also reveals that teachers are not only interested in courses of their own specialized field but they also want to take broader courses such as management, research methods, and history or philosophy.

Keywords: Graduate Programs for Teacher, Teacher Expectations, Professional Development

*Berrin Burgaz is an associate professor at the Department of Educational Administration, Supervision, Planning and Economics in Hacettepe University, Turkey.

**Seval Kocak is a research assistant at the Department of Educational Administration, Supervision, Planning and Economics in Hacettepe University, Turkey.

Correspondence: burgaz@hacettepe.edu.tr

Introduction

The continuity of teachers' professional and personal development is important to meet the needs of ever-changing education. It is extremely vital and necessary to support the process of professional and bureaucratic socialization of new teachers and to provide different learning environments in order to update the knowledge of experienced teachers. Moreover, providing teachers with personal and professional development can be seen as a significant motivation tool.

The focus on human development required by the national economies and social lives accelerated the studies on education. Korthagen (2010) argues that the theoretical and practical void in education expands and highlights that new knowledge should be used in teachers' education and aligned with scientific studies and understanding. Therefore, it is important that alternative education environments that teachers could benefit from should be supported and explored by national and international academic studies. Given the above, the starting point of this research is to address the lack of a theoretical background in the studies about teachers, to argue for an update in their professional knowledge and to establish a link between theory and practice.

Both in the world and in Turkey, the alternative education offered for the teaching profession is an important career and professional development opportunity which serves the aim of developing professional competence and updating teachers' knowledge. Therefore, as in all organizations, education organizations underline the importance of career development to increase the efficiency and effectiveness of teachers and see the effective use of human resources as an obligation. Wills, Guerrin and Bernard (1992) emphasize that career management has a significant role in human resources management and stress that career management bridges human resources planning with human resources management. Likewise, Kingır and Gün (2007) refer to the importance of creating an environment that could help employees' development and argue that in this way the employees' professional quality and personal and organizational performance could be increased.

It would not be wrong to argue that the professional and personal development of teachers will be reflected to the education facilities and will also be one of the factors which influence the students' achievements in a positive way. The literature also shows that students' achievements increase as the qualities of teachers improve (Hanushek, 2010; OECD, 2005; Tracy, 1990). Therefore teachers' professional development plays an important role for education organizations which have an educational mission and the output of which affects human beings. Montecinos, Pino, Campos-Martinez, Dominguez and Carreno (2014) argue that teachers conduct studies and plan professionalism policies under a "New Public Management" understanding and these studies define most important qualities of teachers and emphasize the importance of reward. Xuehui (2008) argues that with a good career management, the quality of teaching could be improved. In addition, providing teachers with personal and professional development could be seen as a motivation tool.

Participating in graduate programs is one of the education opportunities that contribute to teachers' professional and personal development. According to the Higher Education Institutions Regulation on graduate education (1996), masters programs (with and without thesis) and PhD programs aim to increase the students' competency raising it to a higher level. The same regulation also states that masters programs with thesis serve the scientific research process and therefore masters students can gain the capability of accessing, processing and analysing information and knowledge whereas masters programs without a thesis develop the capability and ability of students to apply scientific knowledge in their professional lives. Through PhD programs students gain the skills of bringing innovation in their field of expertise, of conducting independent scientific research and of synthesising information from various sources.

The teaching profession extends beyond the skills of regulating and practising the education process. There are various expectations from today's teachers and they are expected to have a higher level of competencies. Therefore, it should be paid attention not only to teachers' initial education but also to the opportunities of continuing education and career development. In this regard, teachers'

interest in graduate programs is increasing in recent years. Baki (2010), in a study on the evaluation of undergraduate and graduate programs in teacher education, argued that teaching is not a one way knowledge transfer to students. Today's teaching profession requires analytical thinking, a perspective based on modern scientific research, developing effective communication skills, having a student centred approach and making constant progress. Namely, it requires turning the education theory into practice. Concordantly, Harding and Parsons (2011) argue that graduate programs designed for teachers should be practice oriented and should involve studies related to real classroom cases.

In Turkey, teachers started to develop awareness about the necessity of alternative education opportunities to gain a higher level of competencies and to make continuous progress. In their research on the promotion system, Özkan and Kaya (2009) stated that teachers are mostly against the idea of taking only experience into consideration for promotion and think that different criteria should be introduced instead. Köksalan, İlter and Görmez (2010) looked into the attitudes of primary school teachers towards graduate education and found out that 50.3% of the participants wish to pursue master's education.

Studies looking into the reasons for pursuing graduate education show that teachers apply for graduate programs for various reasons. Alabaş, Kamer and Polat (2012) found out that teachers want to take graduate education for "personal development, higher professional seniority and for having the job opportunity of becoming an academic" and they also wish to "gain greater knowledge in their field and to develop their skills of understanding new teaching approaches and techniques."

Likewise, Özmenteş & Özmenteş (2005) and Aslan (2010) in their research about the desires and choices of students for pursuing graduate education indicated that students are motivated by the prospect of an academic career, getting expertise in the field, enhancing their personal development and gaining a scientific perspective in their profession. The research of Baş (2013) also shows that teachers pursue graduate degrees for having job opportunities in the academia, for their personal and professional development and in order to meet the promotion criteria of the Ministry of National Education. All these studies show that in addition to professional and personal development, teachers pursue graduate education in order to be promoted in the position of school principal or school inspector or in order to work as lecturers in universities.

When the knowledge and skills gained by teachers through graduate programs are considered, it becomes clear that such a level of education is necessary for teachers. Alhas (2006) shows that teachers pursuing graduate education stated that they improved their skills of conducting scientific research, reaching scientific knowledge, analysing and synthesising knowledge, developing effective communication between administration, parents and students and solving the problems in schools and classroom in a scientific manner. These results show that graduate education contributes to developing teachers' scientific qualities.

The graduate education teachers take is also approved and seen as necessary by the field experts. Kara (2008) examined the opinions of lecturers about teachers' receiving graduate education in his master's thesis. His findings suggest that all lecturers had a positive approach towards the graduate education of teachers and they stated that it is necessary to offer courses about the teaching profession in graduate programs.

Not only the teachers in service but also teacher candidates want to take graduate education and want to start their profession equipped with better skills. Ören, Yılmaz and Güçlü (2012)'s research on teachers' ideas regarding graduate education showed that teachers who want to pursue graduate education (which constituted 10% of the participants in the study) noted that they want to improve themselves, increase their expertise and work as academic staff. The research results of Erhan, Sünkür and Yılmaz (2012) also showed that primary school teachers wish to pursue graduate education for personal and professional development. Likewise, the study of Dönmez, Aydoğdu, Sever and Aypay (2012) displayed the positive attitude among teacher candidates towards graduate education.

Graduate programs aim to address the individuals' need for personal and professional development. Therefore, it is important that graduate programs are designed to meet these needs. Balcı (2014) confirmed that expectations from master's programs differ before and during the education and that some programs cannot meet the personal (development-related), societal and academic expectations. This requires that master's programs are updated in accordance with the above expectations and needs.

The studies show that there is a tendency to provide teachers with continuous professional development and to focus on the importance of teacher development facilities. Current research also emphasizes the factors that could motivate teachers - who have the task of educating individuals in a way that they are able to adapt themselves in a changing world- to pursue graduate education (Türer, Balçın, Sevindik ve Er, 2013; Gömleksiz, Et, 2013; Köksalan, İlter, Görmez, 2010; Yıldız, 2006; Başer, Narlı, Günhan, 2005). İlğan (2013) stressed that professional development facilities are effective as long as they increase both teachers' qualities and students' learning and emphasized the necessity of having a knowledge of not only the theoretical field of education but also of the practical teaching approaches and techniques. Thereby, it is important to consider the teachers' perceptions regarding the extent to which education facilities respond to the needs of teachers as well as to offer professional development facilities and to encourage teachers in engaging with these facilities.

Teachers apply to graduate programs of the Institute of Education Sciences for professional and personal development and in order to engage with scientific research. Thus, it becomes necessary to explore which deficiencies teachers wish to address through these programs, to design programs in accordance with teachers' needs and to determine the methods that could respond to students' needs. This study aims to reveal the issues teachers want to develop and to explore the issues or fields for which teachers feel inadequate. In addition, this research aims to find out the expectations of teachers from graduate programs and to propose ways about designing these programs in a way that could meet the teachers' expectations.

The data for this research is collected through focus group interviews. The importance of this research lay in that it is crucial to meet teachers' interests and needs at the graduate education level. Additionally, there is no study in the wider literature focusing on the reasons for which teachers want to pursue graduate education that uses the method of focus group interviews. This study aims to explore the reasons for teachers' participation in graduate programs in the Institute of Education Sciences, their expectations from graduate programs and their opinions on the necessity of the programs. The study seeks to answer to following research questions:

1. What are the **reasons for the participation of teachers** in graduate programs within the Institute of Education Sciences?
2. What are the **expectations** of teachers from graduate programs?
3. What are the **courses** teachers wish to take in graduate education programs?
4. What are the teachers' opinions regarding the **necessity** of graduate education and what are their justification for it?

Method

The Design of the Research

The study is based on a qualitative research methodology and has employed the focus group interview method. In the focus group interview a small group of people who have a common interest about a discussion topic convenes under the leadership of a moderator (Marzach, Sewell; aktaran, Williams, Katz, 2001). Çokluk, Yılmaz, and Oğuz (2011) argue that focus group interview is an effective technique to unearth through communication and interaction the different perspectives

among the participants and to develop an in depth knowledge about the topic under research. Therefore, in order to achieve these aims, two focus group interviews were conducted.

Participants

The study used the criterion sampling method which is categorized under purposive sampling. Participants of the research were 20 teachers (coded as T1, T2...T20) who wished to take graduate education in the Institute of Education Sciences. Thus, the common point among the participants was their need and desire for graduate education.

The first focus group interview was conducted with 8 participants and the second interview was conducted with 12 participants. Çokluk, Yılmaz and Oğuz (2001) suggest that the participants of focus group interviews should range between 4 and 10 or between 4 and 12. This study had, therefore, the ideal number of participants for the interviews. Table 1 below presents the demographic information of the participants.

Table 1. Profile of Participants

Code of the Participant	Field of teaching	Years of experience	The graduate program they wish to participate	Gender	Age
T1	Social Science	12	Social Sciences Education	Female	34
T2	Primary School Teacher	17	Management and Inspection of Education	Male	42
T3	Guidance Teacher	14	Management and Inspection of Education	Male	48
T4	Guidance Teacher	14	Guidance and Psychological Counselling	Female	34
T5	Guidance Teacher	7	Guidance and Psychological Counselling	Female	30
T6	Primary School Teacher	23	Management and Inspection of Education	Male	42
T7	Computer Teacher	6	Computer Education and Educational Technology	Male	32
T8	Science and Technology	7	Assessment and Evaluation in education	Female	29
T9	Primary School Teacher	8	Management and Inspection of Education	Male	30
T10	Mathematics	8	Mathematics education	Female	31
T11	Chemistry Teacher	10	Management and Inspection of Education	Female	31
T12	Primary School	10	Management and Inspection of Education	Male	30
T13	Turkish Teacher	6	Management and Inspection of Education	Male	31
T14	Mathematics	5	Mathematics education	Female	26

T15	Guidance Teacher	17	Guidance and Psychological Counseling	Female	49
T16	Technology and Design	27	Educational Programs and Teaching	Male	54
T17	Science and Technology	23	Educational Programs and Teaching	Male	47
T18	Turkish	10	Turkish education	Female	32
T19	Art Teacher	6	Arts education	Female	29
T20	Physics Teacher	6	Management and Inspection of Education	Female	29

As seen in Table 1, participants belong to different fields of teaching and 55% of the participants is female whereas 45% is male. The participants are anonymised by the codes given to them (T1 for the first teacher, T2 for the second teacher and so on). 75% of the participants have a teaching experience of between 4 and 14 years and 25% has between 17 and 23 years. The table also shows that the teachers may also wish to take graduate education in another field than their respective field of teaching.

Data Collection Instrument

Open ended interview questions is the most appropriate data collection instrument for this research. Firstly, a question pool which included questions designed to elicit the research aims of the study was formed and then four open-ended questions were selected from this pool and prepared by consulting the experts of the field. These four questions along with sub-questions (in case the questions are not understood or found ambiguous by the participants, alternative sub-questions were prepared designed for clarification purposes) and the research aims and research questions of this study were given to three different field experts to be analysed for content validity. In the light of the feedback received, necessary amendments have been made and a semi-structured interview protocol has been formed.

In order to understand whether the semi-structured interview protocol is clear enough for the participants, it has been tested on four teachers who did not participate in focus group interviews. The interviews with these four teachers showed that the questions were clear and comprehensible.

Data Collection Process

There were two focus interview groups. The questions were the same for both groups and in case of ambiguity, the sub-questions were asked for further clarification. The teachers were informed about the date and time of the interviews and the interviews were conducted within this pre-determined time and date. Teachers were asked if they consent to the audio recording of the interviews, and these audio records were subsequently transcribed.

Each question contained in the interview protocol was asked and the opportunity to answer these questions was given to all the teachers. Thus, an interactive environment was established. Special care was also taken in order this interactive environment not to restrict the teachers. The semi-structured interview questions offered flexibility (Türnüklü, 2000) and supporting questions were asked to expand and elaborate on teachers' answers. Participants expressed more than one opinion for each question and presented different ideas.

Data Analysis

Descriptive analysis was used to analyse the data. Firstly, the answers were coded according to themes. The perceptions and ideas for each theme were explained and teachers' different perspectives for each theme were presented. Quotations have been provided for striking points and ideas. In

addition to the above, frequency tables of the answers have been devised to present the findings quantitatively.

The reliability of the research was calculated through Match Percentage Formula used in Törnükü's research (2000). First of all, a coding key including categories, sub-themes and themes was formed. This key and the transcripts were given to two different experts. Experts have been asked to check whether the themes in the coding key appear in the interview transcripts and then to mark the respective section. By controlling the selections and identifying the dissensus and consensus between two experts, a match percentage is calculated. The formula is given below:

$$P (\text{Agreement Percentage}) = \frac{Na (\text{Agreement Quantity})}{Nd (\text{Discrepancy Quantity})} \times 100$$

In accordance with the feedback provided by the experts, the reliability percentage of each question has been calculated. Table 2 presents these percentages.

Table 2. The reliability percentage of the questions

Questions	Reliability Percentage (%)
Question 1	% 84
Question 2	% 81
Question 3	% 88
Question 4	% 100
Questions' average reliability percentage	% 88,25

As seen in Table 2 the reliability mean score of the coding key is 88,25%. Yıldırım and Şimşek (2006) argue that a reliability percentage of over 70% can be seen as satisfactory. Therefore, it is argued here that this research has ensured the reliability of the questions asked.

Findings

This section presents the research findings providing quotations and striking accounts from the teachers' answers. It also presents frequency tables to understand how often certain ideas and themes are repeated.

Findings Regarding the Reasons of Teachers' Participation in Graduate Education Programs

The central question asked to teachers in focus group interviews is the following: "What are the reasons for your desire to participate in a graduate program in the Institute of Education Sciences?" Themes were formed from the different statements. Table 3 presents the themes arising from the answers given to this question and the frequency of these themes.

Table 3. Reasons of participating in graduate education in the Institute of Education Sciences

Themes	Sub-themes	Frequency
Reasons concerning professional development and career	Continuous professional development and update	12
	Career development through specialization in the field	7
	To contribute to the field with various services and scientific studies	7
	To gain different skills in order to change job or institution (to start a career at a university, to work in the ministry or to become an	6
	To gain the skills of integrating theoretical knowledge into the profession and into areas of practice within the school management	5
	To gain classroom management skills	3
Reasons concerning personal development	Skills to conduct scientific research and gain scientific literacy	11
	To gain the skill and the habit of following national and international developments and innovations in the field	6
	Professional/Intellectual development	5
	To be in a professional and academic environment	2
Reasons concerning the desire to increase social status	To gain status and power, prestige and to be different from everyone	6
	To feel happy and content through learning new knowledge, through being appreciated and through meeting the need for personal	5
	To get out of the daily routine of school and ministry work.	2

As seen in table 3, the reasons of applying for graduate education are categorized under three themes; professional and career development; personal development; gaining social status.

The analysis shows that the most frequent answer given by the teachers is the following statement: “to gain professional development and update in the field”. Teachers emphasize the importance of continuous professional development to keep up with ongoing developments and feel that it is necessary to update themselves on the teaching career. Regarding this idea, one of the teachers says that “*the reason for which I want to pursue a graduate education is to update my knowledge about my career. As you know, the teaching profession is developing fast, so it is necessary to keep up with these developments. Every day, something new comes up. I think graduate education will give me an opportunity to keep up with these developments and updates.*” (T7). Another teacher underlines the significance of personal development: “*There is a need for new knowledge to keep up with today’s conditions. I would have liked to do a master’s for career development.*” (T15).

Teachers express that they want to learn how to conduct scientific research and how to reach scientific knowledge and to be trained in problem solving skills. They also touch upon the importance of solving the problems encountered in school or class with a scientific approach and see this as one of the most significant reasons for pursuing graduate education. They express the above ideas as follows:

I want to pursue graduate education in order to learn how to conduct research and to write a research article and to learn the steps and process of problem solving (T8)

I feel that I need to learn the correct way of solving problems. Therefore, I want graduate education to equip me with a scientific approach for problem solving. Problems should be approached through a rational process; they should not be dealt without having the appropriate knowledge (T2)

A further desire of me is to solve the problems I face in the class with a scientific approach and to gain the skill of doing this. (T9)

Another idea arising from the focus group interviews is that teachers prefer graduate education in order to specialize in their field, to develop in-depth knowledge and to build a career. They think

specialization is necessary to handle arising issues in a more detailed manner and to make progress in their profession.

Teachers want to be more beneficial to their students through increasing the quality of their service, to share what they have learned with their colleagues, to contribute to the field by participating in scientific research and to participate in studies developing education programs. Therefore, they think that graduate education is essential:

I want to participate in research studies in my field and I want to contribute to this process.” (T11)

I want to gain the skill of making education programs suitable for technology and design relevant lessons and thus contribute to the field. (T16).

I want to be more beneficial to my students so I want to participate in graduate education (T17).

Teachers think that it is important to follow the global developments in education and that the relevant skills can be developed through both graduate courses and discussion with their friends in the courses. They particularly stressed that they cannot follow the international developments in their field in the schools they work and therefore they want to participate in graduate education programs.

Another reason for which teachers want to take graduate courses is the fact that graduate education would provide them with the chance to change their career or their working environment. In this sense, four teachers who want to become inspectors or school managers or want to work in the ministry of education think that graduate education would be an important asset for achieving the above goals. Additionally, two teachers expressed their interest of becoming academics and therefore they expressed their wish to pursue graduate education.

One of the reasons beyond the teachers' desire to do graduate education is the desire to gain prestige and power. Teachers believe that people who have taken graduate education have a more positive and a better image and therefore they themselves want to improve their image through education. Teachers expressed their ideas regarding this issue as follows:

Graduate education gives you prestige (T6).

When I have a master's degree, I will feel myself more successful and people will also think that I am successful (T7)

I want to take graduate education to improve my social status. This is because the way teachers and parents look at you differs when you have a graduate degree. This makes you feel good. When an inspector comes, the ones who have graduate education are treated as if they know everything. (T9)

Some of the teachers think that theory and practice is often incompatible in classroom and say that one of the reasons for starting graduate education is to carry the theoretical knowledge they will gain to the class or in other words to integrate theoretical knowledge to real life. One of the teachers expressed his ideas as follows:

The reason why I wanted to take graduate education was the incompatibility between theory and practice (...). Maybe I want to prove that they could be congruent by participating in graduate education – I may fail to prove this. But I find the academics who produce knowledge without looking into the practice in schools or in an environment without teachers and managers weird. Likewise, I find the teachers who rely on academicians to change the practices with scientific approaches and theories bizarre. I mean if an academic and a teacher do not work together, do not go into class to accomplish some results or plan innovations together then this is not science. This is my foremost reason; I want to combine theory and practice, to share my experiences and to harmonize theory and practice (T6).

Other underlying reasons for teachers' desire to take graduate education are the desire to gain a sense of accomplishment, to be praised and appreciated, to feel satisfied and content by learning new knowledge, to accumulate intellectual capital and to gain fundamental skills and some awareness about classroom management. Another reason mentioned by teachers is taking a break from the work routine at schools:

I want to take a break and get out of the routine and the ordinary work of national education at school. This is among the reasons for pursuing graduate education. At school or within national education system, it is not possible to improve ourselves and we don't have any opportunity to accomplish something. You only do your duties (T7).

Discussions regarding the motivation for participating in graduate education show that in-service trainings are insufficient and therefore, teachers seek to meet this education deficit through graduate education. To explore the nature of education/training deficit, one more question has been added to the interview protocol. Thus, the issues that are not covered by in-service training are looked into and a number of different perspectives regarding graduate programs are presented.

Findings Regarding the Needs That Are Not Met By In-Service Training and Therefore They are Addressed Through Participation in Graduate Programs

When teachers are asked why they want to do graduate education, they indicated that they faced in-service training problems and they sought to address these problems through graduate education. So, one of the reasons why teachers apply for graduate education is "to meet the education deficit of in-service trainings through graduate education". This came up as an important point and one more question is asked during the interviews in order to elaborate on this issue. The findings regarding the question of "which aspects of the in-service training are insufficient and how the graduate programs you wish to apply could address these aspects?" are presented in Table 4. With this question, the aim is not to determine the aspects that in-service training failed to address but to focus on how the graduate programs can deal with this education deficit.

Table 4. Expectations towards meeting the issues that are not covered by in-service training

Themes		Frequency
Meeting the education deficits of in-service training regarding content, methodology and gains	The opportunity to discuss issues in detail	7
	Teaching how to use theory in practice	6
	Offering useful knowledge that could address the needs	5
	Creating awareness about worldwide developments	4
	Being intellectual and gaining different points of view	4
	Doing scientific research independently and gaining scientific literacy	4
	Gaining a scientific point of view to the field	4
	Providing opportunity to develop different skills	1
	The opportunity to be in mutual interaction with a small group of people and the lecturers	3
Meeting the needs of teaching staff and trainees' quality	The opportunity of learning from people who are experts in their field.	6
	The opportunity of being a member of an enthusiastic group of people dedicated to learning	4

As can be understood from table 4, teachers developed some expectations towards meeting the in-service training deficits with graduate education. These expectations are categorized under two themes. Teachers argue that in-service training remains too general and superficial due to time

constraints which do not create time for in depth discussions and due to insufficient content. They also add that training is completed only with the aim of getting a certificate and therefore graduate education emerges as an alternative to such a superficial learning:

There are some topics for which you cannot come up with a solution in a couple of courses or hours. In-service training does not have continuity on the various topics that are discussed. But in graduate education, you can discuss in detail a topic or an issue. I expect this. (T2)

During the in-service training, only general information is being given but graduate education includes more detailed, structured and field oriented programs. (T15)

As noted previously, the teachers highlighted that it is important to use the theoretical knowledge in practice. They stated that graduate education should combine theory and practice by providing applied theory courses and that they should be able to find answers regarding their teaching practice related questions in this education:

In graduate education, as long as we participate in psychological counseling we can receive supervision. In university, getting feedback from these psychological counseling sessions is a great experience. (T5).

Teachers could tell you about the theoretical knowledge of teaching methods and techniques or classroom management but they won't know how to use this knowledge in practice or how to develop new knowledge. Graduate education should address this problem. (T6).

How can practice be developed? How teaching tools should be used? Which teaching approaches should be adopted? Graduate education should provide answers to these questions. Therefore graduate education should contribute to teachers' development. (T10).

Another topic that emerged in the group interviews is that the educators who are in charge of in-service training or any educational training are often seen as inadequate or they fail to satisfy the teachers. Therefore this deficiency could again be addressed through graduate education:

In all the trainings I have received in my field, I have never seen an educator who is expert or has a good knowledge of the field. Graduate education will help me in this sense. I will learn from people who have worked in this field diligently, done research and written journal articles and who are competent. The educators who give in-service training often come from a different area of expertise. They don't understand the difficulties I face in my field. So, graduate education will close this gap (T4).

Not many people believe that the educators of in-service training are competent and real experts. Graduate education, in this respect, is a big asset. (T14).

Teachers indicated that the in-service training is not functional, does not address the needs of teachers and ignores the most important issues. They believe that graduate education will focus on the issues or topics that teachers need the most.

In service training includes topics and issues that teachers do not need at all. On the contrary, graduate education will be useful for both personal and professional development. (T7).

Teachers pay, therefore, attention to the usefulness of the given education and they believe that graduate education will be effective in this regard.

Another issue is that in the education programs given by ministry of national education both the educators and teachers are reluctant and therefore the programs are usually inefficient. Teachers think that taking graduate education is a matter of enthusiasm and eagerness and that both the students and the lecturer should be enthusiastic so as this learning process could be more efficient:

In the last in-service training course, the educator was a graduate of primary school education and told us that she was pushed to give the training. That educator was also not happy or enthusiastic about giving the training and she was reluctant. This is usually how in-service training takes place. You need to have willingness for education. Since graduate education is not compulsory, there will be more enthusiastic people in the programs. This will of course increase the quality of education. You will be enthusiastic about learning and there will be people around you and in your class who are eager to learn. You will be in an environment where there are people who study with great enthusiasm. This is something that in-service training cannot provide to you. (T7).

Teachers' further ideas about the complementary role of graduate education include "awareness raising about the global developments in their field, enhancing their intellectual capabilities and gaining different points of view, gaining the ability to do scientific research independently, and gaining a scientific perspective to their field."

Another issue put forward by the teachers is that in-service training takes place in a quite crowded environment and this discourages discussion. Teachers believe that in graduate education they could have a more interactive environment within small groups. One of the teachers expresses his expectations as follows:

In in-service training you don't talk much or interact with the teacher. The groups are generally large. If you want to discuss or talk about a topic, then there is no time for studying the other topics. Even if you initiate a discussion on a topic, you can't expect much because the educator is not well equipped. In graduate education, you can have a discussion with a teacher because the classes are small (T2).

One of the teachers drew attention to the fact that in-service training does not aim at designing studies for the improvement of students' skills and interests in various fields:

I think graduate education should help people develop themselves on the issues that they are keen on in addition to improving teachers' professional competency (...) A way to do this is to offer education-related elective courses. It is important to push teachers to take courses from other majors (T9).

19 of the teachers believe that the benefits of graduate education cannot be provided by in-service training and 1 teacher thinks that graduate education can partially complement the education provided by in-service training. The important point here is that graduate education is believed to meet the needs that cannot be fulfilled by in-service training. Teachers think that in-service training is insufficient in terms of content, time, depth, enthusiasm of the participants and the teachers and education quality and they believe that all these problems could be addressed through the participation in graduate programs. In addition, it is emphasized that the educators' level of competence is low and graduate education offers the opportunity to benefit from the experts in the field.

Findings Regarding the Courses/Topics Expected from Graduate Programs

Teachers were asked which courses they would like to have in graduate programs. This is important for meeting teachers' needs according to their expectations and in line with their reasons for joining the graduate programs. The answers teachers gave to the question of 'What are the particular topics/courses you would like to have in graduate programs?' are presented in table 5. The most desired course mentioned by the teachers is the professional practice course.

The content of courses should not be only theory oriented but also be directed to the teaching practice. We should take practical courses related to schools (T8)

I would like to have different sample cases and take applied courses. (T9)

I think that graduate courses which include both theory and practical areas could be quite sufficient. (T19).

In addition to the above, teachers want the inclusion of scientific research methods and techniques and statistics courses in the programs. They want to gain knowledge about school and classroom management and about teaching approaches and methods. Moreover, they want to use this knowledge in school and classroom and thus to adapt their teaching practice according to scientific theories.

Teachers think that there should be courses which could teach them how to access education sources in order to follow the latest developments and topics in their field and which could give them an opportunity to discuss the latest developments.

I believe that the courses directing us to follow the latest developments in the field are quite important. We should anyway discuss the latest issues but we also need courses on how to access these developments. We should know what to look for in our field (T5).

Table 5. The courses teachers wish to have in the program

Themes	Frequency
Courses/Topics on the teaching process	Professional Practice courses
	Approaches to new teaching methods and techniques
	Classroom management
	Psychology/Child psychology
	Use of technology in education
	Courses on the education of special talents and disadvantaged students
Courses/topics on research methods	Scientific research methods and techniques
	Applied statistics
Courses/topics on management, policy and planning	School management
	Project management-project writing process
	Education planning
	Crisis management
	Time management
	Conflict management
	Stress management
	Effective Communication
	Education policies
	Human Resources Management
Courses/topic on the foundations of education	Courses in which contemporary education issues are
	Philosophy of Science
	History of Science
	Sociology of Education
	Philosophy of Education
	Ethics in Education
	Comparative Education

Teachers want courses such as philosophy of science, history of science, history of education and sociology of education in the program. Teachers also express that they would like to have courses on the education of people with disabilities as well as child psychology and the use of technology in education. Moreover, they emphasize the importance of comparative education and ethics in education.

Among the courses, Education Policy and Planning is also seen as important by the teachers. Teachers think that education policies should be discussed by every teacher and awareness about the

importance of planning in education should be created. One of the teachers who emphasizes the importance of planning in education expressed his ideas as follows:

I think the courses on planning in education are significant. For instance, I worked as a teacher in a village. There were five or maybe six thousand sheep. The children's cheeks glowed because of eating dairy products. Children's faces were red due to protein overdose. On top of this, as part of the project of ministry, a truck of milk bottles would be sent to region. It is an extreme case maybe but I would send walnuts and figs to this region. Or I would use this region's sources for areas which do not have milk or I would make a plan according to the needs and characteristics of each region. I want to learn the techniques of education planning at a micro and macro level in the program and I would like to have the skills needed on this issue. (T2)

In parallel with the problems teachers face with individuals at school, they want organizational behavior courses such as crisis management, conflict management, stress management, human resources management and effective communication to be incorporated into the programs.

There should be courses which could teach you how to remain calm when faced with tough circumstances or how to cope with stress. Of course, there are people who "misbehave" in their field but there also people who make the best of their job. There is a need for courses which teach how to act in a solution oriented manner towards other teachers and managers and how to remain calm. There should also be courses which teach us how to cope with conflicts with managers (T4).

Along with a research methods course, teachers express that project management courses are also important and there is a need for courses teaching how to implement a project:

Another issue that I find important is that I would really like to learn how to do a project. (T7)

I would like to have courses on project preparation. There should be courses that teach me how to prepare and apply for a project or how to manage these things at schools (T8).

Findings Regarding the Necessity of Graduate Education for All Teachers

Lastly, teachers were asked whether it is necessary for all teachers to take graduate education. The findings are presented in table 6.

Table 6. Ideas regarding the necessity of graduate education for all teachers

	Yes, they should	No, they should not
Frequency	9	11

As seen in Table 6, 45% of teachers (9 teachers) think that all teachers should take graduate education. When asked why they think so, they justified it pointing to the reasons for participation in graduate education mentioned previously (Table 3). On the other hand, 55% of teachers (11 teachers) say that graduate education is not necessary for all teachers. These teachers gave the following justifications:

82 percent of the teachers (9 teachers) who think that not all teachers need graduate education argue that graduate education should be based on the principles of eagerness and competence; otherwise the quality of graduate education can decrease:

Not everyone should do a master's degree. Only those who want and feel confident should pursue it (...). Only those who have the competency and eagerness to produce a good quality of work should do it. You cannot expect that all teachers will have these qualities (T6)

I think being enthusiastic is very important (...). Graduate Education is a higher level of education that you cannot pursue unless you really want it" (T9).

Compulsory education or training will be inefficient and a waste of time and effort since there will be people who are reluctant.”(T10).

The rest 18 percent of the teachers (3 teachers) indicate that some teachers pursue graduate education to gain only power, authority and status and therefore they think this should be prevented by choosing the teachers that want to pursue graduate education carefully. Teachers who think that teachers should not do graduate education only for authority, power and prestige expressed their ideas as follows:

We have colleagues who pursue graduate education for prestige. I think this should be prevented. The entrance exams for graduate education should be improved in terms of quality and not all applicants should be accepted (...) People who cannot manage the authority they have should not take such education. This is because these people misuse the power they gain after they have completed their graduate degrees (...) There are teachers who paid for and completed a master’s degree in order to become an ‘expert teacher’. Then they show off or patronize teachers like us who do not have any degrees” (T4)

These teachers think that in-service training will be enough as long as its quality is good. In addition, they noted that graduate education is a voluntary training to gain higher skills and that it is not a necessary condition for practicing the teaching profession.

Other ideas regarding this issue include the arguments that not every teacher should be expected to make economic sacrifices for education, that there are a number of other different ways for personal development, and that not every teacher should be expected to have an academic knowledge.

Discussion, Conclusion and Suggestions

This research aimed to explore the motivation beyond teachers’ desire to study in graduate education, the qualities they want to improve in terms of professional and personal development, their expectations and their ideas about the necessity of graduate education. The crucial point is to develop suggestions about the graduate programs through teachers’ expectations and motivations for participating in graduate education. In this way, graduate programs can be designed in a more functional and efficient manner.

Current research in the field shows that the teachers who do graduate education and feel the need to undertake graduate studies are generally early career teachers in their first 10 years of service (Alabaş, Kamer ve Polat, 2012; Alhas, 2006; Baş, 2013; Kara, 2008). This study and the literature show that the early career teachers have a greater tendency to take graduate education. 11 out of 20 teachers expressed their desire to follow graduate education in a field different than their specific field of study. This reveals that teachers do not want only to take graduate education in their field but also in other fields. Thus, teachers either tend towards their field or they want to take education in another field that they see as important.

The research findings display that teachers want to take graduate education in order to be equipped with the necessary qualities that are crucial for keeping up with today’s conditions and for responding to the needs of students. Teachers prioritise a specialization process that shows professional continuity and emphasize the importance of the research skills that can allow teachers to contribute to the field through independent scientific research. They believe that all the above can be achieved and gained through graduate education.

It could be seen that some of the reasons for teachers’ desire to take graduate education are personal satisfaction and the desire to gain status, power and prestige. Teachers believe that with this level of education they will gain the habit of following the latest developments in the field and they will increase their professional knowledge. In addition to these, teachers stated that through graduate education, they will gain a sense of personal accomplishment, be appreciated, feel themselves useful for humanity and be happy and content in their professional life. Eren (2009; 551) argues that

employees will show a higher performance rate if they feel satisfied and their status is increased. Likewise, graduate education through which they can gain personal development, status and respect could be used as a tool for increasing teachers' motivation and performance.

The findings also show that teachers want graduate education in order to get away from the routine of school work and to enhance their intellectual development. Teachers believe that in this way both their professional and personal lives will be different. Graduate education will bring different perspectives to teachers' professional and personal lives and will get them out of their daily routine and a situation where they "think like everyone else" in the profession. Another reason why teachers want to take graduate education is to end the theory and practice incongruence and to learn how to apply the acquired knowledge in real life. Teachers say that scientific knowledge does not mean anything on its own and at the same time practical solutions that are not based on scientific research will not bring any success. Bursalıoğlu (1998; 32) argues that experiences that are not based on theory are a waste of effort and time whereas experiences based on theory can have a higher influence. This situation underlines that theory and practice cannot be separated.

The findings also suggest that in addition to professional and personal development, employment opportunities in ministries, in school leadership positions and in universities are also among the teachers' motivations for graduate education. Thus, teachers think that a graduate education diploma will be an important asset for these positions. Other studies also argue (Alabaş, Kamer and Polat, 2012; Özmenteş and Özmenteş, 2005; Aslan, 2010; Baş, 2013) that employment opportunities in universities in lecturer positions are a significant in shaping teachers' motivation for graduate education.

Another issue is that in-service training is centralized and therefore the discussed topics do not meet teachers' needs. The courses offered in in-service training are not congruent with the contemporary qualities and qualifications that teachers need and the topics are examined in a superficial manner due to time constraints, the crowded classes, the reluctance of groups to engage into discussions and the educators' low level of expertise. This training fails also in meeting the different skills that are desired by teachers and the teachers' interests because of the restricted number of topics discussed. Therefore, teachers think that they could address this deficit with graduate education.

It could be seen that teachers' expectations from graduate education and the problems of in-service training match at some point. In other words, teachers' expectations towards graduate education are shaped by their desire to meet the education deficits of in-service training. These expectations also include gaining a higher level of skills as indicated in the Higher Education Council Graduate Education Regulations (YÖK, 1996).

Findings show that teachers hold expectations regarding the practices in classes and they need courses on classroom management, education technology, teaching methods and approaches and the education of disadvantaged children. Teachers also expect to have organizational topics or courses in graduate education programs such as crisis management, conflict management, stress management, effective communication and time management. A good majority of teachers want to take graduate education in "education management, inspection, planning and economy or education management and inspection" (fifty percent of the participants want to take graduate education in education management and inspection whereas the other fifty percent wants to pursue education in other majors). This could be an indication that teachers are interested in the administrative perspectives of schools, in taking responsibility in school management and in gaining awareness about the administrative issues. Meeting this need and enthusiasm could be used as a motivation tool by school managers. The research of Özdoğru and Aydın (2012) suggest that there is a positive correlation between teachers' say in management decisions and teachers' motivation levels. In this study, teachers may see graduate studies in education management and inspection as an opportunity to increase their awareness of and influence in management issues.

The desired courses in graduate programs include history of science, philosophy of science, history of education and psychology of education; these are courses which require intense intellectual facilities and provide opportunities for personal development. The findings show that expectations focus on courses which make it possible for teachers to follow and discuss contemporary education topics and to make cross-country comparisons. Moreover, the courses on education planning and policies – which are also among the desired courses for graduate programs- are seen as important in terms of interpreting the education practices both in Turkey and in other countries from a holistic perspective, critically scrutinizing education policies and recognizing efficient practices. In this respect, teachers' desire for courses on comparative educational practices, planning in education and economy of education can be argued to be reasonable.

One of the most important expectations of teachers is to gain skill required for conducting independent scientific research. In parallel with this expectation, it could be seen that scientific research methods and applied statistics are among the desired courses. Aims of graduate educations in Higher Education Council Graduate Education Regulation (YÖK, 1996) are also determined as to develop scientific perspective and to contribute innovation to the field. This means teachers have congruent expectations.

Another result to be derived from the study is that the ideas regarding the necessity of graduate education can be categorized under two contrasting positions. 55 percent of teachers do not see graduate education as necessary and argue that it should match teachers' desires, skills, interests and needs. According to these teachers, priority should be given to the improvement of in-service training. They argue that in-service training of high quality can be efficient. Teachers who think that graduate education is necessary justify it mentioning the insufficient education that teachers receive and the benefits of graduate education. In other words, all teachers agree about the benefits of graduate education. However, some teachers think that graduate education is not necessary for practicing the teaching profession. They note that this level of education provides a theoretical perspective and skills of high level which are not needed by all teachers.

Teachers believe that the problems they face in in-service training will not be encountered or will be less pronounced in graduate education. They think that they will take courses from academics specialized in their field, have the opportunity for discussion within small and enthusiastic groups and receive courses tailored according to their needs. Thus, there is an expectation that graduate education can meet the needs that are not fulfilled by in-service training. One of the most significant results to be derived from this study is that teachers who are not satisfied from in-service training seek alternative education opportunities. Teachers state that they cannot benefit from in-service training which is expected to provide professional and personal development. For this reason, they argue that they prefer graduate education in order both to address the deficits from in-service training and to gain a high level of skills.

Based on these results, we could make the following suggestions:

1. When preparing graduate education programs within the Institute of Education Sciences, any research about students' expectations from graduate education programs could be useful. Thus, the teachers' needs could be met to the greatest extent possible. Programs can be devised in accordance with teachers' interests, the qualities they want to develop, and their preferences regarding the teaching style.
2. Elective courses can be diversified in the programs to meet the demand for the development of different skills. In addition, teachers can be guided to take elective courses from different graduate programs.
3. In line with teachers' desire for courses in which contemporary issues can be discussed, courses can be designed in a way that they provide the opportunity for discussion on contemporary knowledge and on how to follow this knowledge and which sources teachers

can reach. A course of such content can be added in the list of elective courses prepared in the context of the Bologna process.

4. Considering the teachers' desire to use theoretical knowledge in practice, the graduate studies and courses can help teaches relate theory with the teaching practices in their schools. In other words, they can link theory with real life.
5. It should be ensured that students are trained in scientific research methods and statistics through projects. Thus, they can gain project experience. There should be studies on how to teach research methods and related courses effectively for each department.
6. Considering that the problems of in-service training are linked with teachers' expectations from graduate studies, graduate programs on education could be regulated and improved. Thus, graduate courses that meet the teachers' needs can be created.
7. This research can be applied to each department in order to assess the departmental needs, courses and expectations and to structure as a result the graduate programs according to this assessment.

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Miscellany

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