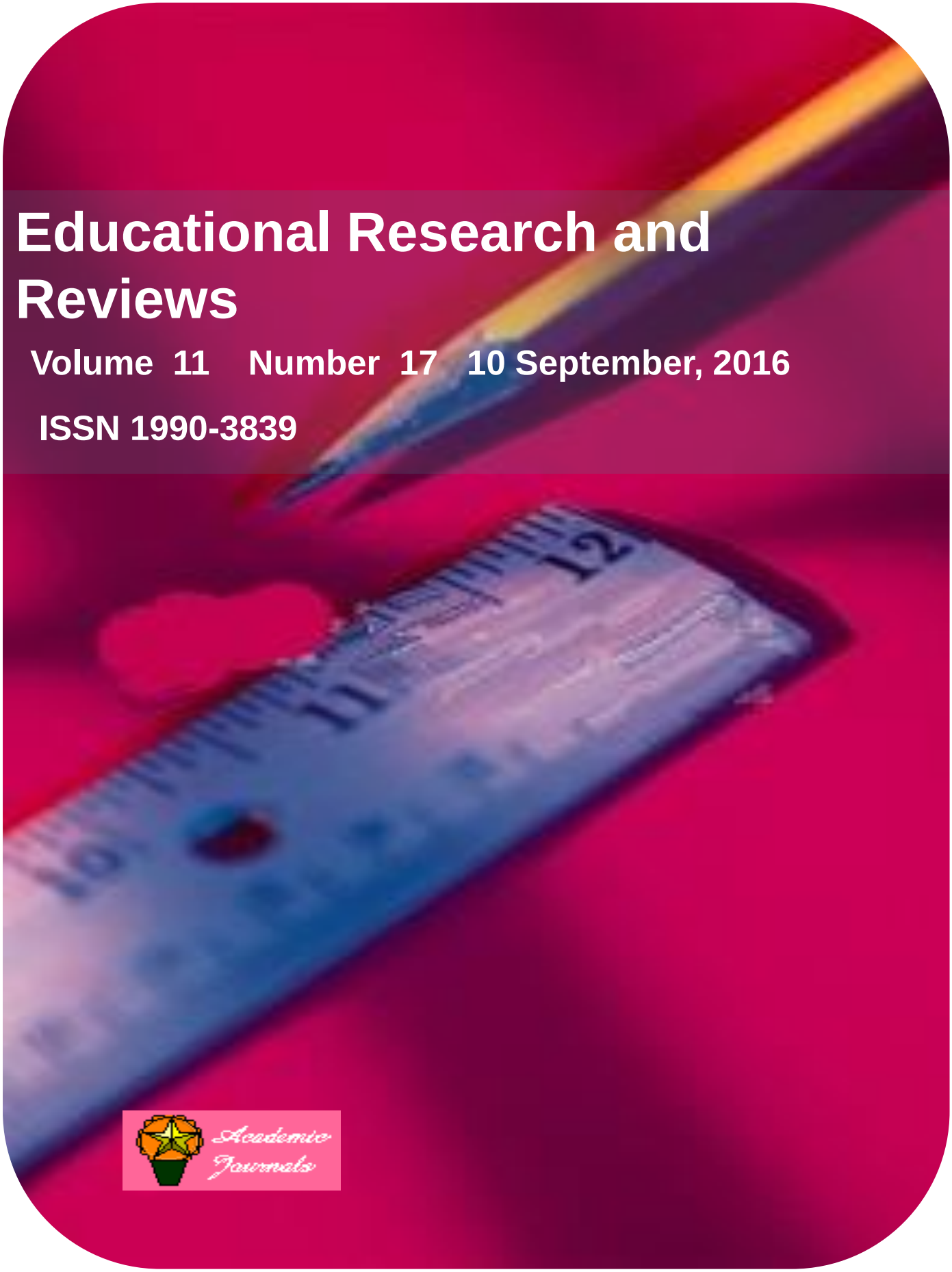

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Educational Research and Reviews

*Full Length Research Paper*

# Primary school teachers' perceptions about character education

**Melek Demirel[1*], Demet Özmat[2] and Imgehan Özkan Elgün[3]**

[1]Department of Educational Sciences, Faculty of Education, Hacettepe University, Ankara, Turkey.
[2]Preparatory School, Çankaya University, Ankara, Turkey.
[3]School of Foreign Languages, Alanya Hamdullah Emin Paşa University, Antalya, Turkey.

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**The aim of this study is to determine the perceptions of primary school teachers about character education. In this descriptive study, data were collected by using a survey questionnaire which required descriptive analysis. Based on the findings, it was revealed that primary school teachers (n=60) defined the character education as moral values necessary to be taught to individuals and behaviors for their personality development. According to the teachers, the most important responsibility of them is to be a model for their students and in order to be a good model they should have the desired characteristics. Some of the teachers think that students who do not get enough support from their parents can have positive characteristics thanks to intense communication and collaboration among school-parents and teachers. On the other hand, some teachers do not think that such kind of students can change. However, the majority of teachers think that students having negative characteristics such as telling lie, cheating and showing disrespectful behaviors can be changed through support. Almost all teachers think that nowadays students lack of respect and responsibility, and they believe that character education conducted at schools is not enough for students.**

**Key words:** Character, character education, teacher training, primary school teacher.

## INTRODUCTION

In contemporary societies, the deterioration of the institution of the family, violation of the human rights, drug addiction, theft, corruption, sexual abuse, violence and the increase of social problems raise the issue of producing virtuous individuals and making the values coming from the past a current issue again. As the values cannot be only transfer by means of parents and society, day by day virtue, value, character education have gained importance. Accordingly, schools have the responsibility of transferring both academic objectives and values which are believed to be right to the students.

### Character education

In the current Turkish dictionary, character is defined as

*Corresponding author. E-mail: melekdemirel@gmail.com.

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"individuals' distinctive features, basic characteristics of a person that separates him from others and the superior key feature of a person shaping a person's character, character, being in a harmony with himself, being consistent in terms of his thoughts and behaviors and all features that enable a person to survive" ( TDK, 2014). Ryan and Bohlin (1999) described the concept of character as making rational decision and as a result feeling yourself well. Besides, Yıldırım (2007) described character as bringing positive characteristics to a person in his thoughts, feelings and behaviors. Moreover, Cevizci (2003) described character as a person's bahaviours, habits, strengths and abilities, values and his way of thinking that separates him from the other people. In general, character is doing the right thing without being seen. The most important reason that makes people to follow the rules is not the fear of punishment or the desire of getting an award, it is the respect to the truths and the necessities of others. In general, having a character means to show right and virtuous behaviors, thoughts and feelings (Vessels, 1998). Another definition emphasizes that character starts to take shape from the childhood with the effect of family, friends and school of a person (Zel, 2006). From the given definitions, it can be deduced that character is a concept that is related to one's ethical and moral values.

Character education has the dimensions of child education, social affective learning, affective learning, community service and citizenship education that help young people to gain responsibility and make contribution to the society. Character education is defined in different ways in literature. The National Character Education Committee established in 1997 in the USA defined character education as "the education that is planned by the school personnel and requires frequent communication between families and society, enables children to be careful and principled (Williams and Schnaps, 1999; Vess and Halbur, 2003).

In another explanation, character education is defined as providing character development by using all aspects of school life and form a virtuous behavior (Battistich, 2005; Nucci, 2005). Similarly, Bakioğlu and Sılay (2011) emphasized that society should adopt some values such as honesty, fairness, responsibility, respect to themselves and others, being a good citizen and etc. Moreover, they emphasized that character education helps people to come up with these values. Kamarruddin (2012) talked about six different characteristics while defining character education. These are trustworthiness, fairness, susceptibility, respect, citizenship and responsibility. Parlar et al. (2010) handled character education as an assurance of students' present and future, they also indicated that by means of character education they become responsible and character education should be a part of curriculum.

Lickona (1999) emphasized that the purpose of character education is to bring good individuals, schools and societies up. On the other hand, Battistich (2005) focused on individuals more and he defined the purpose of character education as raising children who are understanding, caring and have moral values and to raise teenagers who use their potential to do their best, do right things and have purpose in their lives. Character education is related to what type of person and how they should be raised. Accordingly, it has activities which support the children's development and it aims to raise individuals having virtues (Ekşi and Katılmış, 2011). In general, character education is the common term of adopting basic human values, gaining awareness to these values and helping to turn these theoretical knowledge into practice by means of hidden curriculum or curriculum (Ekşi, 2003). Milson (2000) defined character education under six themes:

1. Schools indicate value crises in a society.
2. Exemplifying is a big part of character education.
3. In a part of character education didactic learning can be conducted.
4. Young people need opportunities to develop their character in a good way.
5. Schools should create a positive atmosphere.
6. Society based behavior list can help the curriculum of character education.

To conclude, although there is no common definition of character education and having different aspects of character education, character education can be defined as to gain basic values to be a good person by means of education.

## The role of parents in character education

In literature, the moral awareness of children has been shaped with their parents, and accordingly parents are the most influential factor in children's cognitive, social and moral development (Ekşi and Katılmış, 2011). As it is known, the basic education of children is taken place in family (Pala, 2011; Brannon, 2008). Berkowitz and Bier (2005) emphasized that parallel to the role of parents in the development of a child, they have to participate in character education curriculum. Haynes et al. (2001) indicated that the first responsibility of parents is to provide character development however this responsibility should be shared with school and environment and in our age as most of the children do not see good examples from their parents sometimes schools can be the only institutions for the development of character.

Similarly, Berkowitz (2002) emphasized that parents should be positive about children's needs, while taking decisions they should be democratic and be a friend for them, only by this way they can contribute to their children's development. According to him, parents should actively take part in their children's character education

and the prerequisite of the success of character education parents and schools should work collaboratively. While Brannon (2008) is talking about the role of parents in character education he indicated that teachers should inform parents about the issues that they can help, by this way parents and schools can work in collaboration in order to change the behavioral disorders. According to Kuş (2008) research based on both teachers and students opinions, the factors out of school (parents, media, social environment) have the most important factors that help students to gain values. When the researches about character education are analyzed, a successful character education is based on school, teacher and parent collaboration, providing a moral environment in the school and forming values accepted by the society.

## The role of school and teachers in character education

Many researches about character education showed that the positive atmosphere in the classroom and inside the school has an effect on children's character education (Lickona, 1993, 1997; Ryan, 1986; Ryan and Bohlin, 1999). Wynne (1995) by citing an African proverb as "raising children is the responsibility of whole village" indicated that only with the help of all people in a society teenagers and children can gain all virtuous behaviors.

In this respect, notably school managers directing team work and teachers, everyone in a school and parents should be take part in conducting a character education curriculum and this has a great importance (Yıldırım, 2007). Ryan and Bohlin (1999) think that there are seven competencies that a teacher needs to have to be a good educator in terms of character education.

1. Teachers should be a role model for good character and forming a good character
2. Students' character development should be a professional responsibility and priority for teachers.
3. Teachers should talk about the rights and wrongs in life.
4. Teachers should describe themselves ethically but should not put pressure on teachers about their opinions and thoughts.
5. Teachers should help children to understand other people's lives and help them to be interested in others' lives as well.
6. Teacher should create an atmosphere that has positive values, high ethical standards and respect.
7. Teachers should provide activities to give experience about self-sacrificing and ethical behaviours and create a democratic atmosphere.

Similarly, Lickona (1997) indicated that teachers should know what character education is, and when they understand its meaning they can understand how character education is conducted, he also explained the responsibilities of teacher in character education in detailed. According to him, teachers should be role model for students to teach values. An understanding classroom environment should be created. If teachers can teach values in the class, students have a chance to learn the values learning by experience. What is indicated by moral discipline is to gain moral critical thinking ability, provide respect to other people and provide self-test. The important thing here is neither awarding nor punishment, it is obeying the rules. Identifying rules provides students to understand the rules themselves and the benefits of rules for other people. Besides, teachers should create a democratic atmosphere in the class, provide cooperative learning and teach how conflicts can be resolved.

According to Nucci and Narvaez (2008) by means of education, schools may be the most important factor that shapes students' character. Character education has some aspects of moral education, citizenship education and character development and being a versatile concept makes character education a difficult concept to deal with in schools. School decides the basic values in character education and tries to gain these values to students through learning by experience. A consensus is necessary about which characteristics are necessary to be gained. These characteristics should take part in a whole learning environment such as in sport center, canteen or dinin. These characteristics are both a part of society, and people are required to be models (Otten, 2000).

Undoubtedly schools are not the only places responsible for students' character development but when the spending time in a school by students is considered the role of schools becomes prominent (Ryan, 1993). Berkowitz (1999) claims that, the purpose of education is "to help individuals to be a better person". The responsibility of school is to help students to become good citizen and have good character (Ryan, 1993). Similarly, Elias (2010) emphasized that character education creates a safer learning environment, reduces the level of violence, disciplinary problems and cheating, and for a humanistic environment it connects ethical and moral values. In this respect, it is related with creating a positive classroom environment, being fair while establishing rules, asking in class questions about ethics, providing a balance between competition and division of labor (Ryan, 1986). Within the scope of character education, Lickona (1991) talked about twelve strategies three of which are taken place out of the class, nine of which takes place in the class.

The strategies including whole school are; creating positive values, protecting students out of the class and including character education to their life. On the other hand, the strategies used in the class are modeling,

creating an environment in which people respect and take care of each other and providing moral discipline (Aslan, 2011).

Teachers should show love and respect to the students, be fair, find appropriate ways to solve problems, avoid favoritism, humiliation, painting them into a corner, avoid behaviors that damage students' self-esteem and respect, reducing their fear of making mistakes, creating an environment that enables students to show their abilities and thoughts, and show students how valuable their decisions are (Ekşi, 2003). Lintner (2011) emphasized that all teachers -especially teachers of social sciences- should bring their students who are respectful to other people's ideas and they should create environment to show their character. In this respect teachers should be aware of their own abilities. This awareness helps teachers in implementing character education (Bakioğlu and Sılay, 2011). Based on the research conducted by Demirel (1999), it was revealed that teachers and managers have higher competency belief related to character education. Besides, being experienced as a manager has a positive effect on self-competency belief about character education.

The necessity of guidance and education of students to have a strong character is not a new idea. There have been a lot of researches related to this topic through the history of character education and recent researches about this topic in the USA. With the rise of violence in schools- especially with leading of schools- character, education has become an important issue. Although recent researches have indicated the importance of character education in institutions of teacher education (Jones et al., 1998; Milson, 2000) there is no consensus about how to reach this aim in terms of curriculum and methods (Milson and Mehlig, 2002).

According to Lickona (1993) teacher training about character education is a more complex topic than "learning math or reading and it requires the development of both ability and personal development". Besides, teachers get less or no education about the "ethical aspects" of their job.

As a result of the lack of education, most of the teachers do not feel themselves competent and relaxed about the field of values (Lickona, 1993). Beachum and McCray (2005) claim that in order to support and direct character education, past researches about value education should be taken into consideration with the concepts of character education. Undoubtedly not only parents and educational institutions have a role within the scope of character education but also religious and peer groups, media and cultural groups believes have effect on it (Kılınç, 2011).

### The aim and the importance of the research

Recently, among the social problems nearly in all countries moral corruption has been mentioned. This situation makes discussions about how character education should be conducted a current issue. When the conceptual structure and literature are analyzed related to character education, primary school is the first basis for students' character. The primary school teachers' both positive and negative opinions are valuable. With the aim of determining the perceptions of primary school teachers about character education, the conceptualization of teachers about character education, experiences and observations, their perceptions about students' characteristics and their experiences during the implementation process tried to be given in both positive and negative ways.

## METHODOLOGY

The model of the research is general scanning model within the scope of descriptive research. The researches having scanning the model try to reflect the reality as it is (Karasar, 2006). Question sentences are used while mentioning the aims according to this model. These are "What was it?", "What?", "What about?" and etc. The aim of this research is to find an answer of "What is the perception of classroom teacher about character education?" question.

### Study group

The study group of the research consists of 60 classroom teachers who participated in professional development seminar conducted by in service Education Institute of Ministry of Education. 41 of the teachers (%68) are female, 19 (32%) of them are male. Teachers' education level is divided into four groups; they have associate degree (n:2, 3%), bachelor degree from education faculties(n:32, 54%), bachelor degree (n:24, 40%) and master degree (n:2, 3%). 42% (n:25) of teachers have between 1 and 5 years' experience, 20% (n:12) have between 6 and 10 years' experience, 8% (n:5) have between 11 and 15 years' experience, 10% (n:6) have between 16 and 20 years' experience, and 20% (n:12) has 21 and more than 21 years' experience in their profession.

### Data collection tool

The data collected by the answers given to the 12 open ended questions by the teachers. The reason why open ended questions were chosen is the freedom of choice while answering the questions (Mertens, 1998). The questions are about the meaning of character education, the factors affecting character education, the role of school and teachers in character education, the competency of character education at schools and the structure and basic characteristics of desirable curriculum. An expert's opinion was sought in order to establish the appropriateness of the study aim, and the scope and understandability of the questions. As a pilot study, an interview was conducted with four teachers who were not within the scope of the study. When the last version of the questions was ready, teachers were asked to answer the questions. The implementation lasted nearly 25 minutes.

### Analysis of data

The raw data gathered from the answers were transferred to the

computer, and a 78 page data set was formed. The gathered data were analyzed descriptively. In descriptive analysis, the gathered data are described systematically and clearly according to themes and these descriptions are explained, interpreted and cause and effect relation is criticized and finally conclusions are gathered (Yıldırım and Şimşek, 2005). For this aim, based on research questions data analysis frame was formed, data gathered from themes were selected as sub themes and they were defined and formed in a meaningful way. In order to increase internal validity, findings gathered according to the data were analyzed by two different experts to check whether they were categorized correctly or not and comparison was made accordingly, irrelevant data were omitted from the scope of the research. In order to support the findings, detailed citations were made from the data of questionnaire. To increase external validity for the generalizability of the results, all information was given about how the research was conducted, how the data were gathered and which method was used while analyzing the data. To increase external reliability, an expert was asked to check data collection instrument, gathered data and findings of the research. Categories were formed from the answers of the teachers and the frequencies of the answers were calculated accordingly and tables were formed. Findings supported with the impressive quotations of the teachers were explained were made, and connections between the data were tried to be made. Findings were presented with literature and sub-themes.

## FINDINGS

### Findings about the meaning of character education

When the opinions of teachers related to the meaning of character education were analyzed it is revealed that nearly half of the teachers (n=28) think character education is the behavior needed to be gained by an individual during his personality development, some of the teachers (n=13) defined it as moral values an individual needs to gain. Other identifications according to the answers of the teachers are the process providing an individual's adaptation to society (n=6), the process providing an individual's adaptation to the society (n=3), the process developed by the corporation of families, school and environment (n=3), the process helping an individual to recognize himself (n=2), the education process conducted according to the personality of an individual (n=2) and the process of making behavioral changes (n=1). The sample quotations are:

"*There is a saying: "Life is like an alphabet. Whether be a vowel or a consonant in an alphabet you should have a good character". Character education is the process of developing and improving one's character in morally*." (T.34) (Moral values an individual needs to gain.)
*"For me character education is to develop students or individuals personally. To develop characteristics which need to be accepted by society."* (T.26) (Behaviors needed to be gained by an individual during his personality development)

Opinions of the teachers on the meaning of character education are presented in Table 1.

### Findings about the factors affecting character education

When the opinions of teachers related to the primary factor affecting the character education almost everyone (n=50) indicated parents as the primary factor. They think that children's first model are their parents so they act as a requirement of the characteristics of their development period, parents are the ones with whom children interact most. Minority of the teachers emphasized some factors such as environment, peer groups and teachers affecting character education. A sample quote is as below:

"The primary factor affecting character education is parents. Characteristics of a father and mother are a model for a child, an individual reflect the character of his parents. Positive or negative characteristics of an individual can be shaped later with the effect of environment, school and teacher. It is possible to observe that during the basic character education individuals accept the characteristics of their parents." (T.2) (Parents)

The factors affecting character education is presented in Table 2.

### Findings about the role of the teachers on character education

The major concept related to the role of teachers and school on positive student traits development is "being a model" (n=34). Teachers, under the "being a model category", given these opinions like being a role model by presenting positive behaviors (n=20), being a role model with their characteristics (n=13), being a role model with clothing style (n=10) and being a role model with a fund of knowledge (n=7). In addition to these, teachers think that they can act effectively on students' character development by the ways such as communicating, guiding, authorization, making them feel as an individual and awarding. One of the teachers' opinions chosen is:

*"It is presenting model behaviors. Rules should be taught, positive behaviors should be reinforced, and reasons behind the negative behaviors should be investigated and found solutions. In order to fulfill the needs, we should give them responsibilities and observe them without being noticed. Also it is important to love and appreciate them". (T-8) (Being a role model)*

The opinions about the role of teachers and school are presented in Table 3.

**Table 1.** Opinions of teachers on character education.

| Categories | Frequency |
|---|---|
| Behaviors needed to be gained by an individual during his personality development | 28 |
| Moral values an individual needs to gain | 13 |
| Behavior change as a result of the interaction with environment | 6 |
| The process providing an individual's adaptation to the society | 3 |
| The process developed by the corporation of families ,school and environment | 3 |
| The process helping an individual to recognize himself | 2 |
| The education process conducted according to the personality of an individual | 2 |
| The process of making behavior changes | 1 |

**Table 2.** Opinions of the teachers on the factors affecting character education.

| Categories | Frequency |
|---|---|
| Parents | 50 |
| Peers | 2 |
| Teacher | 2 |
| Environment | 1 |

## Findings about the negative traits of students

When the answers of teachers are examined, it has been seen that the most frequent answer is concept of "respect" (n=33). Teachers think that today's children show disrespectful behaviors to their teachers and friends, and also lack respect.

Following this, teachers (n=15) mention that students don't have a sense of responsibility and present irresponsible behaviors. Generally, the other negative traits of today's children indicated by teachers are respectively, being far from helpfulness, selfish and separate (n=8), being inconsiderate and lack of empathy (n=4), being different (n=3) and lack of communication skills (n=2). Some of the teachers (n=8) think that actually these negative traits of students are caused by the deficiencies of the education system so they are educated far from the expected behaviors. Besides, they (n=6) think that the deficiency of parental education is also influential on students having negative traits. Some of the teachers' opinions chosen are:

*"When I compared to my pupilage, I think the first deficiency is "respect". Besides, ı can say the second one is students do not want to have responsibility".* (T-8) (Respect)
*"Among the most essential deficiencies are honesty, responsibility, discipline, sharing and empathy. Students lack of these subjects".* (T-42).

According to teachers' opinions, the negative traits of students are given in Table 4.

## Findings about the ways to lead students having unsupportive families into positive behaviors

Some teachers (n=17) stated that students who are not supported by their families can develop positive behaviors by dealing with them individually. Besides this, 9 teachers emphasized that teacher, school and parent corporation are necessary to achieve this. The other opinions are necessity of student eagerness (n=4) and teachers being a role model (n=4).

On the other side, some of the teachers (n=20) do not believe that students who are not supported by their families can gain positive traits at school. They emphasize that in order to develop positive traits, students should be supported firstly by their families. Some of the opinions of teachers are:

*"To achieve this is really difficult. It is important to deal with students individually and gain their trust and love. In this way, maybe we can achieve. (T-20)*
*"Some students who are not supported by their families can gain some traits from school. For example, one of my students used to steal by initiating his father. I made him give up that habit by continuously talking to him. (T-58) (Teachers dealing with students individually)*

According to teachers, ways to lead students having unsupportive families into positive behaviors are given in Table 5.

## Findings about the ways to change undesirable student behaviors

Most of the teachers believe that students who have negative traits like lying, cheating and behaving disrespectful can change. Some of the teachers (n=7) think that this can be done by spending a lot of time with such students through the cooperation of their parents,

**Table 3.** The opinions about the role of teachers

| Categories | Frequency |
|---|---|
| Being a role model | 34 |
| Being a role model by presenting positive behaviors | 20 |
| Being a role model with their characteristics | 13 |
| Being a role model with clothing style | 10 |
| Being a role model with fund of knowledge | 7 |
| Positive communication with students | 13 |
| Guiding students positively | 11 |
| Making students feel an individual | 8 |
| Awarding positive behaviors | 7 |
| Authorization of students | 7 |

**Table 4.** Opinions of the teachers on the negative traits of students.

| Categories | Frequency |
|---|---|
| Lack of respect | 33 |
| Lack of responsibility | 15 |
| Deficiencies caused by the education system | 8 |
| Being selfish and separate (lack of helpfulness) | 8 |
| Lack of education from parents | 6 |
| Lack of empathy and understanding | 4 |
| Lack of self confidence | 3 |
| Lack of communication skills | 2 |
| Students having different characteristics | 2 |

**Table 5.** Ways to lead students having unsupportive families into positive behaviors.

| Categories | Frequency |
|---|---|
| Dealing with students individually | 17 |
| Teacher, school and parents cooperation | 9 |
| Students being eager | 4 |
| Teachers being a role model | 4 |
| Teachers who do not believe this statement | 20 |

the teacher and the school. In addition to these, some of the teachers (n=5) believe that they can change the undesirable behaviors by caring for them, behaving positively and some of them also (n=3) believe in being a role model and giving examples for them, showing empathy and awarding positive behaviors. One of the quotations chosen from teachers 'opinions are:

*"Well, yes the negative behaviors like lying, cheating, being disrespectful can be changed by behaving them positively, patiently and telling them the harms caused by them. In the end, I believe these behaviors will decrease and disappear".* (T-7) (Positive communication with students)

The ways teachers used to change undesirable student behaviors are given in Table 6.

**Findings about the teachers' opinions on the efficiency of character education at schools**

Most of the teachers (n=48) believe that the level of character education in school is not sufficient enough.

**Table 6.** According to teachers the ways to change undesirable student behaviors.

| Categories | Frequency |
|---|---|
| To change undesirable student behaviors by spending a lot of time with them | 7 |
| Teacher, parents and school corporation | 7 |
| Teachers caring for students | 5 |
| Teachers showing positive attitude to their students | 3 |
| Teachers guiding to students | 3 |
| Teachers giving examples | 3 |
| Teachers showing empathy | 3 |
| Teachers awarding correct behavior | 3 |
| Teachers preparing supportive environment | 2 |

**Table 7.** The efficiency of character education at schools.

| Categories | Frequency |
|---|---|
| It is not efficient because of the education system | 19 |
| It is efficient because of teachers | 15 |
| It is not efficient because of parents | 8 |
| It is not efficient because of student | 6 |
| It is not efficient because of teachers | 7 |
| It is not efficient because of teaching-learning process | 2 |

According to them, the basic reason of this situation is education system. This is because the education system is highly cognitive. The aim of the education is to prepare students for exams and although the theory is taught but the practice is not enough. On the other side, some of the teachers (n=15) think that the inefficiency is because of teachers. This is because the behavior and characters of some of the teachers are not good enough, some of the teachers are not good role models and do not exhibit what they teach in the character education. Also, some teachers do not allocate sufficient time for the subject. On the other side, few teachers (n=9) believe that character education is taught in an efficient level. Some of the quotations chosen from teachers 'opinions are:

"*Unfortunately, rather than personal development, cognitive development is emphasized in our schools. So, students have knowledge in some areas but they lack of character and unbalanced. A person in order to be a good engineer, artist or a teacher should have gained some values and individualize them."* (T-12)
*"No, I do not think so. The program of the school and academic success expectations is so heavy that they prevent this kind of education." (*T-45) (Reasons because of education system)
*"No. Firstly, the affective needs of students are always ignored. Secondly, students cannot be always fair, forgiving, honest and steady. Thirdly, teachers are not responsible enough. Fourthly, for students' academic success is more important than being respectful and honest (as for teachers and parents) So, students can be selfish (they can cheat because grade is more important)* (T-6) (Reasons from education system, teachers, students)

According to teachers, their opinions of the character education efficiency at schools are given in Table 7.

## Findings about the characteristics of the ideal character education program

When the opinions about aims and basic characteristics of the effective character education program are examined, teachers (n=28) mostly agreed that the main aim is to raise students who are honest, respectful, able to empathize, patient and students having strong communication skills. Some of the teachers (n=15) think that one of the aims of character education is enabling students to realize themselves. In addition to these, the other stated aims are raising students who are sensitive to their society; developing desired behavior modification, raising them with universal and national values. One of the quotations chosen from teachers 'opinions are:

*"The basic aims of the effective character education are*

**Table 8.** Characteristics of the ideal character education program.

| Categories | Frequency |
|---|---|
| Raising individuals having positive characteristics | 28 |
| Enabling individuals to realize themselves | 15 |
| Raising helpful individuals who are sensitive to the problems of society | 14 |
| Raising individuals with the values of their society | 10 |
| Raising individuals along with the universal values | 7 |
| Making students adopt the values to be applied to daily life | 6 |
| Developing desired behavior modification | 2 |

*raising more responsible individuals and raising them as respectful to themselves, environment and society. In addition to these, raising students honest and respectful to themselves and their history is important"* (T-13) (Positive characteristics)

The opinions of the teachers about the characteristics of the ideal character education program are given in Table 8.

## DISCUSSION AND CONCLUSION

In today's world, all nations regard education as an effective instrument to have good characters. In literature, when the role of the teacher and school is examined, it can be said that following parents, school and teachers which students first experienced have essential effects on children character development. It can be also said that teachers being a good role model and schools creating positive environment contribute to student's character education.

According to the results of this research, primary school teachers have the correct conceptualizations related to character education. It is seen that teachers generally define character education as necessary behaviors to be taught to individuals for their personality development. According to a research done by Orhan (2013), teachers generally mention character education by looking at different aspects in literature and although they do not have enough knowledge about it, they emphasize the main characteristics of character education. Parallel to the teacher's definitions, Ryan and Bohlin (1999) defined character education as the development of knowledge, skills and abilities that enable students to make reasonable choices. Similarly, Karaca (2008) while defining character education emphasized the moral education and he defined it as an educational process enabling to develop student character in specific moral insight. According to the findings by Üstünyer (2009), educators generally regard character education as transferring the national values to students. It can be said that teachers have such conceptualizations like personal development, gaining moral values, behavioral change and orientation process to society.

Almost all of the teachers regard the most effective factor in character education is parents. This finding overlaps with other literatures. Ekşi and Katılmış (2011) stated that parents are the primal and basic institution which enables children to develop good characteristics, and the behaviors and attitudes of children in their family life would be effective in their future work life. Children learn almost all new behaviors and values firstly from parents. The base of the moral sensibility in adulthood is the relationship based on respect, love and trust between parent and child (Hökelekli and Gündüz, 2007). Family, especially parents has a great role on character development. Families being steady, their attitudes towards their children's opinions, being model, teaching the values and being honest and respectful to children all guide the development of character development. Following family, school has an important role on this process (Berkowitz, 2002).

According to the other findings of this research, the most important responsibility of teacher in character education is being a role model for students. In the research of Uysal (2013), all of the teachers evaluating themselves as a teacher stated that they are really important for students and agreed that they should contribute to character education. Antes and Nardini (1994) advised that teachers should be role model for students when they are deciding in class and also they should encourage students to participate in decision making. At the same time, teachers need to be model in order to encourage the desired behaviors and they should make them communicate with others and be supportive for students to have positive behaviors. The findings of Şahin (2011) indicate that appearance of teachers is a requirement in order to be an effective teacher. According to Pişkin et al. (2011), developing the support for positive behaviors is very important. In order to achieve this, teachers should develop their efficiencies on problematic issues and bring students positive behaviors. Also, the conditions should be provided for

their career development which is important for student communication.

Almost all of the teachers think that today students lack respect and responsibility. Respect and responsibility are essential traits for a good character. Haste (2001) emphasized that respect consists three dimensions. According to him, the first one is to realize the individuals 'responsibilities and obligations for society, second one respect for other individuals in society and communicate in terms of values, the third one is application of beliefs and values correctly.

Most of the teachers think that character education is not enough at schools. A study conducted by Lee (2008) similarly, benefited from the opinions of teachers and directors at schools. One of the important results of the study is that the character education programs at schools are not sufficient. In the findings of a study by Gündogdu (2010), teachers realize the importance of character education but they cannot use this efficiently in their classes and the level of this education is medium in students. Akbaş (2004) stated that the conditions for an effective value education cannot be provided in his findings.

Some of the teachers believe that they can impart positive behaviors to students who are not supported by their families by being role model, communicating with them, and having parents-school corporation. Similarly, one of the important findings of the study by Baysal and Korucu (2005) is that teachers communicate with students individually in order to overcome problems. On the other side, some of the teachers do not believe that they can help students who are not supported by their families. In a study by Akbaş (2004), he stated that values at school are not reinforced by parents and social life, there is no corporation between school and parents and the values from families and that from school could coincide.

Most of the teachers believe that students who have negative traits such as lying, cheating, being disrespectful can be changed. Bakioğlu and Sılay (2013) states that the characters of young are not completed yet, so they can be changed, it is not late and there is hope. Most of the teachers in order to develop positive behaviors prefer ways like awarding. Similarly, İpşir (2011) emphasized that in order to overcome the negative behaviors of students, teachers should have good communication skills and ability to create positive environment. He also added that teachers can communicate by listening to students effectively, using body language well and having a good eye contact. On the other side, Brannon (2008) emphasized that teachers need to inform families about the roles of parents and by this way there should be corporation between families and teachers in order to fix student behaviors. In the study of Yüksel (2005), in order to overcome undesirable student behaviors, teacher prefer the ways such as warning students, talking with students after lessons and sometimes communicating with the parent of students.

Most of the teachers believe the efficiency of character education programs but they think that the programs at school are not sufficient and the reasons of this situation are education system and shareholders of this system. Uysal (2008) according to his study concluded that character education programs mostly have statistically positive effect on student behaviors and academic success. Almost all of the teachers think that character education programs should be applied by using different techniques and by specialists. In addition to this, Üstünyer (2009) found that teachers regard character educations as a necessity and because of their workloads teachers are not efficient. Along with this, teacher in the study think that in order to have an effective character education the exam system should be changed and students need to be guided to social life. In this study, according to the findings, in the character education, experience is very important and the techniques such as drama, theatre and cinema are very effective. Creasy (2008) stated that teacher integrate character education with their daily plans. According to Çagatay (2009) study, teachers regard themselves very important in character education but they do not have opinions about how to apply character education.

It can be said that teachers agree in the opinion that the basic aims of character education is to raise honest, respectful, communicative and forgiving individuals. These opinions of teachers coincide with other literatures. Similar to the answers of teachers, White and Warfa (2011) stated that character education is a planned learning experience in order to develop social success and cooperative students. Gosset (2006) emphasized that in order to develop positive and ideal behaviors character education is very important. Battistich (2005) is focused on individuals and stated that the aim of the character education is to raise individuals who are sensitive, caring and having moral values in childhood, also doing best using their capacity, presenting correct behaviors and living their life with aims at adulthood. According to the study aimed to reflect opinions of the American and Turkish students about some values by Baloğlu (2014), the American students think that character education programs are not sufficient, boring simple and repetitive. For this reason, in order to see the positive results of character education, effective techniques should be used at learning process.

In the light of the findings of this study, in order to imbibe student's national and global values, it can be said that character education programs should be developed and applied with effective techniques. Also, all the shareholders especially parents should attend the planned character education programs. The number of affective objectives in the primary, secondary and high school programs should be increased and teacher should

be taught the ways of teaching practically. This research mainly focused the opinion of teachers and recommends that further study on the opinions of directors, parents and students on character education should be attempted.

## Conflict of interests

The authors have not declared any conflict of interests.

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Educational Research and Reviews

*Full Length Research Paper*

# Investigating the opinions of physical education teacher candidates on the school experience course

**Mehmet Gullu* and Cenk Temel**

School of Physical Education and Sport, Inonu University, Turkey.

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**The purpose of this study is to examine the opinions of physical education teacher candidates on the school experience course. The qualitative case study design was adopted for this study. The research group was composed of 67 teacher candidates. A semi-structured questionnaire was used in the study. The collected questionnaires were analyzed with Content Analysis Method. The concepts were evaluated in four main themes. The opinions of the candidates about the application were investigated in the first theme, the opinions of the candidates about the schools of practice were investigated in the second theme, the opinions of candidates about the activities in the school experience course were investigated in the third theme, and the opinions of the candidates about the practice instructor were investigated in the fourth theme. In conclusion, the study revealed that the opinions of the teacher candidates on school experience course were generally positive; practice teachers with strong personal relations and high professional experience increased the course success; the arrival of practice teachers in courses before prior preparation had a negative impact on candidates; and the instructor in charge of teaching the school experience course should be prepared excellently, particularly before the course, and monitor the implementation.**

**Key words:** School experience course, physical education teacher candidate, qualitative data analysis.

## INTRODUCTION

Probing undergraduate programs of teacher training institutions can reveal that the education they receive is divided into categories such as general culture, specialized content knowledge, and professional knowledge. In this respect, the aim is to train teachers so that they acquire the qualities every teacher should possess by means of various teaching environments. One of the courses that can be evaluated within the realm of professional knowledge in the training process in question is the group of courses in the field of school experience. In the curricula of the institutions training physical education teachers, this course is arranged as “School Experience I” in the second term; “School Experience II” in the seventh term; and Teaching Practice in the eighth term of teacher training programs (Council of Higher Education [CoHE], 1998). The purpose of these

*Corresponding author. E-mail: mehmet.gullu@inonu.edu.tr.

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courses is to enable the teacher candidates to observe the general cultural knowledge, specialized field knowledge and skills, the teaching knowledge and skills they acquire in relation to the teaching profession in actual education and training institutions, and to provide the students with the opportunity to use them, which can collectively enhance their experiences related to the teaching profession in actual environments. The School Experience course is a course that gives students a chance to become familiar with the school organization and management as well as the daily life in schools, probe into teaching environments, participate in extra-curricular activities, observe experienced teachers on duty, work with students individually and in small groups, and acquire short-term teaching experiences; and ensures that students perceive and adopt the teaching profession correctly (The Ministry of National Education [MoNE], 1998). Moreover, according to Kudu et al. (2006, as cited in Becit et al., 2009)), the School Experience course supports teacher candidates to become familiar with the school climate, comprehend the school structure, become familiar with school units, and acquire the knowledge and skills required by the teaching profession by mostly focusing on observation. Teacher candidates are expected to have acquired the following qualities upon the completion of the School Experience Course (CoHE, 1998, pp. 33-35):

"1. *Familiarity with the teaching process and the organization of a school with a systematic approach.*
*2. Knowledge on school management, regular tasks performed in a school, and school facilities.*
*3. Ability to recognize course activities via observation.*
*4. Ability to plan and implement possible short-term activities in class.*
*5. Ability to recognize individual differences among students in terms of learning and development.*
*6. Acquire skills required to work effectively in a school in coherence with other teachers."*

Another course that improves the professional skills of teacher candidates is "Teaching Practice." In the "Faculty-School Collaboration" published by the Council of Higher Education (CoHE 1998, p. 35), the "Teaching Practice" course is defined as: "*a course based on observation and consultation offered in order to enable teacher candidates to acquire a general familiarity with the school where they will practice, and with the students, the program, and the teachers.*" A look at the content of both courses reveals the aim of enhancing the professional experiences of teacher candidates. Because pre-service training, which can be defined as professional socialization, is important in terms of the cultural adaptation of teacher candidates to the school and the surrounding environment, professional socialization, and organizational socialization (McMahon and MacPhail, 2007). Christenson and Barney (2011) underline that school experience enables students experience the learning atmosphere in emotional and physical terms with the field knowledge, course plan, educational standards of the country, teaching options, class management, teaching styles, teaching effectiveness, and learning by practicing and experiencing. Dodds (1989, as cited in O'Sullivan and Tsangaridou, 1992) states with a similar assessment, that field experience has an important impact on the perception and development of teacher candidates in relation to teaching. On the other hand, it is necessary to emphasize that school experience practices creates anxiety, to a certain extent, for teacher candidates, which allows them to improve their knowledge (Mawer, 1995). Depending on examining the majority of the researches about teacher candidates, it was seen to be related to their learning about diversity, social justice and themselves (Baldwin et al., 2007), their experiment about disabled students (Gill-Gomez et al., 2015), their attitudes about ethnic minority families (Amatea et al., 2012), their behavior relevant to digital games (Sardone and Devlin-Scherer, 2010) and their learning levels (Hildenbrand and Schultz, 2015). According to the results of the research conducted on the school experience course, teacher candidates find school experience and teaching practice courses beneficial, and have the chance to assess actual school environments as a result of the practices performed in the framework of these courses (Herguner et al., 2002; Guven, 2004; Isıkoglu et al., 2007; Sag, 2008; Ozmen, 2008; Becit et al., 2009; Kavas, Buyukgoze and Bugay, 2009; Ozcelik, 2012; Temel et al., 2016). Taking this as a point of departure, the purpose of this study is to examine the opinions of junior students studying in the department of physical and sports education on school experience course practices, the problems they face, their proposals, and their thoughts on the course.

## MATERIALS AND METHODS

A case study design was adopted for this study as a qualitative research method (Merriam, 2009; Simons, 2009). The research group was composed according to the convenience sampling method (Simsek and Yıldırım, 2011). The research group comprised of 84 students in total, 44 from daytime education and 40 from double-shift education, who signed "the informed consent form" and received school experience course in the department of Physical Education and Sports Teaching at Inonu University during the 2011/2012 Academic Year. These students practiced for 13 weeks (13 activities), four hours weekly (52h in total) in groups of seven in five different high schools with 12 physical education teachers (practice teachers), and attended one course per hour a week (13 h in total) of a theoretical course given by the responsible instructor. Upon the completion of the school experience course, the students were given "a semi-structured questionnaire". The Questionnaire consisted of 12 open-ended questions that 8 questions were the positive and negative opinions of teacher candidates about the practice teacher, practice school, instructor and school experiment course activates; and 4 questions were about the proposal of the

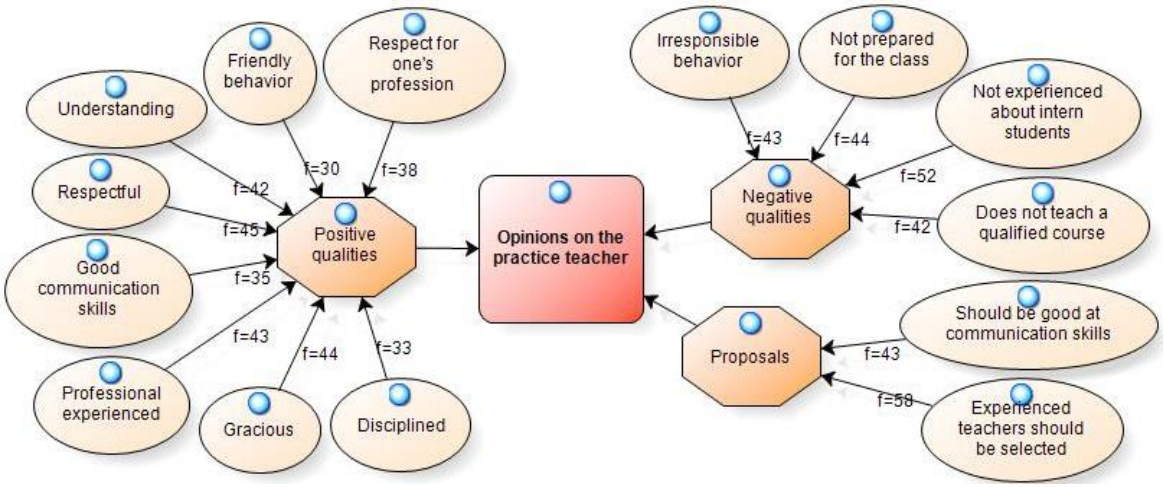


**Figure 1.** Opinions of the students about the practice teacher.

teacher candidates. Questionnaires that were completed electronically by 67 students and sent by e-mail were also taken into consideration. The questionnaires obtained were uploaded to Nvivo 9.00 Package Software Program; and a content analysis was performed (Silverman, 2009). The concepts obtained in the scope of the study were categorized under four main topics in a meaningful relationship. For the reliability of the research data, another independent researcher was requested to perform the content analysis on the same raw data. Cohen's Kappa coefficient was analyzed by the harmony between the two analyses results and was found to be 0.71. According to Landis and Koch (1977), Cohen Kappa Coefficient between 0.61 to 0.80 shows substantial agreement.

## RESULTS

In this chapter, the concepts categorized under four main themes are presented in figures with their frequencies. The opinions of the students about their practice teacher covered in the first theme of the research can be seen in Figure 1. In this theme, the opinions of the students on their practice teachers were investigated in three sub-dimensions. In the first sub-dimension, the students stated that the positive qualities they observed in their practice teachers were: friendly behavior (f=30), professional experience (f=43), respectful (f=45), good communication skills (f=35), respectful for one's profession (f=38), disciplined (f=33), understanding (f=42), and gracious (f=44). In the second sub-dimension, the students stated that the negative qualities they observed in their practice teachers were: not prepared for the class (f=44), not experienced about intern students (f=52), irresponsible behavior (f=43), and does not teach a qualified physical education course (f=42). Furthermore, students suggest that practice teachers should be selected from among those that are experienced about intern students (f=58) and that have good communication skills (f=43).

The opinions of the students about the practice school covered in the second theme of the research can be seen in Figure 2. In this theme, the opinions of the students about their practice school were investigated in three sub-dimensions. In the first sub-dimension, students stated that the number of the classrooms in practice schools was high (f=39), the school facilities and opportunities were sufficient (f=43), and the school was in a central location (f=43) resulting in a positive assessment. In the second sub-dimension, negative qualities of practice schools were stated as the transportation problem (f=52), too much noise around the school (f=34), the high number of students in classes (f=38), overlapping physical education courses, (f=29), lack of a sports hall (f=46) and the reluctance of students during the courses (f=57). In the third sub-dimension, they proposed that practice schools should be selected from among those that had successful school teams (f=43), that had a sports hall (f=53), that had lower number of students in classes (f=46), a school management that supported athletics (f=33), active in sports organizations (f=37), a central location that was easily accessible (f=58), and that was disciplined (f=43).

The opinions of the students about the School Experience course covered in the third theme of the research can be seen in Figure 3. In this theme, the opinions of the students about the school experience course were investigated in four sub-dimensions. In the first sub-dimension, the students stated thanks to this course, they experienced an actual school atmosphere (f=56), learned about the official documents related to the physical education courses (f=39), acquired professional development and experience (f=64), and had the

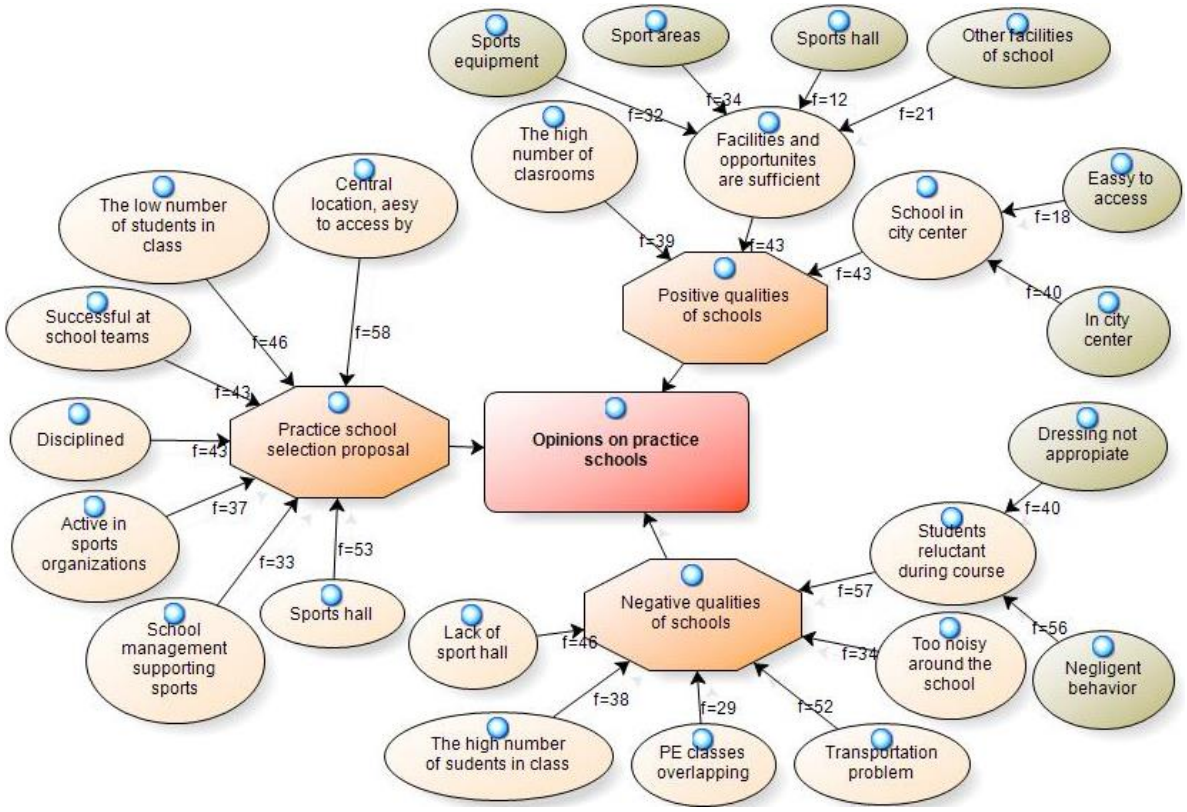


**Figure 2.** Opinions of the students about the practice school.

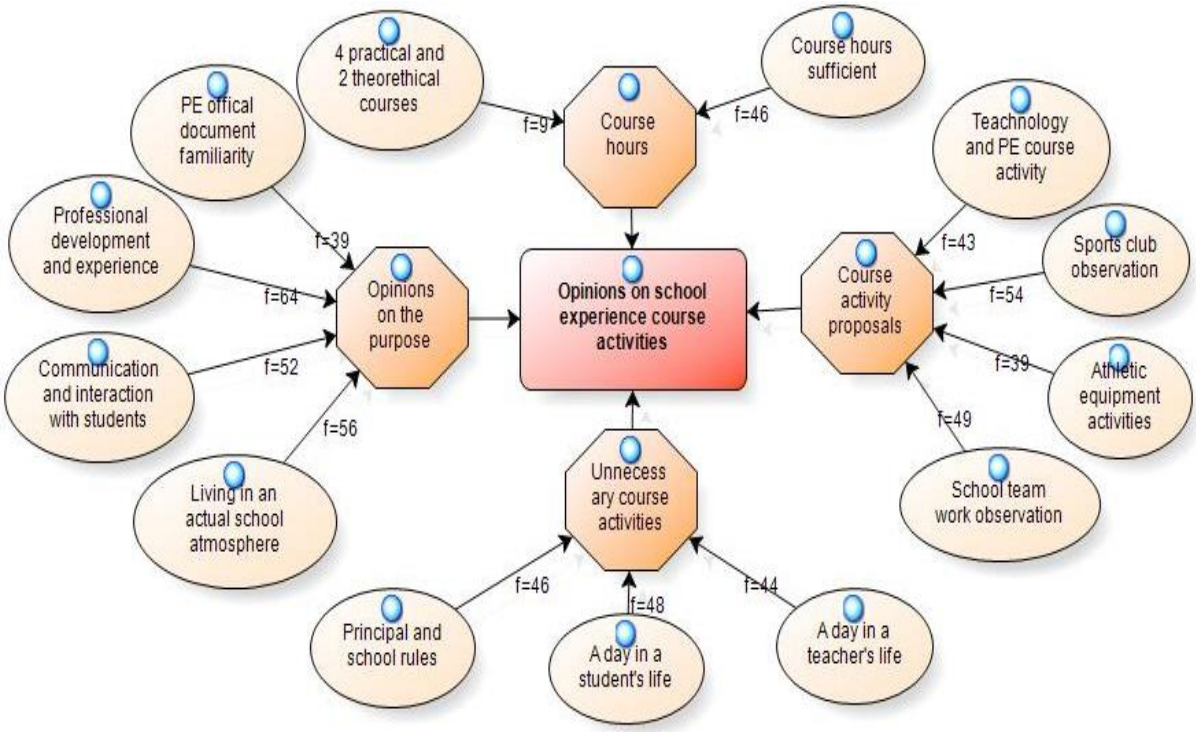


**Figure 3.** Opinions of the students about school experience course activities.

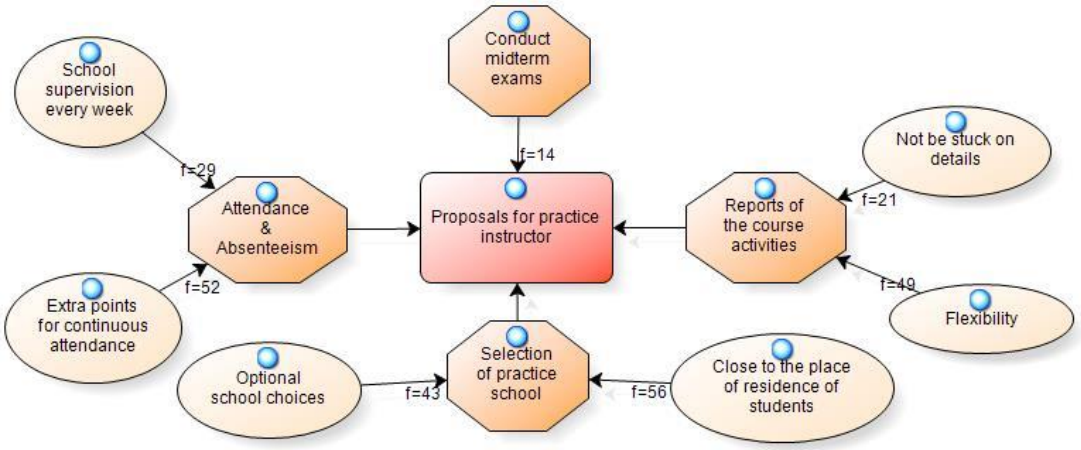


**Figure 4**. Opinions of the students about the practice instructor.

opportunity to interact and communicate with high school students (f=52). In the second sub-dimension, the students thought that it was unnecessary to have 'a day in a student's life' (f=48), 'school principal and school rules' (f=46), and 'a day in a teachers life' (f=44) activities. In the third sub-dimension, students thought that the course hours were sufficient (f=46), and proposed the course be implemented in 4h for practice and 2h for theoretical education (f=9). In the fourth sub-dimension, students proposed new course activities such as sports equipment activity (f=39), technology and physical education course activity (f=43), sports club observation activity (f=54), and school team work observation activity (f=49).

The opinions of the students about practice instructors covered in the fourth theme of the research can be seen in Figure 4. In this theme, the opinions of the students about practice instructors were investigated in four sub-dimensions. In the first sub-dimension, students proposed that instructors should grant extra points to students with continuous attendance (f=52), and conduct school supervision every week (f=29). In the second sub-dimension, students proposed that the instructor should offer flexibility in activity reports (f=49), and not be stuck on details (f=21). In the third sub-dimension, it was proposed that the practice schools that were close to the places of residence of the students should be preferred (f=56), and the selection of the practice schools should be optional (f=43). In the fourth sub-dimension, a written midterm examination was proposed (f=14) by the students.

## DISCUSSION

The combined assessment of the conclusion of all findings investigated within the framework of the research study reveals that the opinions about physical education teacher candidates on school experience courses are generally positive. This result supports the findings of previous studies conducted on this subject (Herguner et al., 2002; Guven, 2004; Sag, 2008; Ozmen, 2008; Becit et al., 2009; Ozcelik, 2012). In the study they conducted on the course perception levels of physical education teacher candidates regarding the school experience course, Herguner at al. (2002) concluded that the school experience course was important for the educational life of the students, and it was important for the teaching profession and would have an additional positive impact on their future educational life and professional knowledge. The opinions of the students on practice instructors covered in the first sub-dimension of the study were investigated in three sub-dimensions; which are positive qualities, negative qualities, and proposals. The most positive qualities physical education teacher candidates observed in their practice instructors were being respectful and having professional experience. The most negative quality was found to be coming to the class without preparation. Teaching is one of the professions with the highest level of personal relations. In particular, physical education teaching requires the teacher to have the utmost level of affective skills due to the characteristics of the course. In this respect, it is remarkable that teacher candidates possess the most positive qualities of physical education teachers with concepts like respect and graciousness, which give prominence to personal relations. Furthermore, the positive opinion of the students on the professional experience of practice teachers, demonstrates that students are able to benefit from these qualities. This finding supports the research findings revealed by Becit

et al. (2009).

On the other hand, the reverse assessment of this conclusion reveals that candidates find themselves inexperienced. Bilgin et al. (2008), demonstrated that teacher candidates studying in various departments, visual arts students in particular, find themselves competent or partially competent. The conclusion stating that teachers come to the class without prior preparation, which was stated as the most negative quality of the practice teachers, is highly striking; whereas, the relevant legislation says; "*Preparing prior to educational activities and courses is legally obligatory and pedagogically necessary."* (MoNE, 2003, p. 440). Students stated the transportation problem, lack of a sports hall, and crowded class sizes are among the negative qualities of practice schools, and proposed that practice schools should be chosen from schools that have a central location and are easily accessible. This result suggests that students do not sufficiently perceive the state of schools in Turkey and the reality of the teaching profession. The state of schools regarding the physical education course is not good at all. Physical education course was taught in the school garden due to lack of sports hall as stated by 77.1% of physical education teachers (Ozsaker, 2001). Also, there was lack of sports equipment as stated by 59.1% of them (Tasmektepligil et al., 2006). Hoskilimci (2011) pointed out that 46.6% of physical education teachers stated there were no dressing-rooms in public schools. According to official statistical data, the average number of the students per classroom consisted of 25 students in primary and middle schools, and 23 students in secondary schools (MoNE, 2016). But students per classroom in city center were more than this data. Students stated among the most positive opinions that the activities enabled them to experience the real school atmosphere of the course, as well as to acquire professional development and experience. This is because there are various aspects to pedagogical content knowledge in physical education teacher training (Ingersoll et al., 2014), many of which can be acquired via actual course practices. School environments, which are defined by Barney et al. (2012) as "*the real world,*" are supportive of the students' opinions. Since physical education courses in particular enable students to experience all aspects of this *real world,* it might be felt as more realistic by teacher candidates. The most negative opinion teacher candidates stated regarding school experience course activities was about the activity called *'a day in a student's life'*. The cause of this finding may be practical inconvenience rather than the content of the activity.

In the last theme investigated within the framework of the study, namely the proposals for the instructors, students proposed that the instructors should perform school supervision every week; practice schools should be chosen among schools that are close to the place of residence of students; selection of practice schools should be optional; extra points should be granted to students with continuous attendance in the school experience course; and flexibility should be allowed in activity reports. However, in the study conducted by Kavas-Buyukgoze and Bugay (2009), students proposed that the number of practical courses in the field should be increased; course contents should be in harmony with today's state of affairs; and the number of optional courses needed to be increased. On the whole, some of these proposals are structural, some are related to the program and some are related to practice. For this reason, instructors responsible for practice should be aware of all problems and should focus on the problems they can solve. Barney (2005) stated that instructors should be prepared adequately for educational activities before school practices, which would boost the practice of the students. In conclusion, it was revealed that the opinions of physical education teacher candidates on the school experience course were generally positive; practice teachers that had strong personal relations and professional experience elevated the success of the course; the arrival of the practice teacher at the classes without prior preparation had negative impacts on students; and the instructor responsible for the school experience course should be prepared adequately before the courses, and monitor the practice.

## Conflict of interest

The author has not declared any conflict of interest.

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Educational Research and Reviews

*Full Length Research Paper*

# Attitude scale towards web-based examination system (MOODLE) - Validity and reliability study

**Basaran Bulent[1], Yalman Murat[1]* and Gonen Selahattin[2]**

[1]Computer Education and Instructional Technology, Dicle University, Turkey.
[2]Department of Physics Education, Dicle University, Turkey.

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**Today, the spread of Internet use has accelerated the development of educational technologies and increased the quality of education by encouraging teachers' cooperation and participation. As a result, examinations executed via the Internet have become common, and a number of universities have started using distant education management system. Eventually, today, more people have a chance to take education. Measurement and evaluation applications carried out via the Internet are now quite important for education. In the present study, a valid and reliable attitude scale was developed to measure the attitudes of students doing the Distant Education Theology Undergraduate Education Program towards a web-based examination system (MOODLE).The study group was made up of 1287 3rd and 4th grade students registered in the Distant Education Application and Research Center. In the study, exploratory factor analysis (EFA) was conducted to determine the factor structure of the scale; confirmatory factor analysis (CFA) was conducted to test its construct validity; and other validity analyses such as exploratory factor analysis, uni-dimensional factor analysis and two-dimensional factor analysis were applied. The research data were analyzed in computer with the package softwares of SPSS 18.0 and Lisrel 8.51.**

**Key words:** Attitude, moodle, education technology.

## INTRODUCTION

In the past decade, rapid developments in information and communication technologies (ICT) have led to the developments in the field of education and increased the quality of education besides contributing to learning experiences (Yalman and Tunga, 2014). This rapid development of ICT has enriched teaching and learning experiences and led to a better-quality education (Tella, 2011; Maldonado et al., 2011). Due to the rapid growth of the Internet, e-learning has become an alternative that has facilitated students' learning (Wang Tzu-Hua, 2008). When compared with the traditional learning, it is seen that e-learning provides students with more sources and allows them to gain more satisfactory learning experiences via instructional activities (Saulnier et al., 2008). Thanks to e-learning, students can carry out learning activities by determining the time and their pace

*Corresponding author. E-mail: mumanenator@gmail.com.

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of learning the subjects. In other words, with the help of e-learning materials, students have the chance to evaluate their own advances. In face-to-face higher education, evaluation methods could be central as a basic component of effective learning and can define such methods in the learning process as measurement of students' achievements and their pace of learning (Gikandi et al., 2011). Mid-term exams, end-of-term exams and quizzes may be given as examples of evaluation. In general, examination is one of the main methods used to confirm the results of students' learning. Quizzes can be conducted to produce better instructional materials and for faculty members to evaluate students' learning experiences. In this way, the quality of students' academic achievements and their learning experiences can be increased (Miguel et al., 2016; Jordan, 2012; Levy and Ramim, 2007).

It is known that different methods used to increase students' academic achievements positively contribute to education levels. Probably, students' attitudes constitute one of the most important processes that increase academic achievement (Gül et al., 2015). Attitude can be named as a mental process in which individuals determine their own behaviors in certain situations (Gagne, 1985). According to Smith (1968), attitude can be defined as a tendency that forms individuals' thoughts, emotions and behaviors regarding a regular psychological object. An attitude and a learned fact shape individuals' behaviors, can lead to a bias in the process of decision making. Attitudes occur as a result of the learning process and experiences (Tavşancıl, 2006). Online evaluations can be used in the evaluation of academic achievement. In addition, it contributes to meaningful learning and delivers the concepts or the learned information to the student as feedback. In traditional class applications, when teachers ask students a question, students are provided with a little chance of responding to the question. This makes it difficult for other students to see whether they have understood the subject or not. When questions are directed to students in distant education management system, the system can instantly provide online feedback and students thus, become more successful in learning when compared to the traditional system (Robles and Braathen, 2002). Online evaluation methods have a number of advantages mentioned above, yet there are limited areas for their application in higher education (Wen and Tsai, 2006). On the other hand, distance education at universities and private education institutions is still popular since it allows reaching a large population of students accommodating in different geographical regions.

The number of distant education software is gradually increasing, and more students can now access these software. Preference of online test to evaluate students' performances in educational processes will allow conducting both test applications and reporting procedures more rapidly. Attitudes are undoubtedly regarded as a good determiner of academic achievement. It is seen that technology has been in use to a great extent in educational studies in recent years. However, it is obvious that the number of studies conducted to reveal students' attitudes towards online evaluations is quite limited (Dermo, 2009). In general, technology-aided studies were measured in relation to technology and computer, and their academic achievements were predicted by these variables. In addition, although, there are positive attitudes towards computers, students are likely to demonstrate negative attitudes towards online evaluation (Bindak and Çelik, 2006; Ergün, 2002).

## Theoretical framework

MOODLE has been used as an education platform via the Internet by a number of public institutions and private corporations for years. Many researchers investigated general system features of these web-based learning systems, users' attitudes towards these systems and their levels of satisfaction with these systems (Coates et al., 2005; Engelbrecht, 2005; Marikar and Jayarathne, 2016; Martínez-Torres et al., 2008; Njenga and Fourie, 2010; Seale and Cooper, 2010). There several reasons for this popularity of MOODLE: it is free of charge to access the system; it is an open-source system; and users can easily solve problems themselves (Gutiérrez et al., 2010; Kakasevski et al., 2008; Limongelli et al., 2011; Xu and Mahenthiran, 2016). This education system, whose courses or curriculum can be designed in line with users' needs via the web, have such basic features as homework and source sharing, questionnaires and forums as well as a testing system that allows measuring students' success at the end of the education given. The study aimed at determining the views and attitudes of students taking education via the distance education management system towards the exam system. In this way, it could be easier to see whether the whole system functions well or not.

Recent developments in information and communication technologies have caused a number of published papers to become out of date. In this respect, in web-aided instructional methods, information technologies are shaped in accordance with the renovations since these technologies are influenced by the related developments. In literature, when the papers in the field of web-aided education are examined, it is seen that issues mentioned by other studies were mostly examined via generalization (Brine et al., 2007; Georgouli et al., 2008; Zakaria and Daud, 2008). On the other hand, although, such systems are similar to each other in terms of function, methodology and form, their user interfaces, courses, questionnaires and exam systems could differ

(Brine et al., 2007; Romero et al., 2009). The basic features used here such as presentation of courses, questionnaires and forms are for general use of the system, while the exam system is used to measure and evaluate the success of students. Correct and valid measurement of students' gains at the end of an education process depends on the features found in the exam module. Students' evaluation of the exam module to determine its negative or positive aspects is important to reveal the related deficiencies. This study focused just on determining the attitudes towards the exam module used in MOODLE system rather than determining the attitudes towards exam modules used in web-aided education systems.

Evaluation of the success of the web-based learning system of MOODLE, which has millions of users all over the world, will be possible via the related measurements and the results to be obtained from these measurements. When the related literature is examined, it is seen that there are studies which examined attitudes of users towards e-learning environments (Graf et al., 2009; Kakasevski et al., 2008; Sun et al., 2008) as well as those which investigate students' views about the system (Kao and Tsai, 2009; Richardson, 2009; Sher, 2009; Yassine et al., 2016). Depending on the results of these studies, it could be stated that it will be better to overcome the problems existing or to exist in the system or to improve the popular applications in line with users' feedbacks.

Measurement and evaluation constitute the basis of education. All the evaluations to determine students' levels of knowledge about the subjects they have been taught, should include objective and healthy evaluations. In contrast with the exams given in traditional education, those conducted in web-aided education include different features and norms; Questions should be clear and comprehensible; time limitations should focus on solving the questions; and a simple language should be used in the instructions to solve the questions. Here, the purpose is to minimize the probable problems. Students' evaluations regarding the web-aided exam system at the end of the exams will help overcome related future problems.

## METHODS

The participants in the study constituted those taking their theology undergraduate education via distance education system using the platform of MOODLE. In the study, a scale was developed to evaluate the students' attitudes towards the web-based exam system (MOODLE). The data collected in the scale development process were analyzed with "Exploratory Factor Analysis", "Uni-Dimensional Data Analysis" and "Two-Dimensional Factor Analysis" to examine appropriateness of the values to the fit indices.

### Sample

The participants in the study were 1300 students who registered in Theology Undergraduate Education Program; they received education with the e-learning management system in a distant education center of a state university. The scale designed for the study was applied via the system which was used to give education. A total of 1287 students responded to the scale conducted online. In this way, almost the whole research group was reached. In the study, as for the demographic backgrounds of the students filling out the scale in the study, 45.53% of them were female, and 54.47% of them were male. The data collected were examined in digital environment. Among the responses to the scale, those with all of its options marked same, those with most of its options marked same and those given to reverse items were examined, and the questionnaire forms which were not responded to correctly or completely were not included in the scope of the study to preserve the objectivity of the study. As a result, a total of 653 questionnaire forms were included in the study. Table 1 below presents the frequencies and percentages of the participants with respect to their gender. According to the demographic backgrounds of the participants, 51.61% of them were females, and 48.39% of them were males (Table 1).

**Table 1.** Frequency and percentage distributions of the participants in terms of gender.

| Gender | F | % |
|---|---|---|
| Female | 337 | 51.61 |
| Male | 316 | 48.39 |
| Total | 653 | 100 |

### Attitude scale for the web-based learning process

For the purpose of determining the success, level and quality of education given via the web, several scales have been developed by researchers. Examining such scales in the study (Dermo, 2009; Gül et al., 2015; Bahar, 2014) and considering the standards previously determined (Swedish National Agency for Higher Education, 2008), a trail item pool was formed depending on the related literature, and faculty members expert in the field were asked for their views. The scale was presented to three experts in the field and to two Turkish language experts. The scale made up of 31 items, 23 of which were positive and eight of which were negative, was piloted to see whether it was comprehensible or not. The results of the statistical analysis of the collected data revealed that five items were difficult to comprehend and 10 items considered by the experts to be statistically inappropriate were excluded. As a result, there were 16 items in the finalized scale. Following this, the updated version of the scale was applied again to collect the research data. The scale included four items in the dimension of "System and Usability", three items in the dimension of "Comprehensibility", six items in the dimension of "Examination and Features" and three items in the dimension of "Security and Reliability". The scale was designed as Five-point Likert-type with the choices of 1- I completely disagree, 2- I disagree, 3- I partly agree, 4- I agree and 5- I completely agree. In attitude scales, a five-point rating method ranging from "I completely agree" to "I completely disagree" could be used (Dunn-Rankin, 2004; Tavşancıl, 2005). When the related literature is examined, it is seen that scale development phases are as follows (Tavşancıl, 2005; Dunn-Rankin, 2004; Devellis, 2003; Karasar, 1995).

1. Forming the item pool M
2. Asking for experts' view

**Table 2.** Fit indices and values.

| Fit Indices | Criteria | Value |
|---|---|---|
| $x^2$ /sd | < 5 / 1 | 3.69 |
| GFI | > 0.90 | 0.94 |
| AGFI | > 0.90 | 0.91 |
| RMSEA | < 0.08 | 0.060 |
| S-RMR | < 0.05 | 0.038 |
| CFI | > 0.90 | 0.97 |
| NNFI | > 0.90 | 0.96 |
| IFI | > 0.90 | 0.97 |

3. Conducting the pilot application
4. Applying the draft scale to the study group and factor analyses
5. Calculating the reliability of the scale

In order to determine the factor loads predicted for scale development, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted. After the results of these two analyses that were obtained, confirmatory factor analysis was used for the model data fit. The fit indices used in the study were Chi-Square fit test, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Root Mean Square (RMS) and Root Mean Square Error of Approximation (RMSEA). Table 2 presents the results obtained via the analysis of the data. The value of $x^2$/sd obtained in the study was lower than 3, which demonstrated that the model had an acceptable fit (Şimşek, 2007). The value in question was higher than three. As the value of $x^2$/sd is sensitive to the size of the sample, it should be interpreted with other fit indices (Jöreskog and Sörbom, 1999). According to the model data fit, the value of 0.94 GFI was higher than 0.09; the value of 0.91 AGFI was higher than 0.09; the value of 0.064 RMSEA was lower than 0.08; and the value of 0.038 RMR was lower than 0.05.

## FINDINGS

### Exploratory factor analysis

The scale developed was applied to 1288 individuals, yet the analysis was carried out with 653 participants due to the fact that some of the questionnaires were not filled completely or some of them included items all with the same options marked. The Kaiser-Mayer-Olkin (KMO) value of the scale was 0.877, and Barlett's test was found significant ($p < 0.01$). The scale included a total of 16 items and four factors. In line with the expert view, no change was done in the scale. Table 3 presents the results of the exploratory factor analysis.

### Uni-dimensional confirmatory factor analysis (CFA)

Figure 1 presents the results of the confirmatory factor analysis conducted to determine the fit between the factors and items in the scale. According to the results of the confirmatory factor analysis, the Chi-Square value of $x^{2(98,N=685)=}$7663,63 calculated for the model-data fit was significant ($p < 0.000$). The fit statistics values calculated using the Lisrel GFI = 0.94, AGFI = 0.91, CFI = 0.97, NNFI = 0.96 software were as follows: RMSEA = 0.064, RMR = 0.038, and = 0.97 dir. Since these values were in appropriate ranges, there was no need for any modification in the scale.
IFI

### *Two-dimensional confirmatory factor analysis (CFA)*

The attitude scale for the web-based learning process with its 16 items and four factors was tested with two-dimensional confirmatory factor analysis (CFA). According to EFA, the items for the fact of System and usability had standard solutions of 0.64, 0.66, 0.58 and 0.51; those for the fact of Examination and Features had standard solutions of 0.49, 0.49, 0.54, 0.56, 0.54 and 0.53; those for the factor of Comprehensibility had standard solutions of 0.75, 0.71 and 0.90; and those for the factor of Security and Reliability had standard solutions of 0.53, 0.54 and 0.49. As can be seen, all the standard solutions were found to be higher than 0.45. As a result of CFA, the fit statistics values calculated as $x^2$/sd = 3.36 were as follows: RMSEA = 0.064, RMR = 0.038, GFI = 0.94, AGFI = 0.91, CFI = 0.97, NNFI = 0.96 and IFI = 0.97. All the fit indices obtained were found to demonstrate an acceptable fit according to Schermelleh-Engel, Moosbrugger and Müller (2003) (Figure 2). It was seen that the values obtained regarding the items and the whole scale were in acceptable ranges for the applicability of the scale.

### Results of reliability analysis

Table 4 presents the reliability coefficients for each factor in the scale. The Cronbach Alpha value for the whole scale was calculated as 0.873. The Cronbach Alpha values were calculated as 0.834 for the sub-factor of "System and Availability", as 0.793 for the factor "Comprehensibility", as 0.761 for the factor of "Examination and Features" and as 0.740 for the factor of "Safety and Reliability". The Cronbach's alpha values obtained in relation to the sub-factors demonstrate that the scale developed was valid (Brownlow, 2004).

## DISCUSSIONS

Depending on the related need in literature, the present study aimed at developing a valid and reliable attitude scale to evaluate the attitudes of distant education theology undergraduate students towards the Web-Based Examination System (Appendix). For this purpose, in line with the scale development phases reported in

**Table 3.** Exploratory factor analysis for “web-based learning attitude scale”.

| Item number | System and usability | Comprehensibility | Examination and features | Security and reliability |
|---|---|---|---|---|
| M1 | 0.781 | | | |
| M2 | 0.813 | | | |
| M3 | 0.816 | | | |
| M4 | 0.708 | | | |
| M14 | | 0.840 | | |
| M15 | | 0.831 | | |
| M16 | | 0.661 | | |
| M8 | | | 0.524 | |
| M9 | | | 0.513 | |
| M10 | | | 0.551 | |
| M11 | | | 0.582 | |
| M12 | | | 0.792 | |
| M13 | | | 0.696 | |
| M5 | | | | 0.706 |
| M6 | | | | 0.772 |
| M7 | | | | 0.757 |

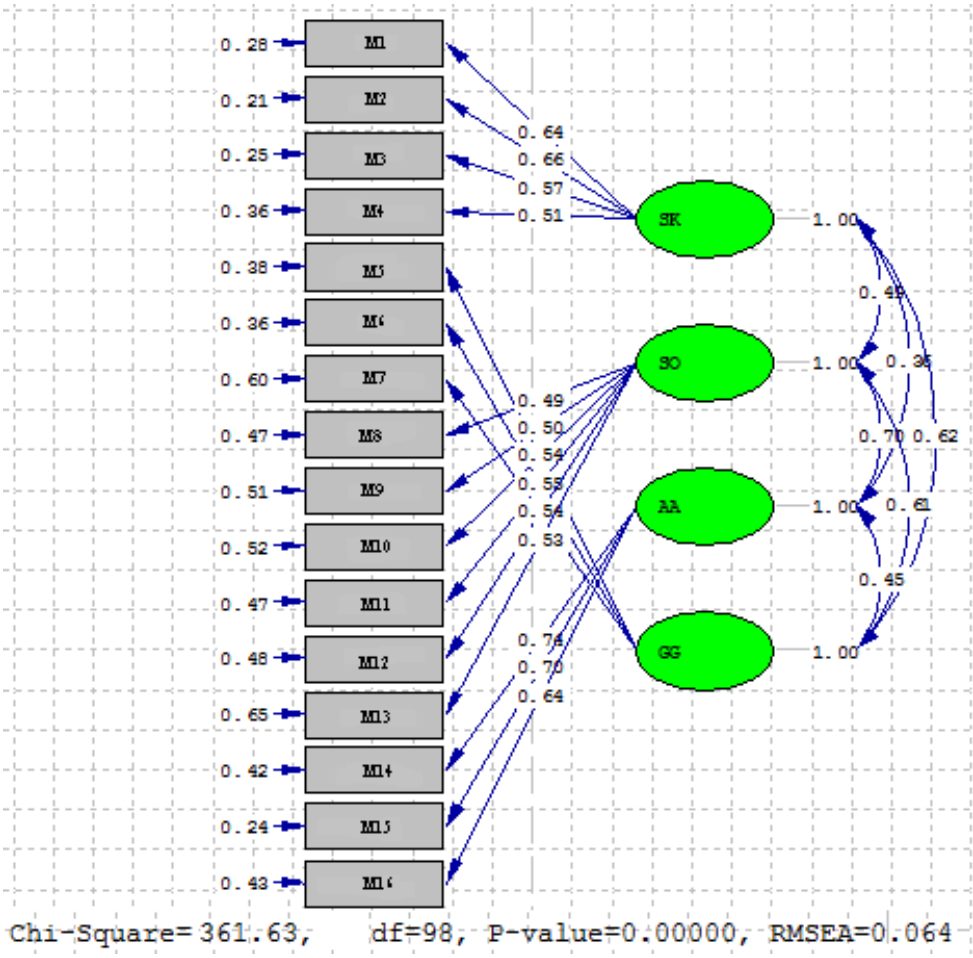


**Figure 1.** Confirmatory Factor Analysis Results for “Web-Based Learning Attitude Scale”.

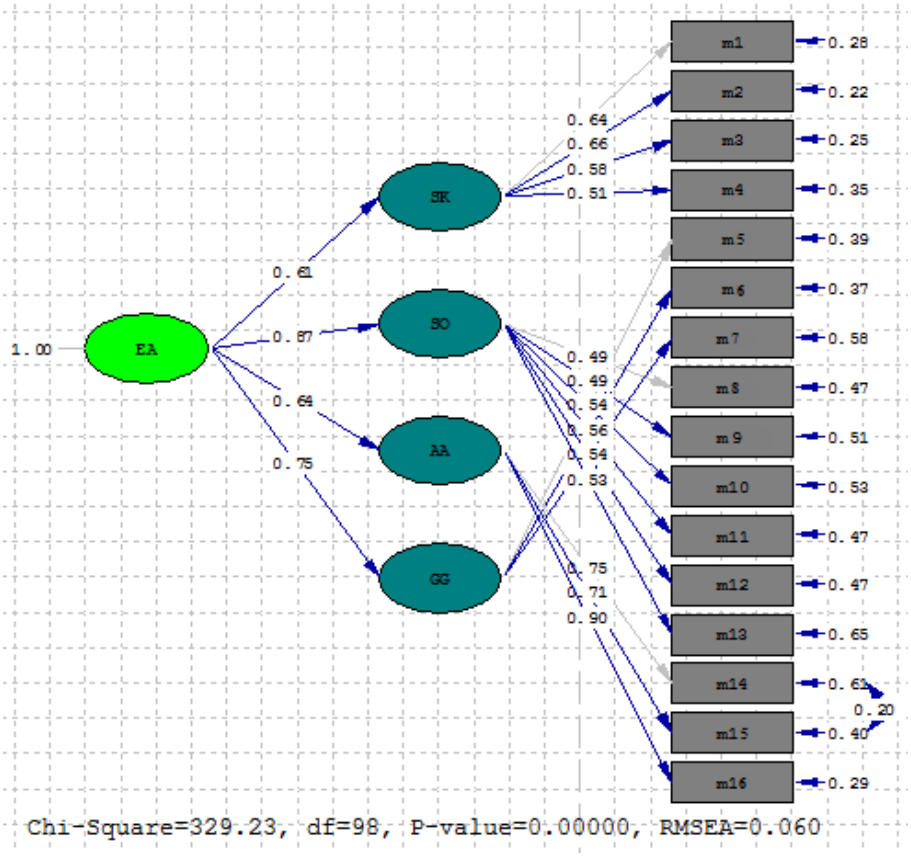


**Figure 2.** Two-dimensional confirmatory factor analysis (CFA) Results for "Web-Based Learning Attitude Scale".

**Table 4.** Cronbach's alpha values regarding the sub-factors of the web-based learning attitude scale.

| Factors | Number of Items | Reliability Coefficient (α) |
|---|---|---|
| System and Availability | 4 | 0.834 |
| Comprehensibility | 3 | 0.793 |
| Examination and Features | 6 | 0.761 |
| Safety and Reliability | 3 | 0.740 |

related literature (Devellis, 2003; Dunn-Rankin, 2004; Karasar, 1995; Tavşancıl, 2005), an item pool was formed; experts' views were taken regarding the items; and the trial item pool was piloted. Following the pilot application, the draft scale was applied to the study group, and the data were examined in terms of the distribution of the scale scores obtained before conducting the Exploratory Factor Analysis. After the distribution was found to be at the desired level, to determine the factor structure of the scale, basic components analysis was preferred as the factorization method, and the maximum varimax technique, one of the vertical rotation method, was preferred considering and significance. In the study, Exploratory Factor Analysis was conducted sequentially and gradually on the data several times. For the statistical evaluation of the data collected during the application, five items lacking unity of meaning and ten items considered statistically to be inappropriate were excluded from the scope of the study.

After the scale items were updated, the scale was applied again to collect the research data. The final version of the scale, which was initially made up of 31 items, included 16 items. In addition, factor analysis applied again to the final version of the scale. According

to the results of the exploratory factor analysis, there were four factors with an Eigen value higher than 1. It was found that the first factor (System and Availability) contributed to the common variance with a rate of 17,154%; the second factor (Comprehensibility) with a rate of 13,834%; the third factor (Examination and Features) with a rate of 16,496%; and the fourth factor (Safety and Reliability) contributed to the common variance with a rate of 12,868%. The contribution of the four factors to the total variance was calculated as 60,353%. Also, the Kaiser-Mayer-Olkin (KMO) value of the scale was calculated as 0.877, and Barlett's test was found significant ($p < 0.01$). In order to evaluate the validity of the two-factor structure obtained as a result of the exploratory factor analysis, confirmatory factor analysis (CFA) was conducted. When the CFA fit values were examined, the Chi-Square value of $x^2(98,N=685) = 51.38$ calculated for the model-data fit was found significant ($p <0.000$). The fit statistics values calculated as a result of the analysis carried out with Lisrel software were as follows: RMSEA = 0.064, RMR = 0.038, GFI = 0.94, AGFI = 0.91, CFI = 0.97, NNFI = 0.96 and IFI = 0.97. Since the values obtained were in appropriate ranges, no modification was done in the scale.

The web-based learning attitude scale made up of 16 items and four factors was also tested with the two-dimensional confirmatory factor analysis (CFA). The fit statistics values found to be x2/sd = 3.36 as a result of CFA were as follows: RMSEA = 0.064, RMR = 0.038, GFI = 0.94, AGFI = 0.91, CFI = 0.97, NNFI = 0.96 and IFI = 0.97. According to Schermelleh-Engel, Moosbrugger and Müller (2003), all the fit indices obtained were found to demonstrate acceptable fit. In addition, the Cronbach Alpha values were calculated as, 834; for the factor of "System and Availability", as, 793; for the factor of "Comprehensibility", as, 761; for the factor of "Examination and Features" and as, 740 for the factor of "Safety and Reliability". The scale could be used as a valid and reliable data collection tool in studies to be conducted not only to determine the attitudes of students from the Department of Theology Undergraduate Education Program towards web-based distant education as well as towards related exam practices but also to examine the factors influential on their attitudes.

## Conclusion

Rapid changes and developments in computer and Internet technologies lead to the development and spread of e-learning management systems. In this process of changes, e-evaluation has gradually gained more importance and become a significant part of this transformation. Evaluation on paper-pen basis is quite an inefficient method of evaluating students' success and making education decisions (Sırakaya et al., 2014). Although, the reliability and objectivity of exams conducted via e-learning platforms are examined by researchers and experts, these exams have a number of advantages when compared to those conducted with traditional methods. The most prominent advantages of e-evaluation include saving time and cost, gathering the responses to the questions in computer environment, providing appropriate and rapid feedback, allowing flexibility, increasing the reliability by minimizing the mistakes made by human (Struyven, Dochy and Janssens 2002; Angus and Watson 2009), decreasing faculty members' involvement (Anderson et al., 2005) and obtaining the results rapidly (Kuhtman, 2004). In addition, exams conducted in computer environment, in contrast with paper-pen exams, allow enriching the presentation of information via integration of multimedia elements (Liu et al., 2001). Obviously, electronic evaluations are beneficial. Faculty members can obtain rapid results, thanks to e-evaluation, and use of computers that will make education better. This will allow transition from a traditional education environment to the one that makes students more active and contributes to their learning. In recent years, the traditional measurement and evaluation methods in the field of education have been replaced by e-evalaution. Thanks to this, the field of measurement and evaluation has gained a new dimension. As an alternative, faculty members try to spread the use of the Internet and computer in the field of measurement and evaluation (Özmen, 2006; Lawrenz et al., 2001).

## Conflict of Interests

The authors have not declared any conflict of interests.

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**Appendix:** Attitude Scale towards Web-Based Examination System (MOODLE)

**Part 1.** Demographics

Sex: Female ☐ Male ☐

Class: 3 ☐ 4 ☐

How long have you been using a computer?
☐ Less than a year ☐ 1-2 years ☐ 2-4 years ☐ 4-6 year ☐ more than 6 years

What is your level of knowledge of computer use?
☐ None ☐ Little ☐ Average ☐ Good ☐ Very good

How often do you use the Internet?
☐ Once a day ☐ Twice or 3 times a day ☐ Twice or 3 times a week ☐ Once a week Once a month

Did you ever use a learning management system (distance education management system) in your previous education life or in a course?
☐ Yes ☐ No

**Part 2. Scale**

| | | I completely agree | I agree | I partly agree | I disagree | I completely disagree |
|---|---|---|---|---|---|---|
| 1 | Web-based evaluation has an important role in higher education. | | | | | |
| 2 | Web-based evaluation is appropriate to religious education. | | | | | |
| 3 | Web-based evaluation could contribute to my learning. | | | | | |
| 4 | Web-based evaluation has an important role in distance learning (Moodle). | | | | | |
| 5 | Web-based evaluation is as reliable as paper-based evaluation. | | | | | |
| 6 | Web-based evaluation is reliable in terms of exam results. | | | | | |
| 7 | I prefer web-based exams to traditional exams. | | | | | |
| 8 | Feedback provided via the exams conducted over Moodle (exam module used) contributes to my learning. | | | | | |
| 9 | I found use of the Moodle web-based exam module easy. | | | | | |
| 10 | Web-based exams have more advantages when compared to traditional exam environment. | | | | | |
| 11 | Web-based exam module could be suggested for those who favor traditional exams. | | | | | |
| 12 | Seeing the wrong answers given to questions in web-based exams contribute significantly to overcoming inefficacies. | | | | | |
| 13 | Seeing each question directed in web-based exams on the screen is an advantage. | | | | | |
| 14 | Questions directed in web-based exam module are legible when compared to those directed in traditional exams. | | | | | |
| 15 | Questions directed in web-based exam module are more comprehensible. | | | | | |
| 16 | Web-based exam module is as successful as the traditional exam system conducted in class environment. | | | | | |

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*Full Length Research Paper*

# The explanatory and predictive relationship pattern between university students' goal orientation behaviours and their academic achievement

**Uğur Akpur**

School of Foreign Languages, Yıldız Technical University, Turkey.

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**The purpose of this study is to determine the explanatory and predictive relationship pattern between university students' goal orientation behaviours and their academic achievement. The study group consisted of 259 university students. A '2x2 Achievement Goal Orientations Scale' was used to determine the students' goal orientation behaviours. The average grades that the students got during a term were taken as the academic achievement criteria. The data were analysed using structural equation modelling (SEM). The results suggested that learning approach, learning avoidance and performance approach are not significant predictors of academic achievement at the p<.05 level. The findings also indicated that the relationship between learning avoidance and performance approach; learning avoidance and learning approach; learning approach and performance avoidance; performance approach and performance avoidance; and learning avoidance and performance avoidance are significant at the p<.01 level. The results also displayed that the relationship between performance approach and learning approach is significant at the p<.05 level. On the other hand, the relationship between performance approach and learning approach along with the relationship between learning approach and performance avoidance was found to be negative unlike the other relationships between the variables.**

**Key words:** Goal orientation theory, academic achievement.

## INTRODUCTION

A number of researchers have long been engaged in studying the factors that influence academic achievement. To acquire effective products of learning, the educational objectives have to be set in such a way that these would meet the requirements in each domain of the taxonomy named after Bloom and each of them should be stressed equally. Though in the past, cognitive abilities were primarily stressed and assessed (Martin and Reigeluth, 1999), in recent years, more scientific judgements started to present an understanding of the affective domain in the learning process (Areepattamannil et al., 2011; Picard et al., 2004; Heikkila et al., 2012).

E-mail: uakpur@yahoo.com. Tel: 0532 401 57 73.

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Al Rifai (2010) argues that motivation, which is regarded as a significant factor in the affective domain, has profound impact on learning as it energizes behaviour and gives it direction. Maehr and Meyer (1997) postulated the idea that “motivation has been is and probably will be at the heart of teaching and learning”, and everybody has certain assets as far as motivation is concerned. In other words, they argue that the fundamental issue is not whether individuals are motivated since they are presumed to be already motivated. At this point, the primary concern is why and how they feel motivated towards a goal (Kaplan and Maehr, 2007) rather than having or lacking motivation. For questions such as why some individuals take the plunge and set higher objectives than others and why some people constantly struggle to improve themselves while others do not, DeShon and Gillespie (2005) assert that goal orientation theory partly gives answers to these questions.

Therefore, in this present study, determining the relationship pattern between goal orientation behaviours of university students and their academic achievement would be beneficial to comprehend why some students feel more motivated, endeavour to comprehend the subject matter thoroughly and set higher goals towards particular objectives while others do not.

## Research framework

Developed within the framework of the social-cognitive approach, (Brdar et al., 2006; Meece et al., 2006; Murayama and Elliot, 2011; Givvin, 2001) the goal orientation theory has been regarded as a dimension of motivation (Elliot, 1999; Pintrich, 2000; Wirthwein et al., 2013) and its framework contains both affective as well as cognitive constituents (Ames, 1992).

Goal orientation theory was first defined as “an integrated pattern of beliefs, attributions and affect that produces the intentions of behaviour” (Weiner, 1986; Ames, 1992). Functioning also as a significant means to examine the impact of various classroom settings and school environments (Meece et al., 2006; Deemer and Hanich, 2005), the major emphasis of the theory is on how students perceive themselves, how they perceive the tasks they encounter, how they react to a given objective and how they perform in a particular situation (Anderman and Midgley, 1997). In this respect, goals are the objectives which are supposed to direct individuals’ behavioural, cognitive and affective endeavours (Lee et al., 2010). In other words, goal orientation theory is about the cognitive, affective and behavioural responses that the individuals display in relation to achievement situations (Demirci, 2013). Thus, it focuses on the students’ characteristic orientations towards particular goals.

Initially, two types of goals were identified by the goal orientation theorists: mastery goals, also called task involvement or learning goals, and performance goals, also called ego involvement or ability goals (Ames, 1992; Antoniou, 2014; Tuominen-Soini et al., 2012; Elliot et al., 1999; Was, 2006; Midgley et al., 1998; Tollefson, 2000; Pintrich, 2000; Moeller et al., 2012; Wolters et al., 2012).

According to Ames (1992), mastery and performance goals contain different notions and applications. In this sense, with a mastery goal, students tend to develop new skills; display perseverance in the face of failure; have a positive attitude towards learning; struggle to increase their proficiency; and endeavour to comprehend the materials and what they are learning (Ames, 1992; Elliot and Harackiewicz, 1996; Bong, 2004; Chen and Wong, 2015; Anderman and Midgley, 1997). A mastery goal also helps them appreciate “challenge” and to handle difficult tasks (Hoyert et al., 2012).

To Cerasoli and Ford (2014), the ultimate aim of mastery oriented students is not solely to meet the “passing criterion” but to comprehend it thoroughly. On the other hand, performance oriented students focus on products or outcomes rather than comprehending the subject matter deeply (Deemer and Hanich, 2005; Dekker and Fischer, 2008). With a performance goal, students struggle to overtake their peers and look better than them; attain praise; abstain from negative evaluations; and have a tendency to pursue relatively easier tasks (Gehlbach, 2006; Fletcher et al., 2012; Elliot et al., 1999; Hoyert et al., 2012; Huang, 2011). Attenweiler and Moore (2006) suggested that performance oriented students tend to consider failure as an inadequacy, so momentary achievements become important.

The dichotomous structure of the goal orientation theory was later expanded by adding approach and avoidance orientations (Tuominen-Soini et al., 2012; Stan and Oprea, 2015; Elliot and Harackiewicz, 1996; McCollum and Kajs, 2007; Elliot, 1999). According to McCollum and Kajs (2007) and Wigfield and Cambria (2010), the dichotomous structure was developed into a trichotomy as there emerged some different and inconsistent findings concerning mastery and performance goals due to the fact that approach and avoidance were not considered. Therefore, Elliot and Harackiewicz (1996) in their study mentioned the notions of performance approach and performance avoidance. Performance approach goals are about outperforming others, obtaining positive judgements of ability and feelings and exhibiting competence (Vansteenkiste et al., 2014; Meece et al., 2006; Cellar et al., 2011; Baranik et al., 2007), while performance avoidance goals are depicted as “striving to avoid incompetence in relation to others” (Baranik et al., 2007). Students who adopt such goals tend to abstain from getting worse results than others or being perceived as incompetent and they try not to attract negative judgements (Keys et al., 2012; Vansteenkiste et al., 2014; Elliot and Harackiewicz, 1996; McCollum and Kajs, 2007).

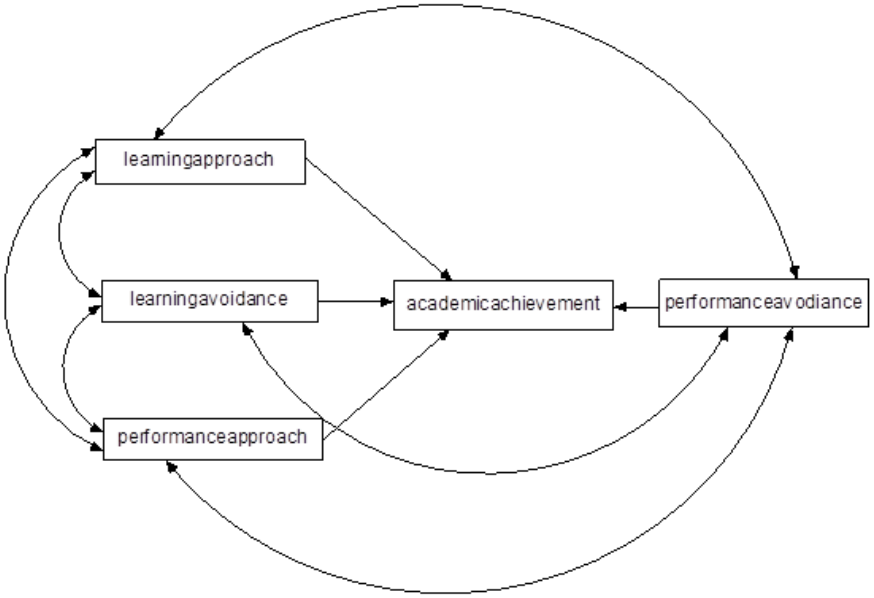


**Figure 1.** Proposed model.

Elliot (1999) suggested that like performance goals, mastery goals may be separated into “approach and avoidance” and thus, a 2x2 model of goal orientation emerged. According to this, some students may display mastery (learning) avoidance behaviours. These students tend to adopt the feeling of avoiding failure, they may not recollect what was learned, misunderstand the subject matter and abstain from making mistakes (Kim et al., 2015; Elliot, 1999, Senko and Freund, 2015). Some studies had forwarded the idea that there is a positive correlation between mastery learning orientation and academic performance (Wirthwein et al., 2013; Bouffard et al., 1995; Roebken, 2007; Church et al., 2001; Chan, 2008).

In addition, it is suggested that, mastery learning promotes positive outcomes and self-regulatory behaviours (Ames, 1992; Brdar et al., 2006). However, when performance goals are separated into performance approach and performance avoidance goals, the general tendency of the research attributes negative outcomes to performance avoidance goals (Ohtani et al., 2013; Chan, 2008). According to Chan (2008), while learning goals have positive impact, performance approach goals have a primarily positive but “truncated set of positive results”.

McCollum and Kajs (2007) argue that students with performance avoidance goals tend to have low academic success while students with performance approach goals are most likely to have higher achievement. Nevertheless, some studies did not yield the same results. For instance, Harackiewicz et al. (1997) suggest that mastery goals along with performance goals can pave the way for positive results in classes. Likewise, Roebken (2007), in his study, found out that, rather than mastery goals only, the combination of performance and mastery goals tend to increase academic success.

The overall conclusion seems to be that goal orientation theory emphasizes the types of goals that individuals have and it can be assessed as a means of anticipating learning outcomes. The theory can be applied to shed light on learners’ performance and behaviours in academic environments (Nakayama et al., 2012). It is thought that determining and modelling the relationship between goal orientation behaviours and academic achievements become more of an issue. To achieve this aim, the purpose of this study is to determine the relationship pattern between goal orientation behaviours and academic achievement. Consequent to reviewing the theoretical background and studies, the proposed model was configured as shown in Figure 1.

In Figure 1, the proposed model was formed after reviewing the related literature in terms of the aforementioned variables.

## METHODOLOGY

In accordance with the framework mentioned earlier, the aim of the present study is to uncover the explanatory and predictive relationship pattern between students’ goal orientation behaviours and their academic achievement.

### Research model

Casual research design was applied in this study. The relationship of cause and effect between dependent and independent variables was evaluated using Structural Equation Modelling (SEM). In this study, SEM is preferred as it is used to evaluate models, ascertain

weaknesses and disclose relationships in a hypothesized model (Weston and Gore, 2006; Kline, 1998).

### Participants

The participants were university students of the Basic English Department in Yıldız Technical University, İstanbul, during the 2015/2016 Academic Year. The scale was administered to a total of 270 students who were randomly chosen. 11 questionnaire sheets were ignored owing to poor feedback. Therefore, the study group consisted of 259 participants. As the received data from the participants are to be impartial and every member of the population has the same chance of being chosen, the subjects in this study were ascertained through simple random sampling (Arık, 1998). Data were collected from the students drawn from 15 classes; 80 (30.89%) were females and 179 (69.11%) males.

### Instruments

#### *2x2 Achievement goal orientations scale*

The students' achievement goal orientation behaviours were determined using '2x2 Achievement goal orientations scale' which contains 4 subscales: learning approach, learning avoidance, performance approach and performance avoidance. Elliot and McGregor (2001) proposed this goal framework and tested it in three studies. The results of the factor analysis of these studies demonstrated that four of the goal constructs are independent. According to the theory, mastery-avoidance goals could be related to negative outcomes.

The scale has 26 items in total as developed by Akın (2006). 8 items focus on learning approach; 5 on learning avoidance; 7 on performance approach; and 6 on performance avoidance orientation goals. It is a five-point Likert scale and the items factor loading values were calculated from 0.41 to 0.98. The total scales' corrected-item correlation was found to range from 0.56 to 0.73. The internal consistency coefficients were between 0.92 and 0.97, and the test-retest coefficients were found to range from 0.77 to 0.86.

#### *Assessment of academic achievement*

The students' academic achievement was based on the average grades they got in the Fall Term, 2015/2016 Academic session. During the term, the students had two mid-term exams (40%), three pop-quizzes (20%), two reading exams (10%), writing portfolio work (10%), presentation and oral exam (15%) and class participation (5%).

### Data analysis

The data obtained from the study were analysed using SEM. SEM is a cluster of statistical methods (Ullman and Bentler, 2013) and it presents a comprehensive and flexible assessment of observed as well as latent variables (Hoyle and Smith, 1994). Furthermore, it is also possible to use this method to test and analyse a structure of a model (Weston and Gore, 2006). Similarly, it allows evaluation and modifications of a theoretical model (Anderson and Gerbing, 1988) in that the method offers a confirmatory factor analysis (Ullman and Bentler, 2013). In other words, it can be considered as a "factor analysis and regression or path analysis" (Hox and Bechger, 2007). As for the sample size of SEM, although there is no exact agreement, it is stated that the reasonable sample size to provide adequate data should be at least 200 (Hoe, 2008; Hox and Bechger, 2007).

## RESULTS

In order to ascertain the relationship pattern between students' goal orientation behaviours and their academic achievement, the proposed model was tested and analysed using path analysis. In Figure 2, after the path analysis, the values of the proposed model and the relationship pattern between dependent and independent variables are displayed.

The AMOS Statistical Program was utilized for maximum likelihood process to test the proposed model. According to Schermelleh-Engel et al. (2003), one of the ways to test a model is to determine the values of certain goodness-of-indexes and compare them with the acceptable values. In this way, the model can be considered reliable. Thus, for the model evaluation, the values of the proposed model were shown along with the good fit and acceptable fit values in Table 1.

As observed in Table 1, the value of chi-square is '0', which is supposed to be less than three when divided by the degree of freedom (Kline, 1998). This figure shows that the model has a suitable index value in terms of the value of chi-square. The other values of the path analysis of the proposed model are as follows:

GFI=.1 (.95 ≤ GFI ≤ 1.00), NFI=.1 (.95 ≤ NFI ≤ 1.00), CFI=.1 (.97 ≤ CFI ≤ 1.00), AGFI=.94 (.90 ≤ AGFI ≤ 1.00) and RMSEA=.29 (0 ≤ RMSEA ≤ .05).

These figures, except for RMSEA, demonstrate that the model's fitness is acceptable. Nonetheless, since the value of RMSEA is not within the limits of either good or acceptable fit, the model was reviewed again and modified in accordance with the procedures of path analysis.

After necessary analysis, the one-headed row between performance avoidance and academic achievement was omitted and after the adjustment, the model was re-evaluated as in Figure 3. In Figure 3, the proposed model was modified and after the necessary adjustments it was re-evaluated.

The figures in Table 2 show that, after omitting the one headed row between performance avoidance and academic achievement, the model became compatible with the goodness-of-fit indexes. The value of chi-square after it was divided by the degree of freedom (df: 1), was 3, which is in the limits of acceptable fit. The other figures of the path analysis were found to be as follows:

GFI=0.99 (0.95 ≤ GFI ≤ 1.00), NFI=0.98 (0.95 ≤ NFI ≤ 1.00),

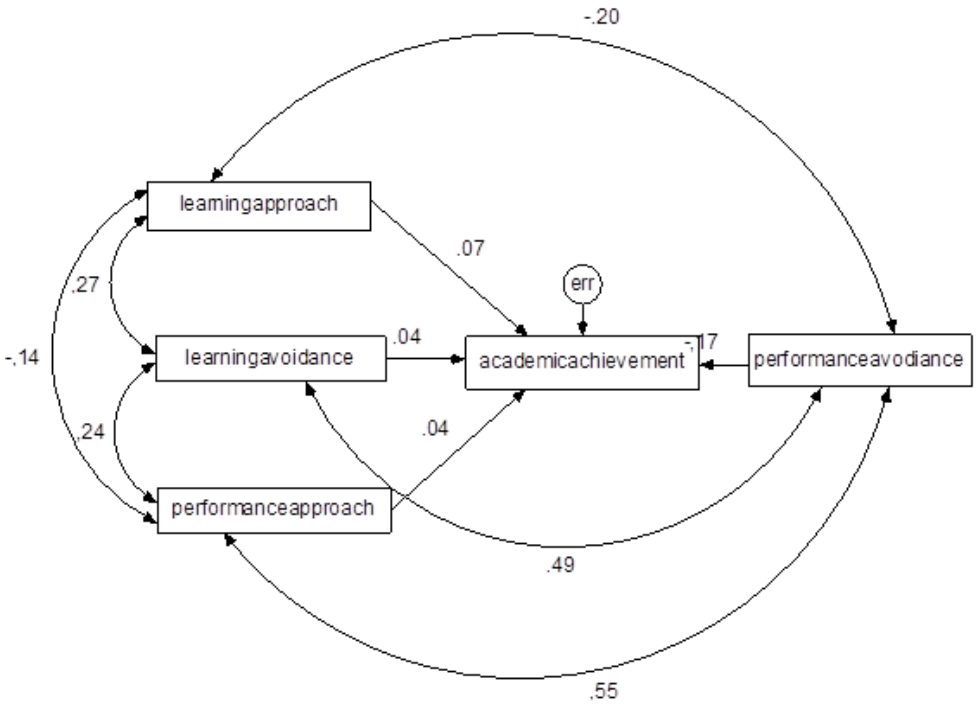


**Figure 2.** Values of the Proposed Model

**Table 1.** Values for model evaluation.

| Fit measure | Good fit | Acceptable fit | The proposed model |
|---|---|---|---|
| χ2/df | 0.0 ≤ χ2/df ≤ 2 | 2 ≤ χ2/df ≤ 3 | 0.0 |
| GFI | 0.95 ≤ GFI ≤ 1.00 | 0.90 ≤ AGFI ≤ .95 | 0.1 |
| NFI | 0.95 ≤ NFI ≤ 1.00 | 0.90 ≤ NFI ≤ .95 | 0.1 |
| CFI | 0.97 ≤ CFI ≤ 1.00 | 0.95 ≤ CFI ≤ .97 | 0.1 |
| RMSEA | 0 ≤ RMSEA ≤ .05 | 0 ≤ RMSEA ≤ .08 | 0.29 |
| AGFI | 0.90 ≤ AGFI ≤ 1.00 | 0.85 ≤ AGFI ≤ .90 | 0.94 |

RMSEA = root mean square error of approximation; NFI = Normed Fit Index; CFI = Comparative fit index; GFI = Goodness-of-fit index, AGFI = Adjusted goodness-of-fit-index (Schermelleh-Engel et al., 2003).

CFI=.98 (.97 ≤ CFI ≤ 1.00), AGFI=0.92 (0.90 ≤ AGFI ≤ 1.00).

As opposed to the proposed model, the value of RMSEA was found to be 0.01 which is within the limits of the recommended value (0 ≤ RMSEA ≤ .05). All these figures demonstrated that the model is compatible and the goodness-of-fitness values are within the limits.

Table 3 demonstrates that the predictive power of learning approach to predict academic achievement is 0.262, the power of learning avoidance to predict academic achievement is -0.136, and the power of performance approach on academic achievement is -0.060. It can be concluded that the learning approach (Critical Ratio-CR=1.691; p<0.05), learning avoidance (CR= -.621; p<.05) and performance approach (CR= -0.432; p<0.05) are not significant predictors of academic achievement at the p<0.05 level. In Table 4, correlations, standard errors, critical ratios and 'p' values of the variables of the last model are itemized.

Table 4 displays that the relationship between learning avoidance and performance approach (CR=3.756; p<.01); learning avoidance and learning approach (CR=4.20; p<.01); learning approach and performance avoidance (CR= -3.20; p<.01); performance approach and performance avoidance (CR=7.72; p<0.01) and learning avoidance and performance avoidance (CR=7.07; p<0.01), are all significant at the p<0.01 level. The table also shows that the relationship between

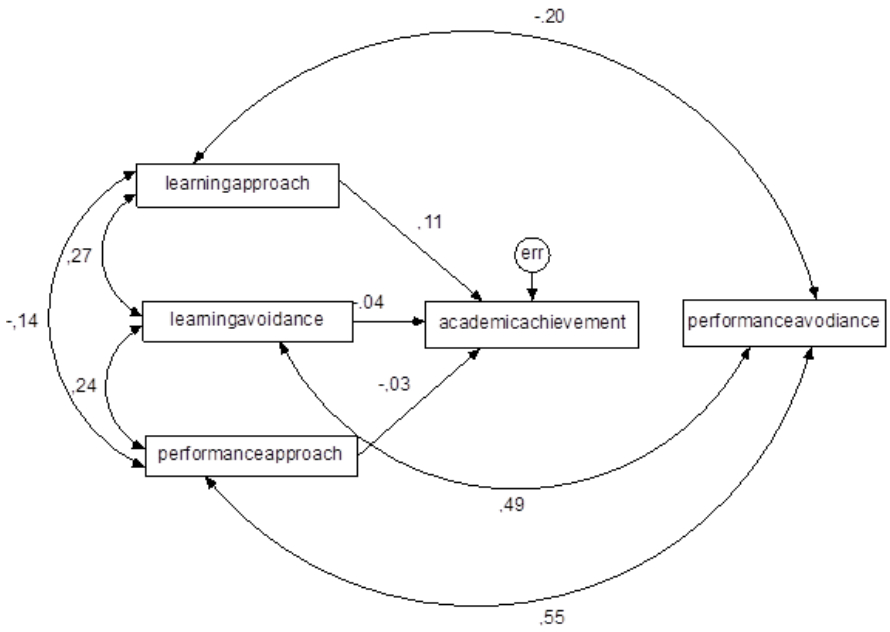


**Figure 3.** Values of the Final Model

**Table 2.** The Values of the last model.

| Fit measure | Good fit | Acceptable fit | Final model |
|---|---|---|---|
| χ2/df | 0.0 ≤ χ2/df ≤ 2 | 2 ≤ χ2/df ≤ 3 | 3 |
| GFI | 0.95 ≤ GFI ≤ 1.00 | 0.90 ≤ AGFI ≤ 0.95 | 0.99 |
| NFI | 0.95 ≤ NFI ≤ 1.00 | 0.90 ≤ NFI ≤0 .95 | 0.98 |
| CFI | 0.97 ≤ CFI ≤ 1.00 | 0.95 ≤ CFI ≤0 .97 | 0.98 |
| RMSEA | 0 ≤ RMSEA ≤ .05 | 0 ≤ RMSEA ≤ 0.08 | 0.01 |
| AGFI | 0.90 ≤ AGFI ≤ 1.00 | 0.85 ≤ AGFI ≤ 0.90 | 0.92 |

**Table 3.** Regression weights, standard errors, critical ratios and 'p' values of the variables of the last model.

| Variable | Estimate | St. Err. | Critical Ratio | p |
|---|---|---|---|---|
| Learn. Appr → Acad. Achiev. | 0.262 | 0.155 | 1.691 | 0.09* |
| Learn. Avoid. →Acad. Achiev. | -0.136 | 0.218 | -0.621 | 0.053* |
| Perf. Appr. →Acad. Achiev. | -0.060 | 0139 | -0.432 | 0.66* |

*p<.05.

**Table 4.** Correlations, standard errors, critical ratios and 'p' values of the variables of the final model.

| Variable | Estimate | St. Err. | Critical Ratio | p |
|---|---|---|---|---|
| Learn. Avoid.↔Perf. Appr. | 4.34 | 1.15 | 3.756 | 00* |
| Learn. Avoid.↔Learn. Appr. | 4.44 | 1.05 | 4.20 | 00* |
| Perf. Appr.↔Learn. Appr. | -3.38 | 1.56 | -2.15 | 0.03** |
| Learn. Appr.↔Perf. Avoid. | -4.22 | 1.31 | -3.20 | 00* |
| Perf. Appr. ↔Perf. Avoid. | 12.57 | 1.62 | 7.72 | 00* |
| Learn. Avoid.↔Perf. Avoid. | 7.38 | 1.04 | 7.07 | 00* |

*p<.01, **p<.05.

performance approach and learning approach (CR= -2.15; p<.05) is significant at the p<.05 level. On the other hand, the relationship between performance approach and learning approach along with the relationship between learning approach and performance avoidance is negative unlike the other relationships between the variables.

## DISCUSSION AND CONCLUSION

The primary objective of this study was to identify the relationship between students' goal orientation behaviours and their academic achievement. The findings from the research have revealed that learning approach, learning avoidance and performance approach are not significant predictors of academic achievement. The results are partly consistent with some studies in the literature. Roebken (2007) pointed out that students who adopt performance approach and performance avoidance have lower grades than those adopting learning approach and learning avoidance.

Nevertheless, in Roebken's (2007) study, students who pursue learning approach and performance approach got higher scores. On the other hand, Antoniou (2014) suggested that learning approach and learning avoidance are positive predictors of academic achievement. McCollum and Kajs (2007) argued that students who pursue performance avoidance goals tend to have low academic achievement. Likewise, Wirthwein et al., (2013), Chan (2008) and Bouffard et al., (1995) pointed out that there is a positive correlation between learning approach and academic achievement.

Also, the research revealed that the relationship between learning avoidance and performance approach; learning avoidance and learning approach; learning approach and performance avoidance; performance approach and performance avoidance; performance approach and learning approach and learning avoidance and performance avoidance are significant. These findings are similar to some previous studies such as, Wang et al., (2016) who found out in their study that all achievement goals were positively correlated with one another. Chen and Wong (2015) also suggested in their study that the paths among the types of goals were positive and significant. However, in the present study, it was discovered that the relationship between performance approach and learning approach along with the relationship between learning approach and performance avoidance is negative unlike the other relationships between the variables.

On the other hand, the results obtained in the present study did not concur with the results of several other studies. It is generally pointed out that while learning approach, learning avoidance and performance approach enhance academic achievement (Ames, 1992; Wirthwein et al., 2013; Church et al. 2001), performance avoidance is associated with lower academic scores (Ohtani et al., 2013; Chan, 2008; McCollum and Kajs, 2007). Also, without taking other related variables such as motivation, anxiety and meta-cognitive strategies into consideration, studying goal orientation as the only variable may have impact on the results.

## RECOMMENDATIONS

Certain limitations of the current study should be taken into consideration. First of all, the data were collected from the university students attending only English preparatory classes. To include students from other departments in the study may have yielded different results. Similarly, it can be recommended that, attaching related concepts such as intrinsic and extrinsic motivation, anxiety, attitude, learning strategies as well as classroom strategies into the study would be beneficial to analyse the relationships between the variables better. It is thought that determining the relationship between goal orientation behaviours and academic achievement will help teachers, policy makers, managers along with other stakeholders of educational system design learning environments.

## Conflict of Interests

The author has not declared any conflict of interests.

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# Application of context input process and product model in curriculum evaluation: Case study of a call centre

**Derya Kavgaoğlu* and Bülent Alcı**

YTU, Istanbul, 34349, Turkey.

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**The goal of this research which was carried out in reputable dedicated call centres within the Turkish telecommunication sector aims is to evaluate competence-based curriculums designed by means of internal funding through Stufflebeam's context, input, process, product (CIPP) model. In the research, a general scanning pattern in the scope of descriptive research is used. The data collection instrument consists of the professional competence development curriculum's CIPP evaluation scale developed by researchers. Participants are 622 call centre agents who served in the Black Sea, Central Anatolia and Eastern Anatolia Regions in 2014 and 2015. Statistical analyses of the research were conducted by applying statistical package for social sciences (SPSS) v23.0 and Amos v21.0 software. In addition to gap analyses, the Structural Equation Modelling (SEM) was applied as well. For the construct validity of the scale, analyses of the illustrative and confirmatory factors are conducted respectively. In scoring, in focusing on the dimensions of the CIPP evaluation scale, significant variations by gender and education background have been observed between the opinions of the participants.**

**Key words:** CIPP model, curriculum evaluation, competence-based curriculum development, adult education, talent management.

## INTRODUCTION

Nowadays, competence-based education and talent management have become the most important areas, on which modern businesses sensitively put emphasis with the aim to maximally benefit from skilled labour. And the process which provides the most reliable information on how well the efforts in these spheres run is an evaluation practice which is at the centre of these applications. These processes running in the area of responsibility of any businesses' Human Resources, Training, Learning and Development, or Career and Competence units may transfer into an educational business in non-competent hands. Being aware of this demand, the market manages to get unearned income from this need through routine curriculums (education programs) by creating brands and fashion.

However, education is a scientific process, not a fashion trend. Noticing of needs, determining of competences, discovering of development areas and making

*Corresponding author. E-mail: deryakus@hotmail.com

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instructional designs to the purpose, and most importantly, finding out whether the efforts provide input for a real development, that is, 'curriculum evaluation' necessitate domain expertise and professional knowledge. In this sense, measuring the findings of entertaining the participants with popular activities also through satisfaction questionnaires by allocating extensive budgets to education would never be an evidence of existence of a real educational activity. With reference to the points of definitions in literature, we can explain the curriculum evaluation as a scientific process containing a range of systematic researches focused on the efficiency of an applied curriculum, integrated data collection, analysis, comparison, decision-making and judgment-making practices (Demirel, 2006; Doll, 1992; Erden, 1993; Erturk, 1975; Sonmez, 2010; Taba, 1962; Tyler, 1949; Worthen et al., 1987; Varis, 1996). A curriculum evaluation specialist should first know that:

1. The curriculum evaluation which is the most important step of curriculum development is an evidence-based reasoning process. Ornstain and Hunkins (2014) explain this situation through the Hourglass Metaphor comprising of cognition, observation and interpretation.
2. Curriculum evaluation should be cyclic, but not linear. Taba (1962) and Varis (1996) particularly emphasize the interaction between the components of a curriculum.
3. Curriculum evaluation is shaped with the questions of an evaluation specialist, and the philosophy taken as a basis has an immediate effect on the evaluation (Doll, 1992; Talmage, 1985; Ornstain and Hunkins, 2014).
4. Evaluation is an irrevocable supplement which enables not only a learner, but also the curriculum, education and instructor to renovate themselves.
5. Curriculum evaluation is an area of specialization (Erturk, 1975). Curriculum development and evaluation is a profession requiring specialization in subject matters from education psychology to social psychology, from education statistics to education economy, and from education philosophy to curriculum design.
6. Curriculum evaluation requires team work. It is an interaction process, which requires sharing not only with decision-makers, but also all partners (Usun, 2012).
7. An evaluation specialist may also evaluate his/her curriculum, especially in the context in the beginning and course of the curriculum as well as at its end according to the evaluation vision s/he determines. This triple goal classification is known as Diagnostic Evaluation, Formative Evaluation and Summative Evaluation (Demirel, 2006; Erturk, 1975; Karip, 2007; Ozcelik, 1998; Sonmez, 2010; Tekin, 2007).
8. Curriculum evaluation approaches may be studied in two key dimensions and two breakdowns as objective and subjective from the philosophical point of view, and as qualitative and quantitative from the methodological point of view. In an objective evaluation, the point in question is gathered through objective measurement instruments information from the outside; while in the subjective evaluation, the point in question is gathering information through qualitative research techniques such as ethnography, case study, observation, negotiation and so on from the inside (Worthen et al., 1987).

More than fifty models are recommended in curriculum evaluation. The key reason for this variance is the difference in evaluation philosophies (Worthen et al., 1987). Furthermore, the 22-component classification focused on approaches to the evaluation conducted by Stufflebam (2001) which may be seen as the most comprehensive view. Stufflebam (2001) when considering both the operating time and modern curriculum evaluation needs – argued that the nine approaches among the approaches in question (in the scope of development and responsibility centred evaluation: Decision/Responsibility, Customer-oriented and Accreditation; In the scope of Social Mission and Defence: Beneficial, Customer-oriented, Democratic-Thinking and Constructivist; In the scope of Answers and Methods: Case Study, Outcome Monitoring) are the most robust and promising approaches, and introduced a very positive evaluation related to the Average Service Score, Utilization Ratio, Applicability Ratio, Compliance Ratio and Accuracy Ratio of these nine evaluation approaches.

Target-oriented evaluation, management-oriented evaluation, cooperation-oriented evaluation, participant-oriented evaluation, competitor-oriented evaluation, qualitative evaluation, specialist-oriented evaluation and customer-oriented evaluation may be seen as key curriculum evaluation approaches. Constraints relating to these curriculums may be expressed as follows:

(i) In the target-oriented evaluation approach, the attention is attached to the targets and their achievability. Neglecting the context and unexpected products (outputs) and encouraging the linear and solid approaches as well as participant to study not for learning, but success in tests may be considered as the weaknesses of the model (Worthen and Sanders, 1987).
(ii) In the management-oriented evaluation approach, the attention of the curriculum evaluation moves from the targets to the management. Being restricted to the qualification of the manager in such issues as its possibility to be unbiased, fair and democratic and possibility of determination of the educational needs properly may be considered as the weaknesses of the model (Worthen and Sanders, 1987).

Cooperation-oriented evaluation approaches are in principle based on participation of all partners in evaluation. This evaluation model here is restricted to data receiving by partners, focused on mainly curriculum development, rather than an active participation while in

the participant-focused evaluation, an active participation of the participants is at stake. But, the objectivity and consolidation of the evaluations by participants may also be limited here (Worthern et al., 1997; Karatas, 2007).

In the competitor-oriented evaluation approaches, the key philosophy is to get the opinions of two different evaluation specialist being for and against the curriculum (Unal, 2013). As stated by Usun (2012), these models may be evaluated as disadvantageous as they are costly, necessitate hard efforts for the time and preparation of evidences, and have difficulties in the points of finding unbiased juries and in terms of potential addressing and presentation skills.

In quantitative evaluation approaches, the subjective evaluations of a specialist are handled as a priority evaluation strategy (Worthen et al., 1987). The Educational Criticism Model (Eisner) and the Specialist/ Accreditation Model are examples of this approach. The qualification of the evaluation is restricted to the specialist's knowledge of specialization and the analysis competence in both the quantitative evaluation approach and educational criticism model.

And in the Customer-Oriented Approach, education is applied in evaluation of the product and program by public and private entities. In the model, the program management with a market culture and market mentality is discussed. The profile of the learner turns into a customer profile and the demand of the learner turns into a customer demand. Education centers ceaselessly compete in order to protect their market shares (Celik, 2010).

In this model, the context, input, process, product (CIPP) model is recommended for the program evaluation processes of modern businesses in contradiction to all of these models. The reasons for giving preference to the CIPP Model may be briefly expressed as follows: it has been observed that the model is applied in 134 PhD dissertations at 81 universities, including 39 disciplines. Moreover, quotes were made from 55 published study samples applying this model in such disciplines as agriculture, management, communication, distant education, primary education, secondary education and higher education; public management; health services; international development; Law; Philanthropy; Psychology; Religion; and Sociology. Furthermore, the area of application of this model is very extensive. Among those using this model or making agreements for use of it, there are public and private sector officials, program and project personnel, international distribution personnel, agricultural distribution agents, school managers, church officers, doctors, nurses, military leaders and evaluators (Stufflebeam, 2014). The CIPP evaluation model is an education evaluation model focused on improvement and accountability. It is a comprehensive structure enabling to evaluate programs, projects, personnel, products, entities, principles and evaluation systems in formative and summative manner (Stufflebeam and Coryn, 2014). It is a rational approach enabling the cost effectiveness at the commencement, planning, implementation and completion stages of necessary development studies (Stufflebeam, 2014). The model is based on professional standards containing the principles of effectiveness, applicability, authenticity, accuracy and evaluation accountability. (Stufflebeam, 2014). In the model, the root term of the evaluation is value. This term refers to the scope of the ideals that a society, group or individual holds. The CIPP model expects from an evaluator and customer to define and clarify the evaluative values and the values that may support the relevant evaluation of the customer (Stufflebeam, 2014).

Key concept of the CIPP model comprises of evaluations of context, input, process and product expressed through acronym letters, and summarizes the key functions of these categories as follows (Stufflebeam, 2014):

1. In contextual evaluations, the evaluator studies the needs, problems, and gains and opportunities, and related contextual conditions and dynamics in addition to these. Decision-makers use this stage for establishing targets and priorities and monitor how the program targets correspond to the determined needs and problems. (Stufflebeam, 2014). The targets, issues, the harmony of interests-needs-expectations, the education environment, the education periods, and the time schedule may be seen as examination spheres that may evaluate the contextual dimensions of an instructional design.
2. In evaluation of input, the evaluators pay attention to the evaluation of all resources allocated for the meeting of the targeted needs and achieving the targets. Program-based alternative approaches, procedural plans, staffing terms and conditions, budget and cost effectiveness may be considered in this scope (Stufflebeam, 2014). And in evaluation of instructional designs, educational materials, content-themes, and the participant views focused on facilitation by the instructor may be considered as the key examination areas.
3. In process evaluations, the evaluators monitor, document, study and report on the application of program plans. These evaluators make feedbacks in the implementation process of a program, and upon completion of the program, report on the continuation of the program as targeted and required (Stufflebeam, 2014). And in the process evaluation dimension of an instructional design, the process management by the instructor; the activities; and the used instructional methods and techniques may be examined.
4. The product evaluation at the end of the program serves as determination and review of all the program achievements. The key questions of the product evaluation are as follows: Has the program achieved its

targets? Have it handled the targeted needs and problems successfully? What are the side effects of the program? Were there also positive results in parallel to the negative results? Are the achievements of the program worth the expenses? (Stufflebeam, 2014). And in the product evaluation aspect of the instructional design, questions evaluating all of the evaluation activities and self-evaluation questions may be used, and the investment decision may be reconsidered by these data.

In researches conducted in relation to the CIPP model domestically and abroad, the comments of the partners of the program for evaluation through a measurement instrument were built by the researcher for the model. The comments did not only demonstrate the participant satisfaction, but also provided information on how steadily the program continued on the context, input, process and product aspects. The achieved data may guide the program development process (Akozbek, 2008; Al-Kkathami, 2012; Bachenheimer, 2011; Bayhan, Chen, 2009; 2011; Dincer, 2013; Farsi and Sharif, 2014; Gelen, 2015; Karatas, 2007; Mahshid et al., 2015; Oncu, 2014; Reeves and Michael, 1973; Selvi, 2009; Sercek, 2014; Smith and Benjamaporn, 2012; Tseng et al., 2010; Tugba, 2010; Tunç, 2010; Usmani et al., 2012; Unal, 2013).

In this research, the Call Center Professional Competence Development Program (CCPCDP) applied specific to the CIPP Model call center is evaluated through the CIPP Model as well. Each training activity under the CCPCDP Program is developed based on the competences required by the positions by the researcher (result-orientation, reassurance, domestic/foreign customer-orientation, team-work, communication, continuous learning and development, quality-orientation, flexibility, resolution and energy, use of initiative, and analytical thinking) diction and rhetoric, active communication skills, customer-focused selling skills, customer service and quality, and overcoming stress are training included in the program. For this developed training, again the researcher chooses learning environments supplied with modern education methods and techniques, and moves the experiential learning to the center, which aims at developing the competences of the participants to meet work practices directed to application and overcome real work and life problems.

**The purpose, importance and problem of the study**

The research criticizes the labelling of motivational activities which has fairly become a fashion trend, of which significant part do not provide any intellectual knowledge and experience, which fail to address professional competence and have no effect on achieving a corporate vision, under the name of 'Training' with significant budgets. It argues that educational intentions focused on achieving such unscientific targets as person/time practices per person, unit performance targets (CPIs) and educational cost concept cannot replace a 'training need analysis' study in reality; the programs evaluated through participant satisfaction questionnaires upon completion of training cannot develop human resources, and any activities which are distant from the scientific education management concept and which only focus on entertaining the participants cannot go beyond generating a motivation in a short time when returning back to start working. In the research, the issue how the science-based program evaluation process may be applied in such a way that enables making all partners maximally benefitted through accepting these comments. The research analyses the CIPP program evaluation model and is exemplified with by the evaluation practice performed specific to the Call Center Professional Competence Development Education Program, CCPCDEP.

The conducted research describes an evaluation process that may guide the program evaluation activity in modern businesses. Through the research questions meeting four different categories of the CIPP model, the framework on how a training program should be evaluated with its all aspects is drawn. In this context, the relevance of the research may be summarized as follows:

The research shows that the program development and evaluation is an area of specialization in education; underlines that there is a need for a model and scientific methods of program evaluation; proves that the training activities of businesses should be built on targets based on professional competences and on formulas that may ensure achievement of corporate visions, in contradiction to motivational activities; and is a practical manual that may be used by modern business in the process of program evaluation in training.

The problematic sentence of the research is as follows:

What are the comments of the participants in relation to the evaluation of the Call Centre Professional Competence Development Training Program through the CIPP model?

The research seeks for the following sub-problems:

1. Are the opinions of the participants of the Call centre professional competence development training program in relation to the context, input, process and product aspects of the program differ by sex?
2. Are the opinions of the participants of the Call centre professional competence development training program in relation to the context, input, process and product

aspects of the program differ by training spheres?

## METHODOLOGY

### Research model

The research data are collected through the raster pattern in the scope of the descriptive research. Karasar (2016) defines the raster models as research approaches that are suitable for describing a situation that existed previously or still exists. The important point in this research approach is to study the existing thing not changing it. Finally, this research also prefers the general raster pattern to determine the existing approaches of the participants in relation to the participants.

### Data collection instruments

As the data collection instrument, the professional competence development program CIPP evaluation scale developed for the research problem by researchers is used in the research. The scale used for the participants covered by the research comprises of 59 clauses and the response options are designed as five point likert scales. The clauses included in the scale are scored as 'Completely agree' (5) and 'Completely disagree' (5). The reliability coefficient of the scale is calculated as 0.98. The values obtained as a result of an analysis also ensures the 0.60 sub limit criterion envisaged in literature (Cronbach, 1990; Punch, 2005).

### Participants

The participants are 622 call centre communication agents who were serving in the operations of the Call Centre in Black Sea, Central Anatolia and Eastern Anatolia throughout Turkey, the Centre where the research was conducted in 2014 and 2015. 41.3% of the call centre agents participated in the research was in Çorum, 39.7% in Ağrı and 19% in Samsun; of which 63.2% were women, 41.8% were high-school graduates, 70.3% were between 20 and 25, 44.9% were with equally-weighted education, 98.9% was with experience of 5 years or less in the call centre, and 78.3% was with total work experience of 5 years and less.

For development of the data collection instrument of the research, Stufflebeam's (2014) principles in relation to the CIPP model and 77 scales included in the "Endustri ve Orgut Psikolojisi Alaninda Kullanılan Olcekler El Kitabi" Manual written by Çelik and Telman (2013) with 302 scales included in the "Psikoloji ve Egitimde Kullanilan Guncel Olcekler" publication written by Akin (2012) are studied and the scales of graduate and post-graduate theses developed by applying the CIPP model are analyzed, the opinions of instructors and professions of the sphere are obtained, and the questionnaire clauses are developed according to the model in the scope of this information. The questionnaire revised by expert opinions was implemented as a pilot questionnaire, the comprehensibility of the questionnaire was tested, and as no problem was faced in the process, the stage of application in the sphere was shifted. The questionnaires for participants were distributed to total 865 participants on April 15, 2015 through the support and instructions of the relevant Operational Managers; of which 155 were distributed to the Samsun Province from the Black Sea Region, 330 were distributed to the Çorum Province from the Central Anatolia Region; and 380 were distributed to the Ağrı Province from the Eastern Anatolia Region.

The research was completed at all locations as of May 15, 2015. In order to achieve sound data, 243 questionnaires filled incorrectly and incompletely were not accepted for the evaluation and the research was performed on 622 questionnaires completed accurately and completely. The construct validity of the scale is tested through the factor analysis. In order to demonstrate the factor pattern, the varimax from the upright spinning methods is also chosen as the factorizing method as a key components analysis and spinning method. In order to test the compliance of the data set to the factor analysis, the Kaiser-Meyer-Olkin (KMO) sampling efficiency test and the Bartlett globosity test were applied. The KMO value was determined as 0.97 above 0.70 which is the allowable limit, and as the Bartlett globosity test was above 0.50 and was meaningful at the 0.05 importance degree, the data set was considered compliant to the factor analysis. The Professional Competence Development Training Questionnaire, which was determined as one comprising 6 aspects together with the clarifying factor analysis was evaluated through the corroborative factor analysis.

The track diagram is provided in Figure 1. According to the analysis results, the ways and regression weights in the model are significant. It is determined that the GFI, CFI and NFI values obtained in the analysis of the structural equality model of the research questionnaire are well suited to the researched correlation; and the x2/sd and RMSEA values are at an acceptable harmony level. The standardized values in relation to the route diagram concerning the model are provided in Figure 1.

In the subsequent part, the correlation analysis provided in Table 1 also gives an idea in relation to the direction and strength of the correlation between research variables. Therefore, there is a strong positive correlation between the aspects of the research and the Professional Competence Development Training Program's CIPP evaluation levels (general situation) at the 0.01 significance level.

### Data analysis

The research findings were obtained as a result of analyses conducted by applying SPSS v23.0 ve Amos v21.0 software programs. The statistical solutions of the research were made by applying One Way ANOVA, Tukey's Test, Tamhane 2 and Independent Groups T Test, and correlation analysis techniques. In the research, the Structural Equation Modelling is applied, in addition to the difference analyses. The construct validity of the scale applied in the research is evaluated by the corroborative factor analysis as a part of first by the clarifying factor and then, the Structural Equation Modelling.

## RESULTS

### Findings in relation to the first sub problem of the research

According to the analysis findings, it is detected that the males' product evaluation – 1, context evaluation – 1, input evaluation, product evaluation – 2, context evaluation – 2 and professional competence development training program CIPP evaluation scale (general situation) levels are higher than those of the females. The correlation between the CIPP evaluation scale of the professional competence development training program of the participants and its aspects and sex is analyzed by the Independent Groups T Test.

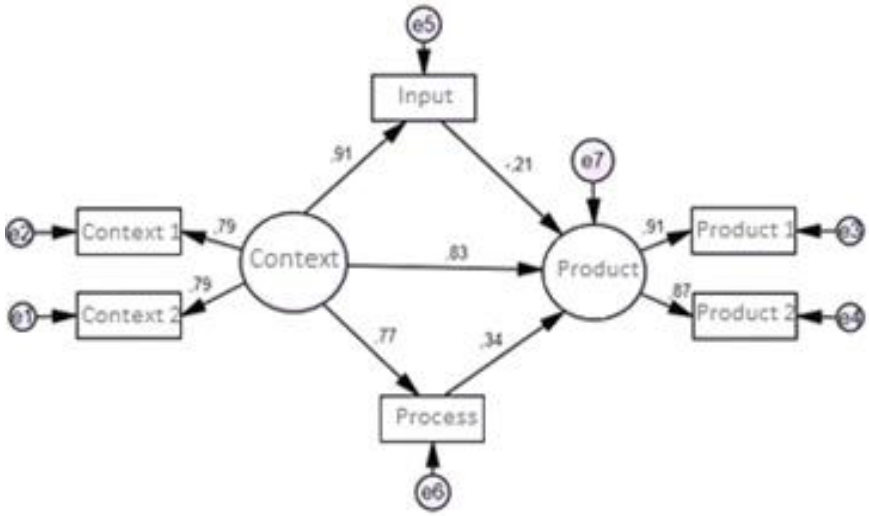


**Figure 1.** Correlation between CIPP factors.

**Table 1.** Analysis of correlation (n=622).

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Process evaluation | 1 | - | - | - | - | - | - |
| Product evaluation – 1 | 0.75** | 1 | - | - | - | - | - |
| Context evaluation – 1 | 0.58** | 0.64** | 1 | - | - | - | - |
| Input evaluation | 0.72** | 0.73** | 0.70** | 1 | - | - | - |
| Product evaluation – 2 | 0.73** | 0.79** | 0.61** | 0.65** | 1 | - | - |
| Context evaluation – 2 | 0.59** | 0.65** | 0.67** | 0.711** | 0.61** | 1 | - |
| Professional competence training CIPP evaluation scale (general situation) | 0.89** | 0.90** | 0.80** | 0.88** | 0.85** | 0.79** | 1 |

** Pearson correlation is meaningful at the p<.01 level.

According to Table 2, there is not a significant difference between the process evaluation and the sexes of the participants (p>0.05). However, there is a statically significant difference between the product evaluation – 1, context evaluation – 1, input evaluation, product evaluation – 2, context evaluation – 2 and the professional competence development training program's CIPP evaluation scale (general situation) (p<0.05). When reviewing the findings, it is detected that the males' product evaluation – 1, context evaluation – 1, input evaluation, product evaluation – 2, context evaluation – 2 and professional competence development training program CIPP evaluation scale (general situation) levels are higher than those of the females.

## Findings in relation to the second sub problem of the research

There is not a significant statistical difference between the participants' context evaluation – 1, input evaluation, and context evaluation – 2 variables and the training sphere (p>0.05); while there is a significant statistical difference between the process evaluation, product evaluation – 1, product evaluation 2- and the professional competence development training program's CIPP evaluation scale (general status) and the training area (p<0.05).

The correlation of the CIPP evaluation scale of the participant's Professional Competence Development Training Program and its aspects and the training area is analyzed according to the One Way ANOVA Analysis. For the homogeneity analysis of the group variances the Levene Test is applied. The results of the Levene Test are provided in Table 3. When reviewing Table 3, it is detected that the group variance of the variables is equal (p>0.05). In order to determine that the groups are statistically different from each other, the Tukey Test is applied from paired comparison tests. The findings of the One Way ANOVA Analysis are provided in Table 4.

In Table 4, there is a statistically significant difference between the participants' context evaluation – 1, input

**Table 2.** Analysis of difference by sex (n=622).

| Variable | Sex | N | $\overline{X}$ | s.s. | F | t | P |
|---|---|---|---|---|---|---|---|
| Process evaluation | Female | 393 | 3.82 | 0.81 | 0.01 | -1.78 | 0.07 |
| | Male | 229 | 3.94 | 0.84 | | | |
| Product evaluation-1 | Female | 393 | 3.75 | 0.79 | 0.42 | -2.77 | 0.00 |
| | Male | 229 | 3.94 | 0.82 | | | |
| Context evaluation-1 | Female | 393 | 3.66 | 0.78 | 1.15 | -3.22 | 0.00 |
| | Male | 229 | 3.88 | 0.87 | | | |
| Input evaluation | Female | 393 | 3.61 | 0.84 | 0.01 | -3.31 | 0.00 |
| | Male | 229 | 3.84 | 0.84 | | | |
| Product evaluation-2 | Female | 393 | 3.71 | 0.87 | 0.97 | -2.30 | 0.02 |
| | Male | 229 | 3.88 | 0.92 | | | |
| Context evaluation-2 | Female | 393 | 3.56 | 0.92 | 0.19 | -3.19 | 0.00 |
| | Male | 229 | 3.81 | 0.95 | | | |
| CIPP evaluation scale (general situation) | Female | 393 | 3.71 | 0.71 | 0.25 | -3.10 | 0.00 |
| | Male | 229 | 3.90 | 0.74 | | | |

**Table 3.** Training area - Levene test.

| Variable | Levene value | p value |
|---|---|---|
| Process evaluation | 0.22 | 0.80 |
| Product evaluation – 1 | 0.87 | 0.42 |
| Context evaluation – 1 | 2.62 | 0.07 |
| Input evaluation | 0.12 | 0.88 |
| Product evaluation – 2 | 0.16 | 0.85 |
| Context evaluation – 2 | 0.91 | 0.40 |
| Professional competence development program CIPP evaluation scale (general status) | 0.72 | 0.49 |

evaluation and context evaluation – 2 variables and the training area ($p>0.05$). However, there is a statistically significant difference between the process evaluation, output evaluation – 1, output evaluation – 2 and the professional competence development program's CIPP evaluation scale (general status) and the training area ($p<0.05$).

As a result of the One Way ANOVA analysis, it is found out that the distribution of the training is different from others for at least one group. In order to determine that the groups are statistically different from each other, the Tukey Test and the Tamhane T2 Test from paired comparison tests were performed. In Table 5, the findings of the Tukey and Tamhane T2 Tests are provided. According to the analysis, finding, it is detected that the levels of process development, product evaluation – 1, product evaluation – 2 and professional competence development training program CIPP evaluation scale (general status) of those verbally trained are higher than those of the persons trained in equal weight. ($p<0.05$)

## DISCUSSION

It has been determined that the scorings focused on the CIPP Model's context, input and product aspects vary by

**Table 4.** Analysis of difference by training area (n=622) (ANOVA results).

| Variable | Area | N | $\overline{X}$ | $SH_X$ | Var. K. | K. T. | K. O. | F | P |
|---|---|---|---|---|---|---|---|---|---|
| Process evaluation | Verbal | 200 | 4.02 | 0.86 | Inter G. | 7.02 | 3.51 | 5.21 | 0.01 |
| | Digital | 143 | 3.83 | 0.81 | Intra G. | 416.78 | 0.67 | | |
| | EA | 279 | 3.78 | 0.79 | Total | 423.80 | - | | |
| | Total | 622 | 3.87 | 0.82 | - | | | | |
| Product evaluation – 1 | Verbal | 200 | 3.95 | 0.80 | Inter G. | 5.70 | 2.85 | 4.41 | 0.01 |
| | Digital | 143 | 3.81 | 0.84 | Intra G. | 400.63 | 0.65 | | |
| | EA | 279 | 3.73 | 0.78 | Total | 406.34 | - | | |
| | Total | 622 | 3.82 | 0.80 | - | | | | |
| Context evaluation – 1 | Verbal | 200 | 3.83 | 0.87 | Inter G. | 2.39 | 1.20 | 1.75 | 0.17 |
| | Digital | 143 | 3.72 | 0.84 | Intra G. | 423.75 | 0.68 | | |
| | EA | 279 | 3.69 | 0.78 | Total | 426.15 | - | | |
| | Total | 622 | 3.74 | 0.82 | - | | | | |
| Input evaluation | Verbal | 200 | 3.79 | 0.88 | Inter G. | 3.06 | 1.53 | 2.11 | 0.12 |
| | Digital | 143 | 3.68 | 0.86 | Intra G. | 449.25 | 0.73 | | |
| | EA | 279 | 3.63 | 0.81 | Total | 452.31 | - | | |
| | Total | 622 | 3.70 | 0.85 | - | | | | |
| Product Evaluation – 2 | Verbal | 200 | 3.94 | 0.90 | Inter G. | 10.10 | 5.05 | 6.38 | 0.00 |
| | Digital | 143 | 3.79 | 0.88 | Intra G. | 489.75 | 0.79 | | |
| | EA | 279 | 3.65 | 0.88 | Total | 499.85 | - | | |
| | Total | 622 | 3.78 | 0.89 | - | - | - | | |
| Context evaluation – 2 | Verbal | 200 | 3.76 | 0.98 | Inter G. | 4.27 | 2.14 | 2.39 | 0.09 |
| | Digital | 143 | 3.67 | 0.96 | İntra G. | 552.82 | 0.89 | | |
| | EA | 279 | 3.57 | 0.90 | Total | 557.09 | - | | |
| | Total | 622 | 3.65 | 0.94 | - | - | - | | |
| Professional competence development training program CIPP evaluation scale (general situation) | Verbal | 200 | 3.90 | 0.74 | Inter G. | 5.182 | 2.59 | 4.94 | 0.01 |
| | Digital | 143 | 3.77 | 0.75 | Intra G. | 324.91 | 0.52 | | |
| | EA | 279 | 3.69 | 0.69 | Total | 330.09 | - | | |
| | - | 622 | 3.78 | 0.72 | - | - | - | | |

**Table 5.** Tukey and Tamhane T2 test results in relation to training area.

| Variable | Area (I) | Area (J) | Average difference (I-J) | Standard error | Significance level |
|---|---|---|---|---|---|
| Process evaluation | Non-graphic | Verbal | 0.19 | 0.09 | 0.12 |
| | | Equal weight | 0.24* | 0.07 | 0.01 |
| Product evaluation - 1 | Non-graphic | Numerical | 0.14 | 0.08 | 0.26 |
| | | Equal weight | 0.22* | 0.07 | 0.01 |
| Product evaluation-2 | Non-graphic | Numerical | 0.15 | 0.09 | 0.25 |
| | | Equal weight | 0.29* | 0.08 | 0.00 |
| Professional competence development training program CIPP evaluation scale (general Status) | Non-graphic | Numerical | 0.14 | 0.07 | 0.19 |
| | | Equal weight | 0.21* | 0.06 | 0.00 |

sex, and the females made a lower scoring than the males. This situation may be interpreted with this that the elaborative and normative thinking style are more dominant in women. In other words, the stereotypes in relation to sex are also very effective on the thinking styles. There are also researches supporting to this finding in literature (Kus and Altun, 2012; Kavgaoglu and Altun, 2016; Deaux, 1985; Dinc and Bal, 2008; Sternberg, 2009; Hogg and Vaughan, 2007; Kaufman, 2002; Saracaloglu et al., 2008; Tucker, 1999). Similarly, in the research conducted by the Scial Structures Research and Development Association (Tokageder, 2014), among the common features of successful women managers, the ambitious and elaborative (26.7%) visions in the private lives and elaborative (13.8%) visions in the business lives, distinctively from males, are emphasized.

Another attractive finding is that there is not any significant difference between the visions of the females and the males in the process aspect of the CIPP model. The Professional Competence Development Program is designed in such a manner that enables instructors to apply frequently and appropriately to the principles of the adult training program and the activities focused on the participant interaction and active participation. Therefore, the participants may enrol the education irrespective of sex and education level and change the direction of the process, solve problems together and make judgments and most importantly, entertain while doing all of these. Another finding supporting to this finding is that an inversely proportional correlation has been detected between the input and product aspects of the CIPP model in the corroborative factor analysis of the research. This finding may be interpreted specific to the research as follows: even when there are not any location backgrounds and training materials, as well as physical and digital application environments; when participants think that they have gained significant gains, they may make very positive feedbacks focused on their products.

Another finding of the research is that the scoring focused on the CIPP aspects varies by training area. The verbally trained students have scored the soft skill learning environments appropriate to their thinking and learning styles higher than the equal weight supporters. It is also supported by the observations in the application processes that the students trained in the digital and equal weight areas are more willing and successful in technical education. And the departments of the instructors participated in the research are mainly digital and equal weight, and it was observed that they are also more willing and successful similarly in the educational processes of the technical education which is their specific area and have difficulties in managing their soft skills.

In literature, there are also researches that verify the correlation between the department and the thinking style. For example, in the research conducted by Ticker (1999), the thinking styles of the students in the accounting department are studied by age, department, education period and sex varieties. It was found out in the research that the dominant thinking styles of the area students are rule-based, elaborative, hierarchic, traditional and extroversive. In the research conducted by Kaufman (2002), the thinking styles of the students getting education in the journalism and creative authorship departments of the authorship profession are studied. The Difference in the dominant thinking styles by gained education is found out.

Therefore, it is determined that the students of the journalism department dominantly use the rule-based style, while the students gaining the creative authorship education dominantly use the self-reliant thinking style. In the research conducted by Saracaoglu et al. (2008), it is found out that the thinking styles of the Education Department students vary by both the departments of the high schools they graduated from and the departments in the university. Therefore, the students graduated from the Science and Math spheres in the high schools dominantly use the self-reliant, elaborative and traditionalist thinking styles; the alumni of the Turkish-Math department dominantly use the integrated and innovative thinking styles; and the graduates of the Verbal department dominantly use the rule-based, hierarchic and singular thinking styles. And when studying the thinking styles of the students in their departments in the university, it is observed that the integrated thinking styles of the students of the Primary School Teaching are more dominant than those of the students of the Science and Social Sciences instructors.

In the research conducted by Durdukoca (2011), the thinking styles of the prospective teachers are analyzed by their departments, and a significant difference is observed in all other thinking styles except hierarchic, introvert and traditionalist thinking styles between the Primary Education Mathematic Teaching and the Social Sciences Teaching in favour of the Primary Education Mathematic Teaching. And in this research, in which the CIPP model is applied, the verbal area participants scored these learning environments which are appropriate to the thinking and learning styles, as exemplified in the literature, higher than the equal weight participants. Both the discussions conducted by the instructors and the direct observations performed for the education processes support these findings. Therefore, while the students studied in the digital and equal weight spheres were more willing and successful in technical education, the interests, attentions and successes of the verbally educated students in soft skills were more. Particularly, it is observed that in the process activities in which the self-expression, team works and social interaction was essential, the learning motivation of the verbally educated students is higher than those of the equal weight and digital students.

## Conclusion

The research findings may be summarized as follows: In the scorings based on the dimensions of the CIPP evaluation scale, significant differences have been found out by sex, education level and education sphere. In different aspects of the CIPP questionnaire, the males made higher scorings than the females; the high school graduates made higher scorings than the high school and upper secondary school students; and the verbal education students made higher scorings than the equal weight supporters.

## SUGGESTIONS

1. It should be taken into account that sex is an important predictor in the expectation and perception in instructional design processes. Both the instructional design and the operation and evaluation processes should also be considered by the elaborative vision, in addition to the integrated vision. Using also open-ended questions that may enable the elaborative profile to express itself instead of using only multiple-choice, matching or gap filling questions in the sample evaluation processes; planning of the class and program periods by considering individual differences, arranging learning environments not only functionally, but also in such a manner that may enable the participants to feel comfortable and within social interaction, where they may study by entertaining; being of the teaching style of instructors comprehensive; and domination of empathy and tolerance in class management may be considered among the products of this research that may be recommended for practitioners and other researchers, specific to this sub problem examining the sexual variable.
2. If the research findings are considered and arranged by the adult learning principles of the process aspect of the education, it may be considered as an aspect in which participants entertain more and most of them score at the highest level. Therefore, practitioners may be recommended to arrange the instructional design and education materials in such a way supporting active participation.
3. Researchers and practitioners may consider the difference in the department/education area and thinking style in design of Soft Skill training programs, and work on homogenous groups. When working with hetero-geneous groups, while illustrations from business processes work weighted in the instructional designs to be arranged for participants in the digital-equal weight areas, the low detail intensity, big images, pragmatic philosophy, showing and having something made, and problem solution; for participants in the verbal area, open-ended questions, processes enabling examination, discussion, and processes enabling social interaction and self-expression may be used.

## Conflict of Interests

The authors have not declared any conflict of interests.

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Educational Research and Reviews

*Full Length Research Paper*

# The effect of brightness of lamps teaching based on the 5E model on students' academic achievement and attitudes

**Hatice Guzel**

Necmettin Erbakan University, Konya, Turkey.

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**The purpose of this research was to examine and compare the effect of teaching the brightness of lamps, which is a topic for grade 11 physics lesson, on student achievement and attitude according to the 5E model belonging to the constructivist learning theory and the traditional teaching method. The research was conducted on 62 11th grade students in İdil High School during the spring semester of 2009/2010 academic year. The quasi-experimental method was used in the research and the significance level was p=0.05. A meaningful difference(p<0.05) was observed on the experimental group according to the results of the independent samples t-test related to the post-test scores of brightness of lamps Achievement Test(BLAT)" of the students in the experimental and control groups. It was concluded that the worksheets applied, cartoons, animation and laboratory activities used while teaching the topic "brightness of lamps " according to the 5E model provided better understanding for the students, increased the motivation related to the lesson, and created a positive effect on understanding abstract concepts. The results of the attitude scale showed that the differences between the groups were insignificant (p>0.05).**

**Key words:** 5E model, constructivist learning, electric, attitude.

## INTRODUCTION

Today, the most important purpose of reforms related to education is to provide a system which would help students learn with understanding. In order to manage this, it is agreed that it is necessary to apply new methods through learning and teaching in which prior knowledge of students are considered and the students would be able to attain the information on their own- that is to say that students actively engaged in learning process and take responsibilities in learning. Contemporary approaches emphasize a student-centered teaching which takes student learning as the base.

This is done by considering the individual difference of students and their learning characteristics. The effectiveness of the constructivist learning theory, which is one of

E-mail:hguzel@konya.edu.tr. Tel:+90 332 323 82 20.

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these approaches, has increased recently. The accumulation of knowledge that a student or an individual possess at any time is very important in responding to new information or stimulus (Burhberger, 2000; Lewis, 2001; Osborne and Wittrock, 1983; Sensoy et al., 2006). Teachers in many countries, especially in developed countries are welcoming educational understanding based on the constructivist approach with open arms (Powell et al., 1986).

In this country, primary and secondary education curricula have been prepared based on the constructivist approach since 2005/2006 academic year. Secondary education physics curriculum was developed according to modern learning theories and approaches, and the constructivist approach was adopted in the studies of the curriculum. This was done because it is possible to say that it advocates a student-centered learning and tries to provide a learning environment which would contribute to increasing high-level student motivation and thinking skills (Boddy et al., 2003).

In constructivist student-centered classrooms, the mental energy of a student is always high in most of the lessons. Students are encouraged to hypothesize and test these hypotheses. They do not receive the explanations made by teachers passively. They acquire the necessary skills to apply what they have learnt to other problems (Limon, 2001; Smerdon et al., 1999).

The constructivist approach is student centered but it is controlled by teachers. The mental energy of a teacher is also elevated because he/she guides students during lessons as they structure the information. The increase in students' interest increases teachers' efforts and by this, a more productive and enjoyable learning environment is provided. An ideal learning environment increases involvement, critical thinking and permanence of knowledge (Lord, 1999). Also, by this, students may check their own learning process (Brooks and Brooks, 1999).

Different learning and teaching models have been developed for the use of the constructivist learning approach. One of these models which have been carried out recently with different process phases in the education process is the 5E learning model. The 5E model is a science teaching method which depends on research-based constructivist learning theory and experimental activities. This model was developed by Rodger Bybee, who is one of the leading names of Biological Science Curriculum Study (BSCS), in 1967 (MMS, 2002). In the researches conducted on the 5E model, there are findings which support that the model increases achievement of students, provides their conceptual development and positevly changes their attitudes (Ozsevgec et al., 2006; Saglam, 2006).

The 5E model has been built on the results of researches which have been determined within the standards of national science education (Newby, 2004).

The model consists of 5 phases they are:

1. Engage-Enter
2. Explore
3. Explain
4. Elaborate and
6. Evaluate (Carin and Bass, 2005).

The phases of the 5E model can be briefly explained as follows:

**Engage:** The lesson begins with an intriguing introduction which would provide a situation for students to understand a problem that they encounter.
**Explore:** Students produce ideas to solve problems by working together.
**Explain:** The teachers encourage students to describe what they have done and to explain the results while the teacher provides scientific explanations.
**Elaborate:** Students are encouraged to apply what they have learned to new situations.
**Evaluate:** This is the phase in which students are expected to reflect their understanding. In this phase, they also change their ways of thinking or their behaviours.

The 5E models helps in learning a new concept or understand a well-known concept thoroughly (Ergin et al., 2006).

In this country, various activities and materials have been developed according to the constructivist learning theory (Gurses, 2006; Ozmen and Yildirim, 2005; Ozsevgec et al., 2006; Sifoglu, 2007). These developed activities and materials are generally prepared in accordance with the 5E model. It has been expressed that this is the model whose usability is the highest (Gurses, 2006). As a result of the review made in the literature, it has been observed that most of the materials which were prepared according to the 5E model are in accordance with all stages of the model and equal emphasis is laid on each stage (Er Nas et al., 2007; Gurses, 2006; Orgill and Thomas, 2007).

It is known that students in many conducted researches could not easily learn physics concepts, which are artificial, and they make mistakes in these concepts (Kucukozer, 2004). In his research, Keser (2003) determined that there were many conceptual problems which are thought to be caused by the contents of many artificial concepts such as atom, electric charge and electrification.

Teaching of electricity as a topic using the 5E model of the constructivist approach and researching the effect of this model on the academic success and attitudes of students would be important to provide effective, permanent and meaningful learning.

## Aim of the study

The purpose of this research is to search the effect of teaching the brightness of lamps, which is an 11th grade physics lesson, using the 5E model of the constructivist learning theory and the traditional method on academic achievement and attitudes of students.

## METHODOLOGY

The quasi-experimental method was employed in this research. The research has a pretest-posttest design with experimental and control groups. This method appoints the sample to the groups randomly and determines the groups (Cepni, 2010). The application was carried out in both the experimental and control groups by the researcher.

### Participants

The study population of the research consisted of 62 grade 11 students attending İdil High school in the Şırnak province during the 2009/2010 academic year. The control group had 33 students and the experimental group, 29 students. These students were selected according to the random sampling rule. Group and individual differences of students in both groups were minimized before starting the application by means of random appointment.

### Data collection tools

In this research, Brightness of Lamps Achievement Test (BLAT) and Science Attitude Scale were used as data collection tools.

### Achievement test

The achievement test, which was used to determine the effect of the 5E model, was suggested for the constructivist learning theory on academic achievement of students. It was prepared by asking for experts' opinions. A test including 20 questions that match up with the attainments based on the grade 11 physics course book of the Ministry of National Education (MNE) was prepared. This test was conducted on 60 grade-12 students who studied this topic the previous year. Five questions whose item distinguishing index was 0.19 or less were eliminated in consequence of SPSS 16.0 item analysis and the number of questions in LPBT was decreased to 15. The reliability of the test was determined as 0.737 by using Kr-20. Thus, the tests carried out in the experimental and control groups were obtained.

### Science attitude scale

The science attitude scale (SAS) which was carried out before and after the application was developed by Yaşar Baykul and its reliability was calculated as 0.92. This 30-item likert-type attitude scale consists of 5 degrees which are "I completely agree, I agree, I am doubtful, I disagree, I never disagree" (Dalkiran & Kesercioglu, 2005).

### Data analysis

The data collected in the research was analyzed using statisitical package for social sciences (SPSS) 16.0 statistical package program. Independent t test was used in comparing the experimental and control groups with each other while evaluating the scores obtained from the brightness of lamps achievement test and the attitude scale related to physics lesson. The dependent t test was employed to compare the pretest and posttest scores within both groups. In both t-tests, the significance level was accepted as 0.05.

### Application of the research

The research was designed and applied during the 2009/2010 academic year. The research was designed according to the semi-experimental method and its application was carried out during the spring semester. The application phase of the research was carried out 3 hours weekly for 3 weeks in the experimental and control groups.

During the 3 h of physics lessons per week, the students in the experimental group were divided into groups of two and three before applications. In order to provide an environment in which they would use their time productively while collaborating, students were allowed to choose their own group. This is appropriate for the 5E model. The purpose of dividing students into groups is to create a competitive environment between the groups and to encourage them help each other as a team. The Brightness of Lamps Achievement Test (BLAT) was applied as the pretest to the students in the experimental and control groups.

The students in the experimental group received worksheets and they did activities related to the topic. In order to enable the students in the experimental group to visualize the topic in their minds, increase visual richness during lessons, animations and demonstrations collected from various resources were displayed through computers. Besides, cartoons obtained from various resources and circuit schemas were exhibited at a location in the classroom that students could easily see during the application.

The lesson plan given to the students in the experimental group was also provided for the students in the control group within the period according to the traditional teaching methods. It is possible to characterize the traditional teaching environment as a classroom environment in which students study on their own and they are extremely dependent to course books and workbooks. Therefore, the students in the control group were informed about the topic to be studied one week before and they were told to come to lesson prepared. The subject to be studied was explained by the researcher and significant points were emphasized. Then, the students were asked various questions in order to measure whether they understood the topic and to help them strengthened the information. Techniques which are supplementary resources oriented, worksheets and course book-centered tests were also used, along with verbal lecture. In consequence of the study process, The Brightness of Lamps Achievement Test (BLAT) was applied as the posttest to both experimental and control group.

## FINDINGS

The BLAT pretest scores of the students of the experimental group in which the lesson was studied according to the 5E model and the students of the control group in which the lesson was taught according to the traditional teaching method were compared using the independent t-test and the results are given in Table 1 and Figure 1.

**Table 1.** Results of t-test related to the BLAT pretest scores of the students in the experimental and control groups.

| Measurement | N | X | Std. Dev. | Df | t | p |
|---|---|---|---|---|---|---|
| Pretest (Control) | 33 | 3.88 | 1.244 | 60 | -0.121 | 0.904 |
| Pretest (Experimental) | 29 | 3.93 | 2.086 | | | |

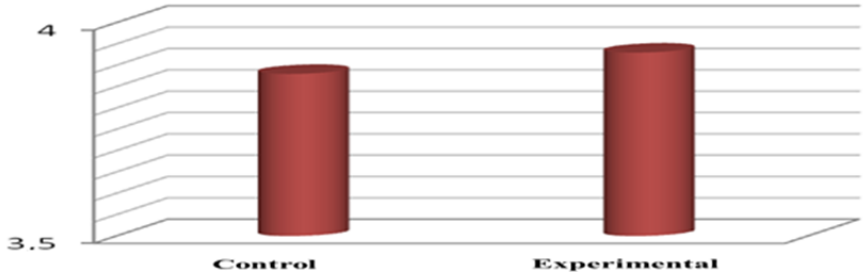


**Figure 1.** BLAT pretest mean value.

**Table 2.** Results of the t-TEST related to the BLAT posttest scores of the students in the experimental and control groups**.**

| Measurement | N | X | Std.Dev. | Df | t | p |
|---|---|---|---|---|---|---|
| Posttest (Control) | 33 | 5.73 | 2.541 | 60 | -4.349 | 0.037 |
| Posttest (Experimental) | 29 | 8.31 | 2.072 | | | |

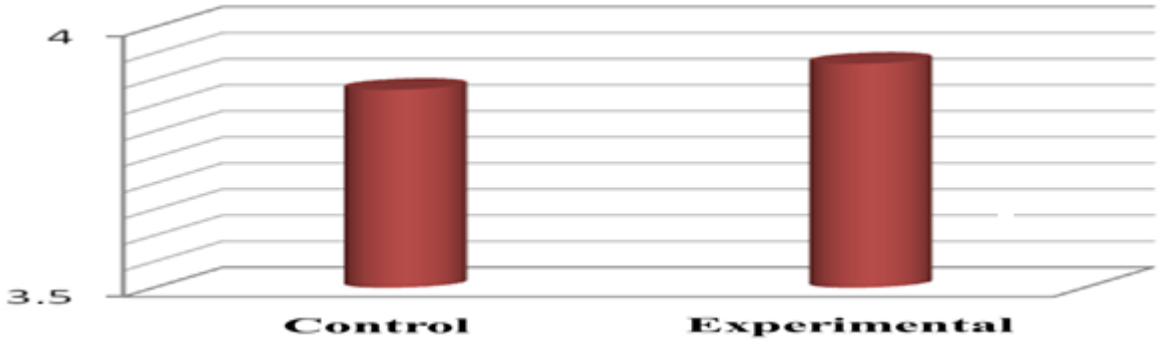


**Figure 2.** BLAT posttest mean values

As can be seen in Table 1, there is no meaningful difference between the pretest scores of the experimental and control groups (p= 0.904 >0.05). Accordingly, it is likely to say that both groups were close to each other before studying the topic. BLAT posttest scores of the experimental and control groups were compared by means of independent t-test, and the results are given in Table 2 and Figure 2.

Table 2 shows that there is a considerable difference between the posttest scores of the control group and the experimental group (p = 0.037 <0.05). In the post test, the experimental group was more successful than the control group. The dependent t-test analysis was conducted in order to understand whether there was a meaningful difference between the pretest and posttest scores of the students in the experimental and control

**Table 3.** Results of the t-test related to the BLAT pretest and posttest scores of the students in the experimental group.

| Measurement | N | X | Std. Dev. | Df | t | p |
|---|---|---|---|---|---|---|
| Pretest | 29 | 3.93 | 2.086 | 28 | -18.639 | 0.000 |
| Posttest | 29 | 8.31 | 2.072 | | | |

**Table 4**. The results of t-test related to the BLAT Pretest-posttest scores of the students in the control group.

| Measurement | N | X | Std.Dev. | Df | t | p |
|---|---|---|---|---|---|---|
| Pretest | 33 | 3.88 | 1.244 | 32 | -4.499 | 0.000 |
| Posttest | 33 | 5.73 | 2.541 | | | |

**Table 5.** Results of the t-test related to the "affection" subfactor of the students in the experimental and control groups.

| Pretest | Groups | N | X | Std.Dev. | Df | t | p |
|---|---|---|---|---|---|---|---|
| Affection | Control | 33 | 25.33 | 6.392 | 60 | 1.033 | 0.878 |
| | Experimental | 29 | 23.76 | 5.495 | | | |

groups.

BLAT pretest and posttest scores of the students in the experimental group was compared using dependent t-test, and they are given in Table 3. As seen in Table 3, there is a significant difference between the pretest and posttest scores of the experimental group (p= 0. 000 <0.05). Students in the experimental group were more successful in the posttest in comparison with the pretest. The results of the t-test related to BLAT pretest-posttest scores of the students in the control group are given in Table 4.

When Table 4 is examined, it is seen that there is a meaningful difference between the pretest and posttest scores of the control group (p =0. 000 <0.05). The control group was more successful in the posttest in comparison with the pretest. When the groups are compared, it is seen that BLAT pretest mean score of the experimental group is 3.93; pretest mean score of the control group is 3.88. Posttest score means of the experimental and control groups are 8.31 and 5.73 respectively. As seen, there is no a meaningful difference between the pretest scores of the groups but there is a significant difference on f the experimental group in terms of posttest scores.

## The results of the attitude scale

The attitude scale used in the research has 3 subfactors. The items numbered 1,4,7,10,13,15 and 18 are related to the "affection" subfactor, the items numbered 2,5,8,12,14 are related to the "interest" subfactor and the items numbered 3,6,9,11,16 and 17 are related to the "importance of physics in daily life" subfactor. The results of the scale were evaluated using t-test according to these factors.

## Examination of "affection" subfactor

Pretest scores of the experimental and control group students related to "affection" subfactor were compared using independent t-test and the results are given in Table 5. According to Table 5, there is no significant difference between the pretest scores related to the "Affection" subfactor of the students in the experimental and control groups (p =0. 878 >0.05). Posttest scores related to the "Affection" subfactor of the students in the experimental and control groups were compared by means of independent t-test and the results are displayed in Table 6. As seen in Table 6, there is no significant difference between groups (p=0.738 >0.05). This result shows that there are no changes in the attitudes of the students in terms of "affection" subfactor.

## Examination of "interest" subfactor

Pretest scores of the experimental and control groups

**Table 6.** Results of the t-Test related to the posttest scores belonging to the “affection” subfactor of the students in the experimental and control groups.

| Posttest | Groups | N | X | Std.Dev. | Df | t | p |
|---|---|---|---|---|---|---|---|
| Affection | Control | 33 | 24.36 | 7.176 | 60 | 0.226 | 0.738 |
| | Experimental | 29 | 23.97 | 6.598 | | | |

**Table 7.** Results of the t-test related to the pretest scores belonging to the “interest” subfactor of the students in the experimental and control groups.

| Pretest | Groups | N | X | Std.Dev. | Df | t | p |
|---|---|---|---|---|---|---|---|
| Interest | Control | 33 | 11.67 | 2.723 | 60 | -1.169 | 0.450 |
| | Experimental | 29 | 12.52 | 3.007 | | | |

**Table 8.** Results of the t-test related to the posttest scores belonging to the “interest” subfactor of the students in the experimental and control group.

| Posttest | Groups | N | X | Std.Dev. | Df | t | p |
|---|---|---|---|---|---|---|---|
| Interest | Control | 33 | 11.45 | 2.862 | 60 | -0.837 | 0.558 |
| | Experimental | 29 | 12.10 | 3.244 | | | |

related to the “Interest” subfactor were compared using independent t-test and the results are given in Table 7. According to Table 7, there is no considerable difference between the pretest scores of the experimental and control groups related to the “Interest” subfactor of the attitude scale (p=. 450 >0.05). Posttest scores related to the “Interest” subfactor of the experimental and control groups were compared using independent t-test and the results are given in Table 8. According to Table 8, as the significance level is (p=0.558>0.05), there is no meaningful difference between the groups. It is possible to say that this study could not make a meaningful difference in the attitudes of the students in terms of “interest” subfactor.

### Examination of “importance of physics in daily life” subfactor

The pretest scores of the experimental and control groups related to the “importance of physics in daily life” subfactor were compared using independent t-test and the results were given in Table 9. When Table 9 is examined, it is seen that there is no significant difference between the pretest scores of the experimental and control groups in terms of “importance of physics in daily life” subfactor (p=0.114>0.05). The posttest scores of the experimental and control groups related to the subfactor “importance of physics in daily life” were compared using independent t-test and the results are given in Table 10. As the significance level was (p=0.214>0.05) according to Table 10, no significant differences were determined between groups. It is possible to say that this study did not make any differences in student attitudes in terms of “importance of physics in daily life” subfactor.

## RESULTS AND DISCUSSION

In the research, the effects of teaching the topic “Brightness of Lamps” according to the 5E model on academic achievement and attitudes of students were investigated and the following results were obtained:

It was observed that there were no significant differences between the results of the BLAT pretest applied to the students in the experimental and control groups. As a result, it was observed that the students in the experimental group in which the 5E model was carried out were more successful than the students in the control group. For the experimental group in which lessons were studied in accordance with the 5E model, a considerable difference was observed between the success points of BLAT which was carried out before and after the application. Based on this result, it is possible to say that lessons which are taught in accordance with the constructivist E model with computer-support and material use, have a great effect on the students’ achievements.

**Table 9.** Results of the t-test related to the pretest scores of the students in the experimental and control groups in terms of “importance of physics in daily life”.

| Pretest | Groups | N | X | Std.Dev. | Df | t | p |
|---|---|---|---|---|---|---|---|
| Importance of physics in daily life | Control | 33 | 21.94 | 2.715 | 60 | 2.314 | 0.114 |
| | Experimental | 29 | 20.14 | 3.409 | | | |

**Table 10.** Results of t-test related to posttest scores of the students in the experimental and control groups in terms of the subfactor “importance of physics in daily life”.

| Posttest | Groups | N | X | Std.Dev. | Df | t | p |
|---|---|---|---|---|---|---|---|
| Importance of physics in daily life | Control | 33 | 22.18 | 3.015 | 60 | 2.144 | 0.214 |
| | Experimental | 29 | 20.41 | 3.480 | | | |

Similar results were found in consequence of investigation in other literatures (Akdeniz and Keser, 2003; Aydogmus, 2008; Balcı et al., 2006; Er Nas et al., 2010; Ergin et al., 2006; Gurses, 2006; Hand and Treagust, 1991; Kilavuz, 2005; Ozerbas, 2008; Ozmen and Yildirim, 2004; Ozsevgec, 2007; Ozsevgec et al., 2006; Saglam, 2006; Saka, 2006; Wilder and Shuttleworth, 2004; Yildiz, 2008).

In the research, it was determined that the worksheets used in the lessons which were taught according to the 5E model had positive effects on understanding abstract concepts by students. The search done in the literature provided similar results obtained in this research (Gurses, 2006; Ozmen and Yildirim, 2005). According to the results obtained from some researches, the strengths of worksheets which are considered to be effective on students’ achievements can be regarded as: depending on individual group work and collaborative learning (Ozmen and Yildirim, 2005; Saka, 2006); placing emphasis on association with daily life (Ozsevgec, 2007); and including activities which are based on simple equipment (Keser, 2003).

In the research, it was observed that the cartoons, animations and laboratory activities which were used in lesson teaching based on the 5E model increased students’ motivation towards the lesson and created positive effects on understanding abstract concepts. Similar results were found (Yalcın, 2003). In the research, it was determined that one-on-one interviews with the students and group works in the experimental group affected their motivation to learn in a positive way. Similar results were provided in Ozmen and Yildirim (2005) and Turker (2009).

The results of the attitude scale applied in the research shows that there are no significant differences in terms of attitude levels towards physics lesson between the experimental and control groups, but it was observed that the students in the experimental group were more willing and interested in the lesson during application. The search in the literature shows that there are researches having similar (Aydogmus, 2008) and contrary results- that is to say, researches show that the lessons which are studied according to the 5E model change the attitudes of the students in a positive way (Akar, 2005; Balcı et al., 2006; Baser, 2008; Boddy et al., 2003; Kocakulah and Kocakulah, 2007; Seyhan and Morgil, 2007; Turker, 2009).

In the research, it was seen that it is quite hard under the conditions of our country to teach all lessons through activities in which the 5E model is used. Similarly, it was determined by Sezen et al. (2009) in their research which was conducted with teachers of that some subjects were not appropriate for the 5E model and the models had some problems such as the time-consumption. It was stated that preservice teachers had difficulties in the phases of the model during application; they could not establish classroom authority. Related to the students, it was observed that their prior knowledge was inadequate and they got bored using of the model continually. In some research, it was expressed that materials were inadequate while using the 5E model (Baskan et al., 2007; Bozdogan and Altuncekic, 2007).

## SUGGESTIONS

1. Teachers should be informed about the use of constructivist approach, which is one of the new learning approaches.
2. While evaluating student success, performance of students should be considered, along with written exams and tests. Besides, students should save their works and portfolios ought to be formed in order to take these works into evaluation.
3. It has been observed that while applying the 5E model, application phase takes long time. It is possible to use

time more effectively by giving students homework for enter and evaluation phases.
4. It is necessary to use multimedia combining graphics, animations, simulations, sounds, colors, softwares and video clips in the teaching environment, along with real models and shapes.

## Conflict of Interests

The author has not declared any conflict of interests.

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Educational Research and Reviews

*Full Length Research Paper*

# Comparative analysis of teacher trainee students' e-learning technology (ELT) readiness towards promoting global curriculum best practice

**Edna N. Ogwu**

University of Nigeria Nsukka, Enugu State, Nigeria.

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**This study compares teacher trainee students (TTSs), electronic learning technology (ELT) readiness, competence as well as their constraints to ELT readiness using 373 University education students' from Botswana and Nigeria that are randomly selected. Data was descriptively analysed based on the research objectives and hypotheses using mean analysis, frequency counts, independent t-test and Pearson correlation analysis. Results indicate a significant difference between Botswana and Nigerian TTSs' in ELT preparation t (371) = -6.26, p<0.05 and competency t (371) = -1.96, p<0.05. However, Nigeria seems better prepared and more competent than their counterpart. Results further indicate a significant relationship r (371) =0.274, p=0.05 between TTSs ELT preparedness and their competence irrespective of their location. This indicates that TTSs mode of preparation influenced their competency in ELT. Students are faced with many challenges ranging from lack of ELT knowledge, technical staff, computers, internet connectivity, power outage, interest among others. This has implications for teacher preparation and global practices.**

**Key words:** Botswana, competence, E-learning technology, Nigeria, readiness.

## INTRODUCTION

E-learning technology (ELT) is an innovative medium used today in modern classrooms for teaching and learning especially in distance education using internet. It is a technology that is used by everyone in a global setup especially by teachers to reach a wider population. According to Shahadat et al. (2012) and Boulton (2013), ELT has radically and positively impacted education and training globally by transforming teaching and learning process. Acquisition of ELT skills is strongly determined by an individual's mode of preparedness or readiness to acquire the skill.

Readiness in ELT is a necessity for teachers at various knowledge points such as primary, secondary, tertiary institutions, workshops, cyber café, through friends and even at individuals' home. Research in Botswana has shown that there is an acute shortage of high skilled and hands-on personnel necessary for steering the emerging digital economy in developing countries (Mutula and Van

E-mail: ogwue@yahoo.com.

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Brakel, 2007). The research also shows that distance education using internet is not yet in operation in university of Botswana which gives a great concern to global practices. Nigeria University is also not exceptional in this practice among developing nations from the researchers observations.

ELearning technology/ICT preparation is therefore needed by teachers on training to power the emerging digital economy for effective pedagogy. This provides teachers and learners access to vast stores of knowledge beyond the school learning environment at anytime and anywhere using online skills via internet and computer (Ebirim, 2010). Empowering teachers mean empowering a whole nation, hence teacher trainee students is the focus of this study.

Teacher trainee students (TTSs) are supposed teachers on training. They are education students that are exposed to principles and practices of education; hence, they were targets for this study. A great deal of research has shown that TTSs need to be competent in ELT such as navigating the World Wide Web for data and tutorial information, use e-mail to communicate and be able to send attachments and create e-mail folders, understand basics computer networks and how school network works, downloading software from the web knowledge, including e-Books, dissertations, e-portfolios, Facebook, portal, social network, be aware of online teaching tools and use them to teach as well as video conferencing (Bouchard, 2011; Turner, 2005; Weller, 2010). The UNESCO competence for teachers advocates that teachers should know basic hardware and software operations in order to be flexible in use of a variety of subjects-specific tools and applications (UNESCO, 2011). If teachers are not exposed to various ICT/ELT facilities and devices, they will find it difficult to use them. Having ELT/ICT does not guarantee their effective usage. The teacher must have the right attitude and competence towards ICT/ ELT usage.

Researchers also believe that innovative system of learning is accessed and delivered electronically only if the instructor is competent in various multimedia products such as the internet, intranet, satellite broadcasts, and audio/video, interactive TV and CD-Roms (Chang and Tang, 2008; Yucel, 2006) among others. This involves effective competence in the use of a wide range of skills for curriculum delivery in and outside the classroom system. According to Osuala (2009), ELT help students to cope with changes, take responsibilities, and think critically towards solving problems cooperatively in an innovative environment. Research has shown that ELT has propelled the whole populace into a global village through interconnectivity of activities irrespective of distance, race, culture, technology and trade (Bolt and Flynne, 2010; Okposio, 2011). Almekhlafi and Almeqdadi (2010) has also advocated for technology integration in the United Arab Emirates school classrooms. Research has also shown that technology integration increased student teachers growth and achievement (Cifuentes et al., 2011). According to Ngwoke and Nummonde (2011), electronic learning allows students to get fully involved by trying things out. These pedagogical skills have become necessary as a result of population growth, insecurity of teachers and learners as well as for global collaboration for distance learning. However, teachers in both countries seem not involved in global teaching and learning practices. As a result of this, it becomes necessary that every teacher must be conversant and well prepared at various knowledge points in order to acquire vase pedagogical knowledge to promote global curriculum practices.

Curriculum is a planned course of study meant for learners to acquire in or out of school for the betterment of the individual and the society. This includes achieving the set objectives as stipulated in the content using best practices and strategies for the realization of the goals. Technologically, curriculum involves internet and software based programmes which provides multi-sensory interactive learning. Promoting global interactive curriculum best practices definitely depends on the high skills of teachers. Hence teachers on training will be used to elicit information on the state of teachers in the two developing countries of interest. In most part of Africa, it is believed that many teacher trainee students are still wallowing in ignorance towards the use of modern innovative technology for pedagogical knowledge. It is on this note that Nwagbo and Ugwuanyi (2011) lamented that the pace of development and readiness in ICT in Nigeria is still relatively low in the universities. Hence TTSs from Botswana in Southern Africa and Nigeria in West Africa were used for this study to determine differences that could exist between the two developing countries in terms of ELT readiness. Hence teachers on training were used to elicit information on this study.

Most researchers have attributed ELT readiness and competence to challenges such as: Poor infrastructure, limited funding, inadequate facilities, frequent electricity interruption (Aduwa-Ogiebaen and Iyamu, 2005), lack of time, poor curriculum planning, lack of technical staff support, poor equipment maintenance (Ogwu and Ogwu, 2010); poor policy/project implementation strategy, conservative attitude of lecturers to ELT (Ochuku et al., 2013) and poor teacher preparedness (Ajayi and Ekundayo, 2009; Mutula and Van Brakel, 2007). In Nigeria, report to challenges teachers face using ICT is attributed to 80% lack of time, 77% insufficient knowledge, and 54% deficiency in professional development opportunity for knowledge and skills (Aiyebelehin, 2012). Deficiency in policy, schools and training providers has also been a challenge in Botswana (Boitshwarelo, 2009). However, with time, more challenges could emanate from countries regarded as third world due to poverty or ignorance.

Research studies have established that Nigeria was ranked 112th on global ICT chart, behind African countries such as Southern Africa, Rwanda, Senegal, Mauritius, Kenya and Botswana (International Telecommunication (ITU), 2011). Although Nigerian students seem overzealous learning ICT associated skills yet they ranked very low. Botswana is also a Southern African country that seems more stable and organized academically than Nigeria, yet their online teaching and learning seemed invisible as observed while living there, hence the choice of the two countries in Africa. This could have implication on global practices academically between the two countries. A great deal of research has also shown that 83% of fresh university students in Botswana did not do ICT at the secondary school level which might influence their readiness and competence ELT (Ogwu and Ogwu, 2012). A survey of teachers' use of computer/internet in secondary schools in Southwest Nigeria was proved to be very low (Alege and Afolabi, 2011). A further baseline study has also shown that students do not adequately possess required skills (Microsoft (MS) powerPoint, MS Excel, MS Access and internet) in computer when entering the University (Lumande and Fidzani, 2008).

A comparative study of this nature has not been established hence two developing countries in Africa were used. Nevertheless, TTSs from two federal universities in Nigeria and Botswana were used to compare their relative readiness and competence in ELT curriculum as well as challenges TTSs face. Findings from this study will be beneficial to TTSs, researchers and government of various countries.

## Statement of the problem

The pace in ICT usage for teaching and learning in global distance education seems sluggish in developing countries like Nigeria (Nwagbo and Ugwuanyi, 2011) as well as Botswana (Mutula and Van Brakel, 2007). This study is timely at a period where everyone is globalizing in terms of teaching, and learning in a chaotic environment with growing classroom population. Children need knowledge for growth and development irrespective of insurgents' attacks and disruptions of academic work. Nations also need to collaborate to achieve peace and development. If ELT is effectively used in Nigeria and Africa as a whole, it will increase economic productivity, socialization and growth in professionalism.

## Theoretical perspective to the study

Constructivist theory maintained that humans can only understand the knowledge they themselves constructed according to Greece (2010). Piaget (1964) contends that exposing children to audio-visual instruction at an early stage serves as building blocks for more sophisticated tasks (Tobias and Duffy, 2009). The constructivist theory or philosophy is based on the assumption that knowledge is constructed by learners as they attempt to make sense of their experiences. Understanding the role of the teacher in the constructivist approach provides a useful base into this study. In the piagetian classroom, it is believed that software enhance learning while telecommunication tools like e-mail and the internet provide contents for dialogue and interaction within the classroom, the school and the community (Tobias and Duffy, 2009). This leads to social construction of knowledge to other ideas, cultures and forums on global issues. Constructivism itself has many variations, such as active learning, discovery learning, and knowledge building. In the constructivist approach, the teacher is a co-ordinator, facilitator, resource advisor, tutor or coach who encourages students to discover and construct knowledge to solve realistic problems. Constructivism can partly be found in self-directed learning, transformational learning, experiential learning, situated cognition, reflective practice and religious practice.

These experiences in relative to ELT readiness could be acquired at any knowledge point such as school, home, cyber café, friends, among others. These experiences, involves a lot of activities and tasks which a teacher trainee student encounter in order to be competent in utilizing skills from computer and internet. In the classroom, the constructivist view of learning can point to a number of different teaching practices. This actually means encouraging students to use active skills (computer, internet) to create knowledge for research and teaching practice. This will stimulate and increase teaching and learning of any school subject in the curriculum. Teaching with constructivist learning theory encourages communication, socialization and collaboration in a diverse society. Hence the teacher as a constructor of knowledge should need to be well equipped with pedagogical skills and knowledge to be able to interact globally.

## Purpose and hypotheses of the study

The purpose of this study is to compare Botswana and Nigeria TTSs' readiness in ELT and determine the challenges facing them. The study specifically:

1. Compares TTSs' mean preparation in ELT by location.
2. Compares TTSs' mean competence in ELT by location.
3. Determines whether TTSs' mode of ELT preparation significantly influences their competence in ELT.
4. Determine the constraints facing TTSs readiness in ELT from both countries.

Following from these objectives, the following null

hypotheses were posited to be tested at an alpha level of 0.05; in order to generalize the study.

$H_{01:}$ There is no significant difference between Botswana and Nigeria TTSs' preparation in ELT.
$H_{02:}$ There is no significant difference between Botswana and Nigeria TTSs' competence in ELT.
$H_{03}$: Teacher Trainee Students' preparation in ELT does not significantly influence their competence in ELT for learning.

## Significance of the study

The findings of this study will be of immense benefit to classroom teachers because it will expose their baseline readiness as well as their level of competence in electronic learning technology. This will give room for teacher training and preparation towards learning and research. Such learning will increase socialization and collaboration among learners from different countries. Students will equally benefit from this research, because it will assist them in learning irrespective of distance. This will be of special benefit to learners from a war thorn zone. Students and teachers will find it easy to teach and learn using online learning skills acquired. The findings from this study will add body to literature for other researchers to utilize.

## METHODOLOGY

### Design

A descriptive survey design was used since it is a large and a comparative population that needs a generalization. It was also used because of the structured nature of the questionnaire.

This design was used to describe the situation of ELT readiness and competence comprehensively while inferential statistics was used quantitatively to test the null hypotheses in order to infer to the general population.

### Area of study

The area of study was a Federal higher institution in South East, Nigeria and also a Federal higher institution in South Central Botswana, where teachers are trained under education. These are University of Nigeria, (UNN) and University of Botswana, (UB) Gaborone Botswana. The area was chosen because of associated problem of ICT utilization by students.

### Population of study

The population of study consists of 330 trainee teachers from Botswana and 450 trainee teachers from Nigeria. This comprises of all education undergraduates from level one to four. This population was chosen because substantial information would be gotten from them regarding their mode of preparation and competence in E-learning technology. They are also future implementers of ELT curriculum. It was also chosen because the two universities are first federal university in their country. It is expected that these universities would serve as a role model to every other universities in the country.

### Sample and sampling technique

A sample of two hundred teacher trainee students (TTSs) from each university were sampled from the stated population using a simple random technique by lottery method across the four levels (1-4) with their class attendance register. This gave every member an equal chance of being selected into the study from different levels irrespective of their departments. Fifty TTSs were chosen among the four levels. However, the return rate of the questionnaire came up to 193 from Botswana and 180 from Nigeria among the education students only. It is based on this, that data was analysed.

### Instrument for data collection

Self-constructed questionnaire on teacher trainee readiness and competence in ELT (QTTRCELT) was used. The questionnaire was made up of two sections (A & B). Section A contains the demographic information of the respondents based on location, gender, level, age and area of specialization; just for identification purposes. Section B comprises of both closed and open-ended questionnaire items. The close ended questionnaire is made up of 16 structured question items in 2 clusters measuring students ELT mode of preparation at various knowledge points, and competence in ELT. The structured items on ELT mode of preparation comprises of: Primary and secondary schools, home, public cyber café, capacity building workshops, self-practice effort and friends made up of 7 items. Competence in ELT with 9 items include: Accessing research information from world wide web, conducting internet searches for information, taking part in online discussions, engaging in online chatting, video conferencing, logging in/out to e-mail, accessing e-mail messages, sending an attachment with an email message. Each of these were measured using 4 point rating scale of (4 = very prepared/very competent; 3 = prepared/competent, 2 = less prepared/ less competent, 1 = not prepared/ not competent.

The open-ended is made up of respondents' responses on their challenges or constraints to ELT readiness. This was arranged in themes and described accordingly based on their frequencies on a particular converging theme.

Questionnaire was face validated for internal consistency by 3 experts from curriculum and instruction, computer and measurement and evaluation department from both countries. Validation of the instrument was based on the research objectives. Their contributions were incorporated into the final draft of the items. A trail testing was then conducted using 25 respondents each from the two countries (Nigeria and Botswana).

Reliability of the instrument was tested using Cronbach's Alpha (α) coefficient method based on the clusters using inter item rate to test for the internal consistency of the items. Reliability on ELT preparation at various points was carried out using 7 items which resulted to .898; ELT competence using 9 items which gave a cronbach alpha index of .934. The total item of 16 resulted to .902 cronbach Alpha. It is based on this high tested reliability that the instrument was used for data collection.

### Data collection

Data was collected by hand collaboratively from each country to

**Table 1.** A descriptive mean analysis of ELT mode of preparation by location.

| ELT preparation | Location | n | Mean | SD | Remark |
|---|---|---|---|---|---|
| My ELT preparation started in the secondary school. | Botswana | 193 | 2.50 | 1.03 | P |
| | Nigeria | 180 | 2.62 | 1.09 | P |
| I had knowledge of ELT right from home. | Botswana | 193 | 2.00 | .97 | LP |
| | Nigeria | 180 | 2.36 | 1.04 | LP |
| I learnt about ELT from public cyber café. | Botswana | 193 | 1.94 | 0.91 | LP |
| | Nigeria | 180 | 2.66 | 0.99 | P |
| I acquired ELT skills through capacity building workshops. | Botswana | 193 | 1.78 | 0.78 | LP |
| | Nigeria | 180 | 1.98 | 0.91 | LP |
| I learnt about ELT in the primary school. | Botswana | 193 | 1.87 | 0.95 | LP |
| | Nigeria | 180 | 2.03 | 0.10 | LP |
| Knowledge of ELT was gotten through self-practice effort. | Botswana | 193 | 1.58 | 0.73 | LP |
| | Nigeria | 180 | 1.87 | 0.94 | LP |
| My knowledge in ELT was through friends. | Botswana | 193 | 2.56 | 1.04 | P |
| | Nigeria | 180 | 2.61 | 1.04 | P |
| Total Grand Mean | | | 2.17 | 0.89 | LP |

VP, Very prepared; P, prepared; LP, less prepared; NP, not prepared.

ensure effective returns. The help of colleagues were solicited for to monitor returns. Ethical issues were observed to ensure data collection. This was carried out after their lecture period to avoid disruption of normal lesson which made it very hectic to retrieve most of the questionnaire distributed. The instrument was administered with the help of two assistants from both Botswana and Nigeria respectively. Data was collected based on appointment from the head of department of education. Out of 200 questionnaire distributed to university of Botswana, 193 were collected given a percentage of 97%; and out of 200 questionnaire also distributed to university of Nigeria, 180 were collected given a percentage return of 90%.

#### Data analysis

Data was analyzed descriptively using mean analysis to determine the extent of ELT preparation and competence. Real limit of numbers was used to take a decision on the Mean analysis as follows: 1.00-1.49 = not prepared/not competent; 1.50-2.49 = less prepared/less competent; 2.50 -3.49 = prepared/competent; 3.50 - 4.00 = very prepared, very competent.

Frequency count was used to describe respondents' responses to the open-ended question as arranged in themes. This was used to establish TTSs responses in themes on constraints they face learning ELT.

An Independent t-Test was used to test hypotheses 1 and 2 on significant differences that exist in ELT between Botswana and Nigeria. Pearson correlation analysis was also used to establish a significant relationship between TTSs mode of preparation and their competence in ELT irrespective of location. The hypotheses were tested at 0.05 significant levels.

## RESULTS

The results are arranged based on the research objectives and the hypothesis for ease of generalization on each variable.

### Objective 1: Compares TTSs' mean preparation in ELT by location

A descriptive mean analysis result of ELT mode of preparation of TTSs from Botswana and Nigeria shows that TTSs from both countries were mainly prepared from secondary schools and partially through friends. However, Nigeria TTSs seem better prepared than TTSs from Botswana as reflected in Table 1. In addition to this, Nigeria is also prepared from public cyber café with mean of (M = 2.66, SD = 0.99) than Botswana as reflected in Table 1. Never the less, both countries are less prepared at various knowledge points such as home, primary school, capacity building workshops and from their self-effort (Table 1). The grand Mean total of both countries ELT readiness at various knowledge point (M = 2.17, SD

**Table 2.** An independent t-test analysis of ELT preparation by location.

| Location | n | Mean | SD | t-value | df | p-value |
|---|---|---|---|---|---|---|
| Botswana | 193 | 20.11 | 3.64 | -6.26* | 371 | .000 |
| Nigeria | 180 | 22.68 | 3.68 | | | |
| Total | 373 | 42.79 | 6.32 | | | |

*Significant at p<0.05.

= 0.87) indicate that they are less prepared.

Results as Table 1 indicate that both countries are generally less prepared in ELT at various knowledge points such as home, primary and self-effort and capacity building workshops. However, Nigerian TTSs are better prepared in terms of ELT acquired from various knowledge points such as cyber café, while both countries are only prepared at secondary schools and through friends. This is an indication that teacher preparation needs to be enforced for effective global practices. This might be attributed to challenges TTSs face as indicated in Table 6. Further analysis in Table 2 would indicate a significant preparation in ELT at various knowledge points.

**$H_{01}$:** This hypothesis was tested using an independent t-test analysis to determine the significant difference between Botswana and Nigeria TTSs' preparation in ELT. Results shows t (371) = -6.26*, p< 0.05. Hence, the null hypothesis of no significant difference between Botswana and Nigerian TTSs' ELT preparation at various knowledge points was rejected. A closer look at the Mean difference shows that Nigeria (M = 22.68, SD = 3.68) is significantly better prepared in ELT at various knowledge point than their Botswana (M = 20.11, SD = 3.64) counter parts (Table 2).

This result indicates that Nigeria TTSs are significantly better prepared in various ELT knowledge points than Botswana. This is an indication that if given the opportunity and enabling environment, Nigeria TTSs could excel in global interactive practices.

### Objective 2: Compares TTSs' mean competence in ELT by location

A descriptive mean analysis of ELT skills competence between Botswana and Nigeria shows that Botswana and Nigeria are equally competent in accessing research information from world-wide web, conducting internet search for information, logging in and off e-mail and accessing e-mail messages. However, both countries also exhibited less competence in online discussion as well as video conferencing (Table 3 for mean difference). Nevertheless, while Nigeria is competent in online chatting, Botswana is competent in sending attachment with e-mail messages. In totality, both countries have a (M = 2.74, SD = 1.10) competence in ELT. Although competent in chatting and emailing skills, TTSs in both countries are less competent in online discussion and video conferencing. These two skills are very vital in future distance learning and global network in teaching and research.

Results in Table 3 indicate that both countries are competent in ELT skills for learning and research. But how significant different the competence is was not established. This was done using hypothesis as shown in Table 4.

**$H_{02}$** This hypothesis was tested using an independent t-test analysis of TTSs competence in ELT by location. Result shows t (371) = -1.96, p< 0.05. Based on this, the null hypothesis was rejected; hence, there is a significant difference in TTSs competence in ELT skill usage. A closer look at the mean table entries, shows that Nigeria (M = 23.94, SD = 6.32) is significantly more competent in ELT skill utilization than their Botswana (M = 22.56, SD = 7.17) counterpart. Hence Nigerian TTSs are significantly more competent in ELT than Botswana (Table 4).

This result indicates that Nigeria TTSs are more competent in ELT skills usage for learning than Botswana TTSs. This indicates that Nigeria TTSs have more access to research information worldwide, conduct internet search for information, and engage in on-line chatting, use e-mail for assessing messages, logging in and off, as well as sending an attachment with messages more than their Botswana counterpart. These skills are necessary for learning in a globalized world. Despite all the challenges as reflected in Table 6, Nigerian TTSs are still competent in ELT than Botswana. However, both countries have a short fall as far as online discussion and video conferencing is concerned. This has serious implications for future implementation of ELT curriculum in order to reach a large group of individuals within a short space of time.

### Objective 3: Determines whether TTSs' preparation in ELT significantly influences their competence in ELT

This was done using hypothesis 3 to determine the influence of preparation on competence.

**$H_{03}$** This hypothesis was tested using Pearson

**Table 3.** A descriptive mean analysis of TTSs competence in ELT by location

| ELT competence | Location | n | Mean | SD | Remark |
|---|---|---|---|---|---|
| Accessing research information from World Wide Web (www) | Botswana | 193 | 2.75 | 1.05 | C |
| | Nigeria | 180 | 3.19 | 0.98 | C |
| Conducting other internet searches for information | Botswana | 193 | 2.63 | 0.99 | C |
| | Nigeria | 180 | 3.03 | 0.88 | C |
| Taking part in online discussions | Botswana | 193 | 2.07 | 1.07 | LC |
| | Nigeria | 180 | 2.34 | 1.05 | LC |
| Engaging in online chatting | Botswana | 193 | 2.31 | 1.17 | LC |
| | Nigeria | 180 | 2.50 | 1.19 | C |
| Video conferencing | Botswana | 193 | 1.72 | 0.93 | LC |
| | Nigeria | 180 | 1.71 | 0.88 | LC |
| Logging on to e-mail | Botswana | 193 | 2.84 | 1.17 | C |
| | Nigeria | 180 | 2.98 | 1.12 | C |
| Accessing e-mail messages | Botswana | 193 | 2.89 | 1.15 | C |
| | Nigeria | 180 | 2.99 | 1.06 | C |
| Logging off e-mail | Botswana | 193 | 2.83 | 1.20 | C |
| | Nigeria | 180 | 2.69 | 1.13 | C |
| Sending an attachment with an email message | Botswana | 193 | 2.50 | 1.20 | C |
| | Nigeria | 180 | 2.48 | 1.12 | LC |
| Total Grand Mean | | | 2.74 | 1.10 | C |

* VC, Very competent ; C, competent; LC, less competent; NC, not competent.

**Table 4.** An independent t-test analysis of TTSs' competence in ELT by location.

| ELT skills competence | Location | n | Mean | S. D | t-value | Df | p-value |
|---|---|---|---|---|---|---|---|
| ELT | Botswana | **193** | 22.56 | 7.17 | -1.96* | **371** | .051 |
| | Nigeria | 180 | 23.94 | 6.32 | | | |
| Total | | 373 | 46.50 | 13.49 | | | |

*Significant at p<.05.

**Table 5.** Pearson correlation product moment analysis of TTSs preparation and competence in ELT (n=373).

| Variable | Mean | SD | R | df | P- value |
|---|---|---|---|---|---|
| ELT preparation (X) | 20.30 | 3.73 | .274** | 371 | .000 |
| ELT competence (Y) | 23.22 | 6.80 | | | |

*Significant at 0.05.

Correlation Product Moment analysis of TTSs preparation and competence in ELT. This resulted to r (371) =.274, p <0.05. Hence the null hypothesis that TTSs preparation in ELT does not significantly influence their competence in ELT was rejected. Result therefore indicates a positive relationship between TTSs preparation in ELT at various knowledge points and their competence in various ELT skills irrespective of location. The Mean analysis revealed a higher mean competence (M = 23.22, SD = 6.80) than preparation (M = 20.30, SD = 3.73) (Table 5).

This result indicates that although, TTSs are less prepared in some knowledge point, they are competent in ELT such as accessing research information from worldwide using internet search. They also chat online,

**Table 6.** A frequency count of constraints associated with TTSs' readiness in ELT by location (n = 373).

| S/N | Constraints associated with ELT readiness | Location of country | |
|---|---|---|---|
| | | Botswana | Nigeria |
| | | F | F |
| 1 | Lack of ELT knowledge and skills to source for information. | 20 | 49 |
| 2 | Shortages of technical staff to assist learning | 18 | 43 |
| 3 | Poor access to ELT in school so cannot practice effectively. | 14 | 16 |
| 4 | Lack of personal computers to practice. | 5 | 7 |
| 5 | Lack of confident (technology phobia) in ELT usage. | 5 | 6 |
| 6 | Lack of interest in ELT due to poor motivation. | 6 | 2 |
| 7 | Unavailability of internet network connectivity. | 5 | 6 |
| 8 | Constant power outage. | 0 | 6 |
| 9 | Teaching is more theoretical than practical in ELT. | 2 | 2 |
| 10 | Ineffective introduction to ELT at an early age. | 1 | 3 |
| 11 | ELT training too expensive to engage in. | 0 | 4 |
| 12 | Lack of time to use ELT. | 1 | 1 |

logging in and off e-mail to access messages and send attachment. This indicates that the better prepared TTSs are at various knowledge points, the more competent they are in the use of ELT.

### Objective 4: Determine the constraints facing TTSs readiness in ELT from both countries

This was done descriptively using frequency counts from TTSs theme responses from the open ended question. Table 6 show the open-ended question on challenges and constraints students face using ELT. Responses from TTSs were arranged and coded based on themes. It is based on this coding that frequency in coding as it occurred was made. Majority of the students from Nigeria (49) and Botswana (20) indicated lack of ELT knowledge to learn and search for information. Many from Nigeria (43) and also Botswana (18) indicated shortage of technical staff and computers to assist learning. Most of these respondents from Botswana (16) and Nigeria (14) claimed to have poor access to ELT facilities in their schools for practice. Other problems as highlighted in Table 6 include lack of confidence, interest, motivation, time, ignorance, unavailability of internet network; teaching being more theoretical than practical, late introduction to ELT skills, high cost of training and among others as shown in the table. Results from frequency counts of the open- ended question as seen in the table indicates that TTSs from higher institutions in both Nigeria and Botswana lack sufficient knowledge in ELT and also have shortages of technical staff and computers to assist learning. Most of these problems range from poor access to ELT in their various institutions to lack of personal computers for effective practice. Other challenges are as applicable in the table. These are relative to their level of competence in ELT as reflected in their respective countries.

## DISCUSSION

Findings from the study revealed that both Botswana and Nigerian TTSs' are less prepared at various knowledge points such as home primary school, home, capacity building workshop and their self-effort. Although less prepared, findings revealed that Nigeria TTSs are significantly better prepared at various ELT knowledge point than their Botswana counterpart. This finding is in line with that of Mutula and Brakel (2007) that developing countries are less prepared in ICT which has led to acute shortage of skilled human resource in this area. Finding is also contrary to International Telecommunication Union (ITU), (2011) analysis that Nigeria was ranked 112$^{th}$ behind Botswana in global ICT chart. Findings have significantly revealed that Nigerian TTSs are more prepared than their counterpart in Botswana. This finding is however striking since it indicates that students from both countries are mainly prepared in ELT at the secondary school level and through friends. This also is contrary to Ogwu and Ogwu's (2012) findings that majority (83%) of students' ICT readiness did not start at the secondary school level. And also contrary to Lumande and Fidzani (2008), findings that student does not adequately possess the required skill when entering the university. This is an indication that students do not have proper orientation in ELT right from the basis that is from their homes, primary schools and capacity building workshops, where standard is expected to start for students. This has implications on institutional

standardization as well as future curriculum practices in ICT among future teachers in developing world.

Findings also indicate that TTSs from both countries are generally competent in ELT, although Nigerian TTSs are significantly more competent. They are competent in electronic usage for accessing research information worldwide, conducting internet search for information, assess their messages, logging in and off from internet, and are able to perform other necessary functions using e-mail skills. However, both countries showed less competence in on-line discussions, chatting, and video conferencing as well as sending an attachment with messages through e-mail. It is however expected that students from more organized countries like Botswana should do better as far as learning electronically is concerned based on the ranking of International Telecommunication Union (ITU) (2011). Nigeria being more competent could be attributed to interest which converges with Ebirim's (2010) findings that on-line learning could be attributed to interest and not necessarily location. These skills are necessary for learning and research in a globalized world according to Ngwoke and Nummonde (2011). Studies have not been fully established in terms of comparative study as far as electronic skill competence is concerned between Nigeria and Botswana. These findings have implications for collaborative teaching, research and exchange programme. It would enable future teachers to organize distance teaching and learning with ease for developing countries.

Findings from structured and unstructured questionnaire on challenges TTSs face from both countries indicates that students from both countries lacked sufficient knowledge in ELT to search for information during learning, and also shortages of technical staff to assist in learning and research, poor access to ELT in their various institutions, lack of personal computers for effective practice, lack of confident in ELT, lack of interest and unavailability of network. Other challenges as applicable to only Nigerian students include ignorant about video conferencing, hyperlink, PowerPoint and lack of motivation. However, in Botswana, challenges independently faced were high cost of ELT training. Most of these findings converged with most researchers like Ajayi and Ekundayo (2009) that lack of computers and literate teachers hinders effective readiness and utilization of ELT in teaching and learning. Nigeria students are likely facing huge manpower challenge as indicated by them which could have influenced their competency in these practical skills. This converges with Osuala's (2009) findings that teachers and students are increasingly engaged in electronic education irrespective of circumstances which has influenced their knowledge and skills. This finding also converges with Bouchard (2011) and Weller (2010) that electronic learning is one of the integrative skills used for teaching and learning irrespective of location.

## CONCLUSION AND IMPLICATIONS

This study reveals that TTSs from both countries are less prepared at various ELT knowledge point since both lack grass root knowledge in ELT. They only began to acquire the knowledge at the secondary school level and through friends. However, Nigerian TTSs are significantly prepared in ELT than their Botswana counterpart. The two countries are however generally competent in ELT with Nigeria having a moderately upper edge over Botswana. However ready, TTSs from both countries, are still faced with challenges ranging from lack of ELT knowledge to learn and search information, shortage of technical staff to assist learning, poor access to ELT, lack of personal computers to practice, lack of confidence and interest, unavailable internet connectivity, constant power outage, among others. These challenges might have implications for their global best practices now and in future. Nevertheless, this has implications for teachers' global best practices in collaborations with other students outside their environment. It will also have impact on teachers outreach to large student population who are indisposed to learn in a traditional classroom situation due to war or handicap of any kind. This however will assist in increase economic productivity, socialization among learners through communications as well as growth in professionalism.

## RECOMMENDATIONS

1. Trainee teachers should endeavor to upgrade themselves at home, public cyber café workshops and self-effort towards ELT usage in order to promote best practices in teaching future students.
2. Teacher trainee students should be exposed to ELT capacity building workshops and training programmes once or twice every year in their various institutions. This will increase their knowledge and growth in ELT.
3. Sufficient infrastructure and computers should be provided by the government to enable TTSs have access to ELT usage for effective acquisition of knowledge and competence.
4. Internet connection should also be made available and functional by the school authority, for easy browsing and connectivity with the outside world. Without this, video conferencing and other forms of e-learning becomes impossible as indicated in their constraints.
5. Government should provide stable, efficient and constant electricity to be able to harness the full advantages of ELT learning in schools which is a major constraint in Nigeria.
6. Policy development should be put in place by the

Government of each country towards the training of teachers in ELT usage as advocated by Boulton (2013), in order to alleviate constraints associated with shortages of technical ICT staff.

## Conflict of Interests

The authors have not declared any conflict of interests.

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*Full Length Research Paper*

# A study of global citizenship levels of Turkish university students according to different variables (youth camp leaders sample)

**Cenk Temel**

Inonu University, Turkey.

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**The aim of this study was to investigate different variables of university students' (Youth Camp Leaders) global citizenship levels from different universities, who participated in the youth camp leadership meeting organized in March 2016, by the Turkish Ministry of Youth and Sports. The present research is a descriptive study based on the survey model. The study group consisted of a total of 408 participants studying at different universities in Turkey, who attended the youth camp leadership meeting. In the study, the Global Citizenship Scale (GCS) prepared by Morais and Ogden (2011) and adapted into Turkish by Şahin and Çermik (2014) was used and the quantitative data were analyzed using descriptive statistics that is frequencies, percentages, means (M) and standard deviations (SD). Statistical analyses were conducted with the SPSS 18 package software. In conclusion, the study opines that the global citizenship levels of university students (youth camp leaders) from different universities who participated in the youth camp leaders meeting organized by the Ministry of Youth and Sports was, overall, at a medium level. Also, the foreign language level/skill and the number of foreign friend variables of the participants led to significant differences in global citizenship scores/levels, while gender and sportsman licenses were not associated with any significant differences in global citizenship scores/levels.**

**Key words:** Global citizenship, university student, youth camp leaders.

## INTRODUCTION

It was in the 1960s that the concept of globalization first came into use in a sense that is close to its present-day definition, while in the 1990s, it became a key concept for explaining many concepts used in the branches of social science (Güzelsarı, 2012, Hirst and Thompson, 2007). Globalization refers to the overall phenomenon by which we live in an increasingly unified and similar world, and by which societies and nations become growingly interdependent. Globalization has emerged from a combination of political, social and economic factors. Furthermore, the speed and scope of communication technologies have been important factors in giving

E-mail: cenktemel@hotmail.com.

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**Table 1.** Global citizenship skills.

| |
|---|
| i) Accepts personal responsibility |
| ii) Civic commitment |
| iii) Respect for diverse cultures, gender, and ethnicity |
| iv) Respects cultural heritage and the environment |
| v) Collaborates for justice, peace and democracy |
| vi) Promotes solidarity and equity at the local, national and international levels |

**Table 2.** The global citizen.

| |
|---|
| i) Is aware of the wider world and has a sense of their own role as a world citizen. |
| ii) Respects and values diversity. |
| iii) Has an understanding of how the world works. |
| iv) Is passionately committed to social justice. |
| v) Participates in the community at a range of levels, from the local to the global. |
| vi) Works with others to make the world a more equitable and sustainable place. |
| vii) Takes responsibility for their actions |

globalization its present-day form (Ritzer, 2011). As a result of the different stages of globalization, the concept of citizenship has begun to attract considerable interest worldwide in the 1990s (Heater, 2007). The concept of citizenship generally describes the willing and committed involvement of individuals in the existing political community (Falk, 1993, p.39). Within the context of the state, the concept of citizenship can be conceptualized based on four aspects. These include the identification of citizenship (a) based on national identity and nationality; (b) based on documents; (c) based on rights; and (d) based on duties and responsibilities (Kadıoğlu, 2008). However, the global developments have further enriched the different dimensions of citizenship. As a result, identifying citizenship based on an awareness of one's responsibilities and duties towards his/her country no longer seems sufficient.

Today, it is necessary to raise citizens who feel responsible towards all of humanity, who possess a universal awareness. In the literature, any citizen having these characteristics is called a "global citizen" (Kan, 2009). "Global citizenship is defined as awareness, caring, and embracing cultural diversity while promoting social justice and sustainability, coupled with a sense of responsibility to act" (Reysen and Katzarska-Miller, 2013) and "global citizenship refers to a sense of belonging to a broader community and common humanity. It emphasizes political, economic, social and cultural interdependency and interconnectedness between the local, the national and the global" (Unesco, 2015). Falk (193:39-42) points out that there are four different variations to the concept of global citizenship. These variations involve a greater emphasis on: 1. working to make a better world; 2. working with the aim of global integration; 3. working to meet ecological necessities; and 4. political mobilization due to ecological necessities. The skills that a global citizen must possess according to Fine's (2015) UNESCO definition are shown in Table 1. Due to the attention the concept of global citizenship has been receiving in recent years, many international organizations have developed educational materials for ensuring that children and youngsters are educated according to this concept. The characteristics of global citizens as defined in an educational material prepared by OXFAM (2015) are given in Table 2.

As a result of the increasing emphasis on this concept, educational processes and activities focusing on the concept of global citizenship have become more prevalent in school curricula, course contents and educational environments. Education on global citizenship today is one of the most rapidly growing movements, or trends, in education (Dill, 2012; Lehner and Wurzenberger, 2013; Chong, 2015; Sklad et al., 2015; Mac Kenzieb et al., 2016; Costa, 2016). Hicks (2003) opines that the subjects often covered as part of global citizenship education in the educational programs of different countries are based on environment, economic development, intercultural relations, peace, economy, technology and human rights. Toumi et al. (2008) suggest that global citizenship education should include education on human rights, peace and media, intercultural dialogue, international relations, the intercultural relations, and cosmopolitan citizenship. Davies (2006) describes that while there is a consensus

on the importance of global citizenship; discussions on what the curricula of these courses should be can be more radical and politicized. However, it is also noted that there is a need to further research the opinions of the students themselves on these subjects. Teachers are of the opinion that though their willingness to teach global citizenship education is negatively affected by different priorities of the state, teachers' organizations and rigid curriculum practices they have to follow; they still feel highly motivated to achieve the objectives of global citizenship education (Schweisfurth, 2006). Ceylan (2014) emphasizes that prospective teachers do not have sufficient information about global citizenship. In their study on business schools providing global citizenship education, Lilley et al. (2014) observed that giving students' global citizenship education would help to provide them with social imaginary, relationality and reflexivity in the complex and often uncertain environment of the business world.

On the other hand, global citizenship education may be provided in formal education institutions like schools, and may also be organized as common-public education activities. Common-public education activities may be organized in various styles. One of these is the Youth Camps. In Turkey, Youth Camps are organized by non-governmental organizations and the state. The aim with the Youth Camps, which are organized by Ministry of Youth and Sports in Turkey, is making the young people from different cultural, educational and age groups spend their free times with various social, cultural and sportive activities, and socializing young people. All the needs of the young people, who participate to the Youth Camps organized as nature and sea camps in different regions of Turkey at different time periods, are covered by the Ministry of Youth and Sports. Youth Camps are organized as "Sea Camps" for the 12 to 15 age groups; and as "Nature Camps" or "Thematic Camps" for the 16 to 22 age groups. During these camps, young people participating to the camps are under the responsibility of the Camp Manager, Program Officer, and Camp Leaders, respectively, who work in the Ministry of Sports and Youth (MSY).
(http://genclikkamplari.gsb.gov.tr/Modul/GenclikKamplari.aspx). Making young people feel relaxed, allowing them to entertain, making them acquire new skills and make new friends, increase their skills and experiences, making them have fresh air, increasing their physical strength with various sportive activities, and introducing various regions of Turkey are among the major aims of the Youth Camps (Tezcan, 1994). In addition, Fine (2015) conducted a study and emphasized that various camping activities and educational programs were extremely beneficial in terms of global citizenship education.

The Youth Camp leaders working at the camps are determined from among university students, and are assigned to their duties after receiving a certain educational program. As it is known, universities are the institutions where universal knowledge is produced and shared. Tores (2015) pointed out that some of the universities in today's world were global universities with their research opportunities, academic institutions, and the characteristics of the academic staff and students; however, some are at local level. In addition, it is also considered that universities increase global cooperation with the help of Erasmus and AIESEC, etc. student exchange programs. When global citizenship, which has been explained above, is considered together with global citizenship education, youth camps and university concepts, examining the global citizenship levels of the university students studying at various universities in Turkey (Youth camp leaders), who are employed at youth camps organized by the state in Turkey, become important. The purpose of this study is to examine the global citizenship levels of the university students studying at various universities in Turkey (Youth camp leaders) according to different variables (gender, foreign language, duration of Internet use and licensed sportsman).

## MATERIALS AND METHODS

The present research is a descriptive study based on the survey model. The study group consisted of a total of 408 participants studying at different universities in Turkey, who attended the youth camp leadership meeting organized in April, 2016 by the Turkish Ministry of Youth and Sports. Data regarding the personal information of the study participants are shown in Table 3. In order to define the global citizenship attitudes of university students (youth camp leaders), the Global Citizenship Scale (GCS) was used as the data collection tool. The GCS consists of 30 items and three dimensions, it was developed by Morais and Ogden (2011) and adapted to Turkish by Şahin and Çermik (2014), who also tested its validity and reliability ($\alpha$ =0.76). The scoring of the 5-point Likert type scale ranges from "totally disagree (1)" to "totally agree (5)". In the present study, the scale's Cronbach's alpha reliability coefficient was calculated as 0.79. Based on the Kolmogorov-Smirnov normality test (KS=0.670 p=0.77) of the global citizenship total scores, the study data was determined to have a normal distribution. As a result, for the independent groups, a t-test was used for bilateral comparisons, while the unidirectional variance analysis was used for multi-comparisons. The Tukey poc hoc test was used when performing multiple comparisons, and the level of significance was accepted as $\alpha$ =0.05. The Quantitative data were analyzed using descriptive statistics that is frequencies, percentages, means (M) and standard deviations (SD). Statistical analyses were conducted with the SPSS 18 package software. The significance level was accepted as 0.05 for statistical calculations.

## RESULTS

In this section, analyses on the study data are shown in Table 4. The study data indicates that the global citizenship scores of the study participants did not differ significantly according to gender [t(408)= -1.525, p>0.05].

**Table 3.** Personal information of the participants.

| Variables | Sub-categories | n | % |
|---|---|---|---|
| **Gender** | Male | 305 | 74.8 |
| | Female | 103 | 25.2 |
| | Total | 408 | 100 |
| **Foreign Language** | Beginner | 149 | 36.5 |
| | Elementary | 193 | 47.3 |
| | Intermediate | 47 | 11.5 |
| | Advanced | 19 | 4.7 |
| | Total | 408 | 100 |
| **Use of Internet** | 0-5 hours | 358 | 87.7 |
| | 6-10 hours | 38 | 9.3 |
| | 11 hours and above | 10 | 3.0 |
| | Total | 408 | 100 |
| **Foreign Friend** | None | 285 | 69.9 |
| | Only 1 | 55 | 13.5 |
| | 2-4 friend | 17 | 4.2 |
| | 5-9 friends | 26 | 6.4 |
| | 10 or more friends | 25 | 6.1 |
| | Total | 408 | 100 |
| **Sportsman License** | None | 303 | 74.3 |
| | Individual | 56 | 13.7 |
| | Team | 49 | 12.0 |
| | Total | 408 | 100 |

**Table 4.** Comparison of average global citizenship scores of the study participants according to gender.

| Gender | N | Mean | Std. Deviation | T | df | p |
|---|---|---|---|---|---|---|
| Male | 305 | 99.73 | 15.81 | | | |
| Female | 103 | 102.48 | 15.93 | -1.525 | 406 | 0.128 |
| Total | 408 | 100.42 | 15.87 | | | |

Based on this result, it can be said that gender variable does not have an important effect on the global citizenship levels. According to Table 5, the global citizenship scores varied significantly according to the foreign language level of the study participants ($p<0.05$). Based on the Tukey pos hoc test, this difference was found to be particularly significant between (1) the scores of study participants with beginner and intermediate level of foreign language skills ($p=0.005$ $p<0.05$); (2) between study participants with beginner and advanced level of foreign language skills ($p=0.000$ $p<0.05$); (3) between study participants with elementary and intermediate level of foreign language skills ($p=0.017$ $p<0.05$); and (4) between study participants with intermediate and advanced level of foreign language skills ($p=0.000$ $p<0.05$). The data on Table 6 indicate that there were no significant difference in the global citizenship levels of the study participants according to their duration of internet use ($P>0.05$). Table 7 shows that the global citizenship scores of the study participants varied significantly according to the number of their foreign friends ($p<0.05$). Based on the analysis performed using the Tukey pos hoc test, it was resolved that this difference are (1) ($p=0.033$ $p<0.05$) between the scores of participants with

**Table 5.** Comparison of average global citizenship, scores of the study participants according to foreign language.

| Foreign Language | N | Mean | Std. Dev. | Source of Variance | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| Beginner | 149 | 98.05 | 15.58 | Between Groups | 6878.520 | 3 | 2292.840 | | |
| Elementary | 193 | 99.31 | 15.26 | Within Groups | 95643.274 | 404 | 236.741 | | |
| Intermediate | 47 | 106.70 | 15.83 | Total | 102521.794 | 407 | | 9.685 | 0.00* |
| Advanced | 19 | 114.84 | 13.74 | | | | | | |
| Total | 408 | 100.42 | 15.87 | | | | | | |

**Table 6.** Comparison of average global citizenship scores of the study participants according to the duration of internet use.

| Duration of Internet use (hours) | N | Mean | Std. Dev. | Source of Variance | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| 0-5 | 358 | 100.81 | 15.72 | Between Groups | 655.727 | 2 | 327.864 | | |
| 6-10 | 38 | 98.76 | 18.05 | Within Groups | 101866.067 | 405 | 251.521 | 1.304 | 0.273 |
| 11 and above | 12 | 94.00 | 11.75 | Total | 102521.794 | 407 | | | |
| Total | 408 | 100.42 | 15.87 | | | | | | |

**Table 7.** Comparison of the average global citizenship scores of the study participants according to the number of their foreign friends.

| Foreign friend | N | Mean | Std. Dev. | Source of Variance | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| None | 285 | 98.22 | 15.29 | Between Groups | 54.19 | 4 | 1354.926 | | |
| only 1 | 55 | 102.90 | 17.38 | Within Groups | 97102.090 | 403 | 240.948 | | |
| 2-4 | 17 | 109.41 | 16.07 | Total | 102521.794 | 407 | | 5.623 | 0.00* |
| 5-9 | 26 | 105.80 | 15.69 | | | | | | |
| 10 and above | 25 | 108.36 | 12.94 | | | | | | |
| Total | 408 | 100.42 | 15.87 | | | | | | |

no friends and with 2 to 4 friends; and (2) (p=0.016 p<0.05) between the scores of participants with no friends and with 10 or more friends.

As shown in Table 8, there were no significant differences between the global citizenship levels of the study participants as regards sportsman licenses (P>0.05).

## DISCUSSION

The study results indicate that the university students (youth camp leaders) from different universities in Turkey who participated in the youth camp leadership meeting organized by the Ministry of Youth and Sports had, in general, a medium level of global citizenship score or level ($\overline{X}$ =100.42). This result is similar to Kayışoğlu's (2016) study on prospective physical education teachers. Evaluations based on the study participants' gender indicate that the global citizenship levels were nearly similar between males ($\overline{X}$ =99.73) and females ($\overline{X}$ =10248). This result is comparable to the findings of Durualp and Durualp (2012), Kayışoğlu (2016), Kaya and Kaya (2012) and Ferreira (2011) all of which opine that females are generally more interested in learning about global and social subjects. In this study, three variables were presumed to have influence on the global citizenship levels of the participants. These variables were foreign language level, Internet use, and the

**Table 8.** Comparison of the average global citizenship, scores of the study participants according to sportsman license.

| Licensed sportsman | N | Mean | Std. Dev. | Source of Variance | Sum of Squares | df | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| None | 303 | 100.44 | 16.10 | Between Groups | 445.103 | 2 | 222.552 | 0.883 | 0.414 |
| individual | 56 | 98.44 | 14.14 | Within Groups | 102076.691 | 405 | 252.041 | | |
| team | 49 | 102.57 | 16.30 | Total | 102521.794 | 407 | | | |
| Total | 408 | 100.42 | 15.87 | | | | | | |

number of foreign friends (which can be considered as being dependent on the first two variables). As expected, participants with higher foreign language skills also exhibited higher levels of global citizenship (Table 5). Regarding the use of the internet, it was determined that greater internet use was associated with a decrease in global citizenship levels. This result is extremely interesting. It was expected that as the duration of the Internet use increased, so would the global citizenship levels of the participants.

## Conclusion

It is considered that the reasons for this situation is the foreign language proficiency levels of the participants (Table 5) being low, and the characteristics of the ages of the participants. This observation is similar to the findings of Engin and Sarsar (2015) and Sarsar and Harmon (2011; 2012). On the other hand, Kaya and Kaya's (2012) describe a parallel relationship between global citizenship and the frequent use of the internet, which is in stark contrast with the results of the present study. It was also expected that having a sportsman license would have had a positive effect on global citizenship levels. However, the study data indicated that having sportsman licenses did not have a significant effect on the study participants' global citizenship levels. However, it is known that sports have the effect of bringing together individuals and societies, and supporting both individual and social development by encouraging greater tolerance towards differences and different cultures (Rees and Miracle, 2000; Miller et al., 2001). In conclusion, the study opines that the global citizenship levels of university students from different universities who participated in the youth camp leaders meeting organized by the Ministry of Youth and Sports was, overall, at a medium level. Also, the foreign language level/skill and the number of foreign friend variables of the participants led to significant differences in global citizenship scores/levels, while gender and sportsman licenses were not associated with any significant differences in global citizenship scores/levels.

## Suggestion

According to the results obtained in the study, the following recommendations may be made for university students (youth camp leaders):

1. It may be recommended that the universities in Turkey establish more student exchange programs and global connections.
2. The contents of global citizenship education may be made use of in training Youth Camp Leaders.
3. Camps with international participation may be organized as well as the local youth camps organized by Ministry of Youth and Sports.

## Conflict of Interests

The author has not declared any conflicts of interest.

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Educational Research and Reviews

*Full Length Research Paper*

# The construction of deductive warrant derived from inductive warrant in preservice-teacher mathematical argumentations

**Lia Budi Tristanti[1]*, Akbar Sutawidjaja[2], Abdur Rahman As'ari[2] and Makbul Muksar[2]**

[1]Mathematics Education, STKIP PGRI Jombang, Jalan Patimura III/20, Jombang 61418, East Java, Indonesia.
[2]Mathematics Education, Universitas Negeri Malang, Jalan Semarang 5, Malang 65145, East Java, Indonesia.

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**This study discusses the construction of deductive warrant derived from inductive warrant in mathematical argumentations expressed by pre-service teacher. In completing a mathematics task, a problem solver needs argumentation to determine, reveal, and support a reasonable solution. A mathematical argumentation can be analyzed by Toulmin scheme consisting of data, claim, warrant, backing, refutation and qualifier. This study focuses on *warrant* because it is one quality determinant of an argumentation. Inglis, Mejia-Ramos, and Simpson (2007) mentioned types of warrant in mathematical argumentation, including inductive, structural-intuitive, and deductive. This study aims to describe the construction of deductive warrant in mathematical argumentation. Students must use deductive warrant in mathematical argumentation, and that the truth of the conclusion obtained is absolute and there is no rebuttal. This study uses qualitative approach with written works, think aloud, and interview to collect data. The subjects are asked to investigate the truth of the mathematical statement. The result shows that the subjects, in constructing a deductive warrant, initially used inductive warrant. The subjects use an inductive warrant to reduce the uncertainty of the result, so the needs of using deductive warrant exist to reveal a certain conclusion.**

**Key words:** Construction, warrant, deductive, inductive, mathematical, argumentation.

## INTRODUCTION

Argumentation is a person's competence to link data to make a claim (Jimenez et al., 2000). It is a kind of informal reasoning, which is central to intellectual competence in problem-solving, judging and decision making, generating idea and faith building (Kuhn and Udell, 2003). When students are able to do argumentation, they can leave their hesitancy in completing a task, they can be more acquitted to select an idea as well. They can even suggest a reasonable answer for the task.

Although competence to argument is necessary in completing a task, many students failed to do that. Cerbin (1988) mentioned that students are not well-versed in constructing a convince argument. Kuhn (1992)

*Corresponding author. E-mail: btlia@rocketmail.com.

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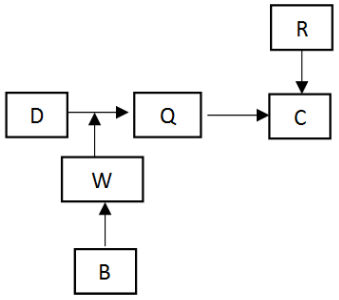



**Figure 1.** Toulmin scheme for general argument.

suggested that argumentative skill in reasoning did not evenly occur in every school. He also showed that capability to make a reasoned assessment must become a part of capability to think well. Brem and Rips (2000) and Klaczynski (2000) mentioned some difficulties and limitations by the subjects in their youth and young adults in the term of constructing and improving arguments. Kuhn (1991) investigated 160 students in various ages and found that only few of them consistently improved qualified arguments. Thus, a study of mathematical argumentation is further necessary to conduct as an evaluation toward a process of students' thinking and a model of mathematical argumentation which is likely to exist.

A person's argumentation needs to be analyzed using a richer format so he/she does not merely distinguish between premises and conclusion (Toulmin, 2003). Hence, he proposed a layout of argument, known as Toulmin Scheme. It consists of data (D), claim (C), warrant (W), backing (B), rebuttal (R), and qualifier (Q). Data refers to facts for supporting claim. Claim refers to a proposition supported by the data. Warrant is a guarantee for data in supporting the claim. The warrant is supported by backing, and backing provides further evidence including legal basis as the foundation of warrant. Refutation refers to an exceptional condition for an argument, and qualifier enables it to reveal the strength of the data toward the claim by the warrant (Figure 1).

In analyzing a mathematical argumentation, Toulmin scheme can be use. In mathematics education, Krummheuer (1995) started the trend of using Toulmin scheme to analyze the mathematical argumentation. However, Krummheuer (1995), Whitesnake and Knipping (2002) and Conner (2007) focused on the mathematical argumentation in the discussion. Before someone builds a valid argument with others, it is better they build a valid argument individually, so that the individual will be ready to discuss. An argument can exist in a dialogue or non-dialogue (Walton, 1990).

Critically, discussion is one instance that arguments exist in a dialogue that every participant attempts to bring out a correct view through their arguments addressed to other participants. Planning or solving a problem is one instance of argument in non-dialogue. While planning or solving a problem, an interactive reasoning can naturally take place, that the same person, in turns, plays roles as an initiator and respondent. Self-approach and self-debate will exist as well. Therefore, the focus of this research is the analysis of mathematical argumentation individually.

This study focuses on the components of warrant used when mathematical argumentation occurs. Toulmin (2003) also mentioned the importance of recognizing and understanding mathematical argumentation especially in the re-construction of the components of warrant. He stated that there is a chance to conduct a research on how a person builds a warrant in the field of mathematics by attempting to demonstrate variability or field-dependence. The warrant of an argument may depend on a particular limitation, of which to be concerned so that the truth of the argument will never be conflicted.

Weber and Alcock (2005) suggested that at least, there are three important elements as a core of an argument: data, conclusion, and warrant. Whenever a person brings out an argument, he/she is attempting to persuade audience with particular statement called conclusion. Supporting the conclusion, a presenter usually keep on providing evidence or data. An explanation presented by the presenter on how the provided data may support the conclusion is called warrant. In this phase, the audience may accept the data but not for the explanation stating that data determine the conclusion. In other words, the authority of warrant can be resisted. If this happens, the presenter needs to present additional supports for correcting the warrant. Thus, the warrant is the core of a valid argument. This study focused on the warrant of Freeman and Inglis (2005) and Ramos and Simpson (2007).

Freeman (2005) classified warrants into priori, empirical, institutional and evaluative. Inglis et al. (2007) classified three kinds of warrant: inductive, structural-intuitive, and deductive. The researchers refer to the classification of the types of warrant (Inglis et al., 2007) because the category has similarities with the proof-schemes outlined by Harel and Sowder (1998). Harel (2001) and Tall (2004) stated that it is a must to use a deductive warrant in undergraduate level. Therefore, this research focuses on how undergraduate students construct such a deductive warrant.

The researchers selected undergraduate students of Mathematics education program as the subject of their study; due to the fact that they are pre- service mathematics teachers for the future who will affect the development of students' thinking process in mathematical argumentation. Students must be able to

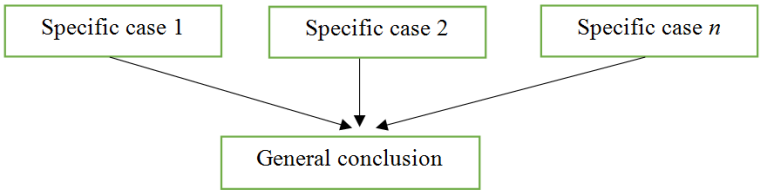



**Figure 2.** A Process of inductive warrant thinking.

make an argument for establishing the validity of allegation (NCTM, 2000). The students' argument depends on the construction of theorem culture during the class, the characteristics of the given task, and the kind of certain reasoning teacher emphasizes (Boero et al., 1999).

Thus, what teachers do can encourage their students to explain, note, and correct their intention during a class discussion. Whitenack and Knipping (2002) and Yackel (2002) found that what teacher did would encourage his/her students to explain, note, and correct their intention during the class discussion in order to improve their argument. Following Conner (2007), a concept of evidence and proof by mathematics teachers affects their practical teaching in facilitating students to argue.

This study aims to describe the construction of deductive warrant in mathematical argumentation done by pre-service teacher in completing certain mathematics tasks. The research questions of this study are as follows:

1. How is the structure of students' thinking in mathematical argumentation based on the components of Toulmin scheme?
2. How is the construction of deductive warrant derived from inductive warrant in mathematical argumentation based on Toulmin scheme?

## REVIEW OF LITERATURE

### Kinds of warrant in mathematical argumentation

Inglis et al. (2007) classified three kinds of warrant: inductive, structural-intuitive and deductive.

### Inductive warrant

Inductive *warrant* occurs when students ensure themselves and persuade some one else about the truth of an allegation by evaluating that allegation in one or more specific cases in order to reduce uncertainty of a conclusion made (Inglis et al., 2007). However, Soejadi (2000) addressed inductive warrant as a mind-set which begun with specific things, and then gradually leads to a general conclusion or common trait. Solso et al. (2008) suggested that in inductive reasoning, a conclusion is often expressed both explicitly and implicitly in the context of a statement of possibility. Following those experts, it can be concluded that inductive is a process of thinking which conclusion is made from specific cases to become a common trait, based on an observation toward that cases. A process of formulating a conclusion through inductive can be seen in Figure 2.

### Structural-intuitive warrant

The very first big study of intuition in mathematics education is conducted by Fischbein (1987). Fischbein (1987) suggested that intuition is often described as a kind of spontaneous thinking directly accepted through individual's belief when the information is related to their previous experience. It may be not identically be similar to someone else's belief, but it can be understood by anyone else. Kustos (2010) addressed that intuition in problem-solving can exist through 4 components:

1. Understanding a problem based on instinct, a response in thinking of a problem being faced.
2. Solving a problem based on intervention, relating the problem with learned knowledge.
3. Solving a problem needs a prior perception, and then runs that perception, until the truth of the answer becomes individual belief.
4. Global is that a problem solving conducted in whole package.

Structural-intuitive warrant occurs when students use observation or experiment, some kinds of mental structures whether visual or the otherwise, which leads them to a conclusion (Inglis et al., 2007). Following Fischbein (1987), Inglis et al. (2007) and Kustos (2010), the characteristics of intuitive and analytical/formal thinking can be concluded as indicated in Table 1. Here, structural-intuitive warrant occurs when students use a direct cognition beginning with perception, and then

**Table 1.** Characteristics of intuitive and analytical thinking.

| Intuitive thinking | Analytical thinking |
|---|---|
| Immediate or spontaneous answer based on direct cognition | The answer is based on systematical and logical thinking |
| A direct cognition which begins with perception and then run the perception made | The cognition is based on some rules, procedures of completion, applying a formula, definition, and theorem |
| Resulting some creative ideas | Verify and formulate more precise ideas as the final step of a creative process |

running the perception made, which results to a spontaneous or immediate answer based on that direct cognition.

## Deductive warrant

Deductive warrant is a correction of formal mathematics which is used to guarantee the conclusion of related argument. Such correction can be derived from various ways: deduction of axioms, manipulation of algebra, or the usage of *counterexamples*, in which all will be classified as deductive warrant (Inglis et al., 2007). Deductive mind-set is simply defined as a way of thinking derived from common traits that are applied or led to specific things (Soejadi, 2000). Harel and Sowder (1998) and Harel (2001) suggested that deductive scheme is the most sophisticated scheme. People with this scheme will use the deduction of axioms to create a truth. However, in this study, deductive warrant refers to a theory from Inglis et al. (2007) being a foundation derived from a justification process of formal mathematics which aims to guarantee the conclusion made. Such justification of formal mathematics comes from a deduction of axioms, manipulation of algebra or the usage of *counterexamples*.

## The construction of deductive warrant

The construction of deductive warrant from inductive one as stated in this study refers to the usage of inductive warrant in constructing a deductive warrant. Such construction occurs when students use inductive warrant in their mathematical argumentation. Hence, it will reveal a conclusion, since the qualifier of that conclusion is still probable, thus, the needs of using deductive warrant in that mathematical argumentation will exist in order to eliminate the uncertainty within the conclusion made.

Similarly, Inglis et al. (2007) did not deny that different kinds of warrant may probably exist, like combination of inductive and structural-intuitive. However, a combination found in this study is between inductive and deductive, thus, students construct deductive warrant beginning with inductive.

Many researches have examined argumentation on mathematics field (Krummheuer, 1995; Yackel, 2001; Kuhn and Udell, 2003; Verheij, 2005; Cross, 2009; Bizup, 2009; Tristanti et al., 2015; Tristanti et al., 2016). However, all have not discussed the process of constructing deductive warrant which begun with inductive in mathematical argumentation, yet.

Following the previous studies dealing with Toulmin scheme (Inglis et al., 2007) stating that particular parts of the scheme (backing and refutation as the most frequent ones) are not explicitly verbalized by a presenter due to the fact that the researchers do not only report the data from written answers, but they also explain the attitude and words expressed by the subject of their studies, although the subjects did not directly bring those out. Hence, the researchers need to see three important points: the written works, think-aloud subjects in mathematical argumentation when solving particular problems, and interview conducted toward the subjects.

## METHODOLOGY

### Subjects

The subject of this study is undergraduate students of STKIP PGRI Jombang of The Mathematics education program in the 6th semester. They are pre-service teacher in junior high and high school. They are selected due to the fact that they, in that semester, have learned relational concept. So that they can have the ability to solve a given problem. Selection of the subjects in this study were students who had argued with warrants deductive through inductive.

### Procedures

In the first phase, the subjects are asked to maximally express what they think of a given mathematics task (*think aloud*) during the process of problem-solving. Secondly, the researchers conduct a task-base interview. At a glance, this interview is conducted to find out what subjects are thinking when they conclude and do an act. The question can be in the form of "How do you think of this? Or "what are you thinking right now? Some questions are also delivered to see the reasons behind the way they are thinking.

### Instrument

This study applies two kinds of instruments, main and supporting instruments. The researchers place themselves as the main

**Some information is given as follows.**

Definition 1. Cartesian product A and B are set of all ordered counterpart $(a, b)$ with $a \in A$ and $b \in B$, in the form of $A \times B = \{(a, b) \mid a \in A \text{ and } b \in B\}$.

Definition 2. R is binary relation to set S, if R refers to a non-empty set of S x S.

Definition 3. Given $a, b \in S$ and R is binary relation to set S. $a$ relates to $b$, notated as $a$ R $b$ if $(a, b) \in R$.

Definition 4. Given R is a binary relation to set S. S is partially ordered set of R if it meets some criteria:

1. Reflective: if $a$ R $a$ for every $a \in S$,
2. Transitive: if $a$ R $b$ and $b$ R $c$, $a$ R $c$ for every $a, b, c \in S$,
3. Antisymmetric: if $a$ R $b$ and $b$ R $a$, $a = b$ for every $a, b \in S$.

Definition 5. Given S is a partially ordered set of binary relation R to S, and A is subset of S. Then, A refers to *chain*, if each of two different elements of $a$, $b$ in A fits whether $a$ R $b$ or $b$ R $a$.

Definition 6. S is partially ordered set of binary relation R to S, and B is a subset of S. B refers to antichain, if each of two different elements of $a$, $b$ in B fits both $a$ R $b$ and $b$ R $a$.

**Investigate the truth of the following mathematical statements.**

4. If $\mathbb{Z}$ is a set of integers and P is binary relation to $\mathbb{Z}$ notated as $P = \{(a, b) \in \mathbb{Z} \times \mathbb{Z} \mid a - b = 7k$, for $k$ is whole number$\}$, then, binary relation P on set $\mathbb{Z}$ is antisymmetric.
5. If P is not chain, P is antichain.

**Figure 3.** Problem-solving mathematics task.

instrument. Furthermore, they use other three kinds of instruments as the supporting ones, including mathematics task, interview manual, and video recording. Mathematics task is applied to figure out which kind of warrant is in mathematical argumentation as shown in Figure 3.

The researchers adapt the task based on the research instruments applied by Inglis et al. (2007). According to the instruments, some information is given, and then subjects need to investigate certain statements. Each of them is asked to investigate the two statements at different time. While completing the task, they are asked to verbally express what they are thinking during the process as much as possible. The researchers take a video recording to tape every activity done by the subjects during the process.

#### Data analysis

Data from *think aloud* and interview are scripted and analyzed. The data collection process can be seen in Figure 4. The researchers conduct a three-phase analysis of qualitative data by Miles and Huberman (1992), and a six-phase analysis and interpretation of qualitative data by Creswell (2012). Those analysis phases are:

1. Data transcription
2. Data reduction
3. Data coding
4. Check the validity of the data or the triangulation of data
5. Data analyzing
6. Finding interpreting
6. Conclusion making.

## RESULTS

The researchers involve 50 undergraduate students of Mathematics education major in STKIP PGRI Jombang. This study was conducted in February 25 to March 22,

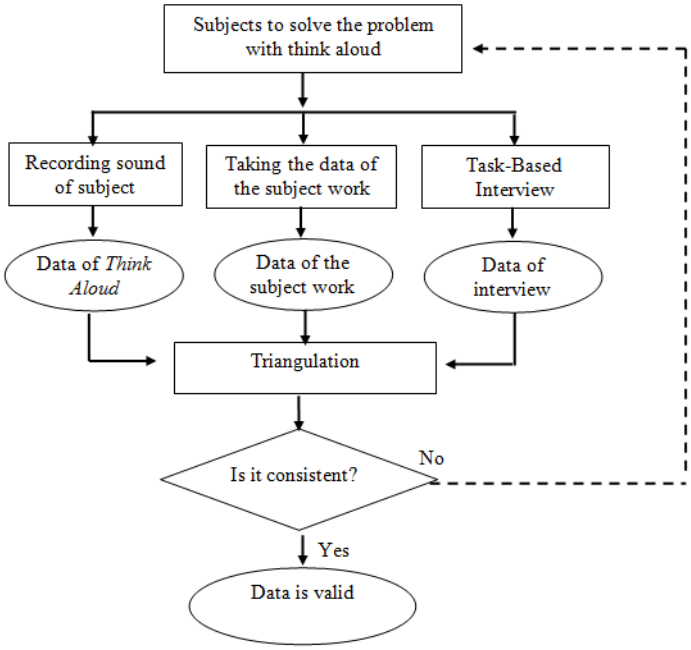



**Figure 4.** Data collection techniques.

**Table 2.** Kinds of warrant used by students.

| Kinds of warrant | The number of students using warrant for statement 1 | The number of students using warrant for statement 2 |
|---|---|---|
| Inductive | 5 | 6 |
| Structural-intuitive | 3 | 3 |
| Deductive | 5 | 7 |
| Inductive and structural-intuitive | 4 | 3 |
| Structural intuitive and deductive | 16 | 18 |
| Inductive and deductive | 17 | 13 |

2016. Table 1 presents the kinds of warrant the students used, as follows.

Based on Table 2, it shows that, in mathematical argumentation of statement 1, 5 students use inductive warrant, other 3 use structural-intuitive, other 5 used deductive, other 4 use inductive and structural-intuitive, other 16 uses structural intuitive and deductive, and other 17 use inductive and deductive. Whereas, in statement 2, 6 students use inductive warrant, other 3 uses structural-intuitive, other 7 use deductive, other 3 use inductive and structural-intuitive, other 18 use structural intuitive and deductive, and other 13 use inductive and deductive.

More than 60% of the students construct deductive warrant from non-deductive ones. Inductive and structural-inductive are non-deductive warrant. Thus, the researchers are interested to describe a process of constructing deductive warrant beginning with non-deductive ones. The researchers will describe the process from inductive one in mathematical argumentation expressed by the subjects, since this construction may whether strengthen or oppose the conclusion made by inductive warrant.

A construction of deductive warrant from inductive one for task 1, begins with subject ND expresses given information, $\mathbb{Z}$ refers to integers, and gives models of $\mathbb{Z}$ element: -2, -1, 0, 1, 2. Other elements of $\mathbb{Z}$ is coded with ". . .". Next, subject ND defines binary relation P, P = {($a$, $b$) $\in \mathbb{Z} \times \mathbb{Z}$ | $a - b = 7k$ , $k$ is element of whole number}. The intention of subject ND expressing such information is because it will become the data to conclude that whether or not binary relation P on set $\mathbb{Z}$ is antisymmetric. It is seen based on the data of *think aloud* by subject ND

during the task completion, interview transcription, and his written work.

Researcher: "After reading the task, why did you write this? (*showing subject ND's work*)
Subject ND: "This is information given within the task"
Researcher: "There is much information within this task, why did you take this information to be noted?"
Subject ND: "I will use this information to see whether or not binary relation P on set $\mathbb{Z}$ is antisymmetric" (data)

After subject ND shows the data used and the conclusion made, the subject determines element models of P. Doing so, given the value of $a = 5$ and $b = -2$. Subject ND randomly determines the value of $a = 5$ from $\mathbb{Z}$. The reason why he determines $b = -2$ since $b \in \mathbb{Z}$ and the result of $a - b$ is $7k$. Subject ND seeks certain integers as $b$ which fits $5 - b = 7k$, $k$ is a whole number. With $k = 1$, the subject determines $b = -2$. Thus, subject ND determines (5, -2) as the element model of P. Next, he examines whether or not (5, -2) is antisymmetric. He use the term "antisymmetric" referring to "if $a \neq b$, so $a$ P $b$ or $b$ P $a$" in examining (5, -2). Subject ND states that $5 \neq -2$, 5 P -2 and -2 P 5. $a$ P $b$ refers to $a$ and $b$ has such a binary relation P that fits $a - b = 7k$, with $k$ as whole number. 5 P -2 indicates that 5 and -2 has such a binary relation P that fits $5 - (-2) = 7k$, with $k = 1$. -2 P 5 indicates that -2 and 5 has no such a binary relation P because $-2 - 5 \neq 7k$. Subject ND suggests that (5, -2) meets an antisymmetric characteristic due to $5 \neq -2$ and fulfills whether 5 P -2 or -2 P 5. He also suggests that binary relation P is antisymmetric because $(5, 2) \in$ P is antisymmetric. This is based on *think aloud* data by Subject ND while completing the task and also based on his written work.

*Inductive* warrant

Subject ND: "Both $a$ R $b$ and $b$ R $a$ are antisymmetric, so $a = b$, with $a$, $b$ as elements of $\mathbb{Z}$. The P equals to (*keeping silent for a while, and then going back on his reading*) 5 and -2 since $a - b = 7k$, $5 - (-2) = 7k$, $7 = 7k$, so $k = 1$, 1 is an element of whole number, so (5, -2) is element of P. Next, about antisymmetric (*keeping silent for awhile*), it is if $a$ R $b$ and $b$ R $a$ so it is whether $a = b$ or $a \neq b$, it is also whether $a$ R $b$ or $b$ R $a$. 5 ≠ -2, yes, of course, 5 R -2 is yes, -2 R 3 is no, so binary relation P on set $\mathbb{Z}$ is antisymmetric."

Based on the *think aloud* data and the subject's written work as shown in Figure 6, it seems that Subject ND determines the element model of P, evaluates them with a definition of antisymmetric, and conclude that binary relation P is antisymmetric. He uses a specific model to make such conclusion. Thus, he uses inductive warrant in his mathematical argumentation to guarantee the truth of his conclusion. He determines another element model of P, (14, 7), with $a = 14$ and $b = 7$. Subject ND randomly determines the value of $a = 14$ from $\mathbb{Z}$ as well. His intention determining $b = 7$ is because $b \in \mathbb{Z}$ and the result of $a - b$ is $7k$. He seeks integers as $b$ that fits $14 - b = 7k$, $k$ is a whole number. With $k = 1$, Subjek ND takes $b = 7$. Next, he examines whether or not (14, 7) is antisymmetric. In doing so, he uses the same strategy as when he examined (5, -2) with a definition of antisymmetric. He also mentions that binary relation P is antisymmetric since $(14, 7) \in$ P is antisymmetric. This is based on what is stated in *think aloud* data by Subjek ND while completing the task and also based on what his written work.

Subject ND: "then, the P equals to (*keeping silent for awhile*) 14 (*keeping silent for awhile*) 7, $a - b = 7k$, and $14 - 7 = 7k$, $7 = 7k$, so $k = 1$, 1 is whole number. Next, about antisymmetric (*going back on his reading*), this $a \neq b$ so if $a \neq b$ then it is whether $a$ R $b$ or $b$ R $a$. It is not 14 = 7, but 14 R 7, 7 R 14 is a no, because it meets $a \neq b$ so it is whether $a$ R $b$ or $b$ R $a$, thus, P is antisymmetric. After all, binary relation P on set $\mathbb{Z}$ is antisymmetric."

*Inductive warrant*

Based on the *think aloud* data and the written works on Figures 6 and 7, it seems that subject ND determines an element model of P with $a \neq b$ and then evaluates the model through a definition of antisymmetric, "If $a \neq b$ so it is whether $a$ relates to $b$ ($a$ R $b$) or $b$ relates to $a$ ($b$ R $a$)". Next, he determines an element model of P with $a = b$, (3, 3). He randomly determines such model from set $\mathbb{Z}$. Then, he examines whether or not the model (3, 3) meets the definition of binary relation P. Thus, he substitutes $a = b = 3$ into $a - b = 7k$ and takes (3, 3) as the element of P. He examines whether or not the element (3, 3) meets the nature of antisymmetric. He uses the same strategy as when he examined (5, -2) and (14, 7) with a definition of antisymmetric. At this time, however, he does not such definition stating "If $a \neq b$ so it is whether $a$ R $b$ or $b$ R $a$ so P is antisymmetric". He uses a definition of antisymmetric stating "If $a$ R $b$ and $b$ R $a$ so it is $a = b$". Subject ND also notes that $(3, 3) \in$ P is antisymmetric. This is based on what is stated on *think aloud* data expressed by subject ND when completing the task and also based on his written work.

Subject ND: "Hemp…, given the P equals to (3, 3), $a - b = 7k$, and $3 - 3 = 7k$, $0 = 7k$, then it will be $k = 0$, $k = 0$ is whole number, it is done (*keeping silent for a while*). Yeach,… then both $a$ R $b$ and $b$ R $a$ are antisymmetric and $a = b$, since from its beginning, the $a$ is 3, both 3 R 3 and 3 R 3 are right, thus, 3 = 3 is right, it is antisymmetric."

Subject ND makes another element model of P with $a = b$, (10, 10). He uses the same strategy as when he examined whether or not (3, 3) meets the definition of binary relation P and the definition of antisymmetric as

Data used by Subject ND to make a conclusion

Subject ND : "(reading the task) $\mathbb{Z}$ is a set of integers of {. . ., -2, -1, 0, 1, 2, . . .} (*keeping silent for a while and then going back on his reading*) P is binary relation of $\mathbb{Z}$, noted as binary relation due to a non-empty space of $\mathbb{Z} \times \mathbb{Z}$. Definition of binary relation $P = \{(a, b) \in \mathbb{Z} \times \mathbb{Z} \mid a - b = 7k$, $k$ is the element of whole number }. Is binary relation P on set $\mathbb{Z}$ antisymmetric? Antisymmetric is both $a$ R $b$ and $b$ R $a$, so $a = b$, with $a$, $b$ as element of $\mathbb{Z}$".

The conclusion that will be gained by subject ND

**Figure 5.** Subject ND's work.

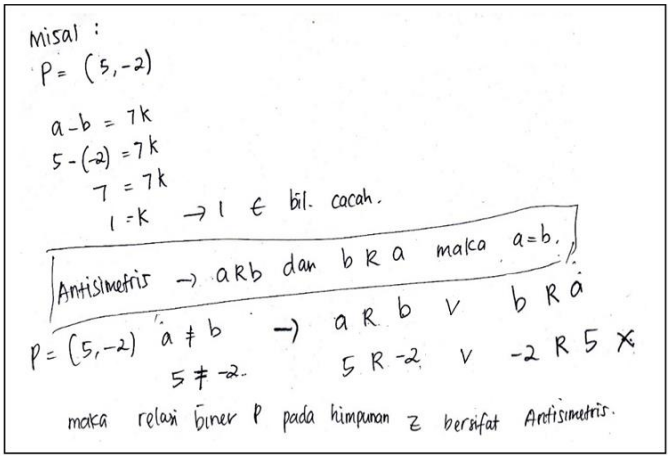



**Figure 6.** Subject ND's work.

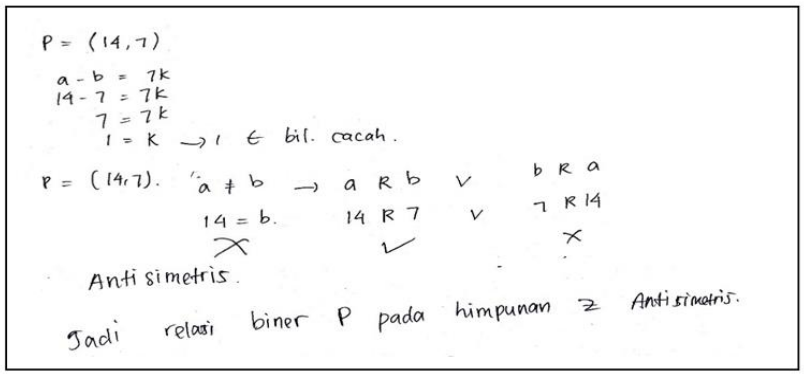



**Figure 7.** Subject ND's work

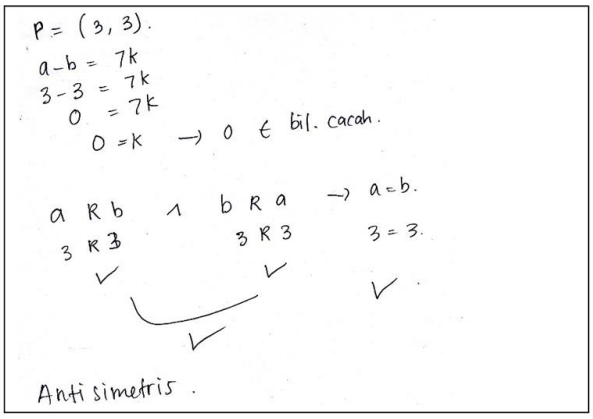



**Figure 8.** Subject ND's work.

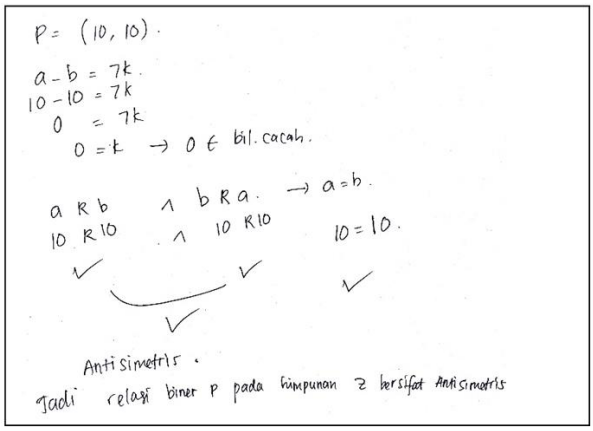



**Figure 9.** Subject ND's work.

as well. He suggests that (10, 10) ∈ P is antisymmetric. He also states that binary relation P on set Z is antisymmetric based on an observation conducted on both (3, 3) and (10, 10). This is in accordance to *think aloud* data done by subject ND while completing the task and also based on his written work.

Subject ND: "Hemp,… if another given P is (10, 10), it will be $a - b = 7k$, $10 - 10 = 7k$, $0 = 7k$, hence, $k = 0$, 0 is whole number. It is right, isn't it? Thus, it will become antisymmetric is $a$ R $b$ and $b$ R $a$, so, $a = b$. 10 R 10, it is right, and 0 R 10 is also right, so 10 = 10 is right, thus, it is antisymmetric. As (3, 3) and (10, 10) are both antisymmetric, the binary relation P on set ℤ is antisymmetric."

Based on *think aloud* data and subject's written work as shown in Figures 5, 6, 7, 8, and 9, it indicates that in giving a guarantee for the truth of his conclusion, Subject ND uses some specific element models of P including (5, -2), (14, 7), (3, 3) and (10, 10). He uses similar strategy to examine whether or not each of his models is antisymmetric. Thus, he uses inductive warrant in his mathematical argumentation. He makes an instance ($a$, $b$) ∈ P by considering 2 states: $a \neq b$ and $a = b$.

Nevertheless, after ensuring his conclusion with inductive warrant, subject ND starts constructing a deductive warrant. This is because some elements of ℤ that meet binary relation P and identifying some elements model of P with a definition of anti-symmetrical nature. *Qualifier* of a conclusion in its mathematical argumentation is *probable* since the conclusion is made based on some specific data.

Subject ND needs to construct deductive *warrant* in his mathematical argumentation to easily make general conclusion without any requisite or disclaimer. This is based on *think aloud* data done by the subject and his written work while completing the task. The interview transcription conducted by the researchers is included as well.

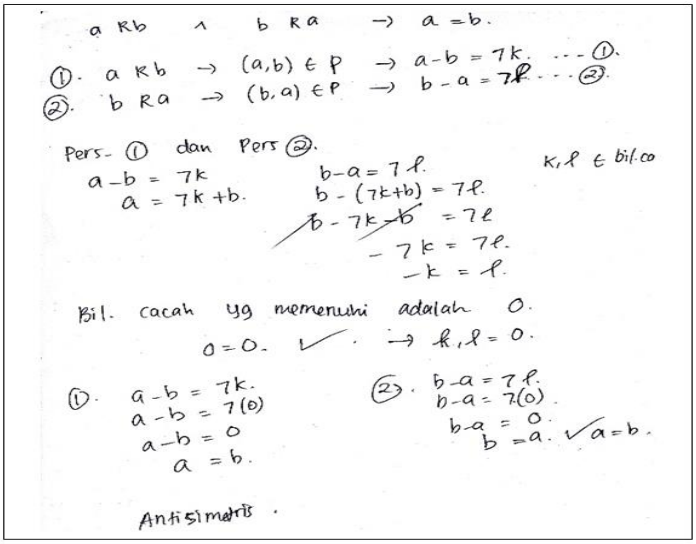
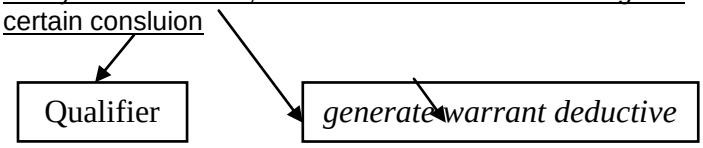



**Figure 10.** Subject ND's work.

Subject ND: "(*keeping silent for a while, and going back on his reading again)* hemp,… I try to use deductive to make the conclusion generally accepted." (*constructing deductive warrant*)

Furthermore, the results of interviews with subject ND are as follows:

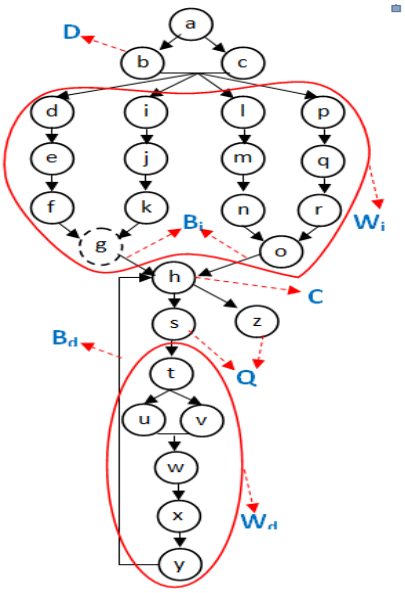
Researcher : "Why did you use this deductive as your way?"
Subject ND : "Here, for inductive, I just took some pairs of $\mathbb{Z}$ to be the elements of P, then, I identified those elements of P with a definition of antisymmetric. Hence, binary relation P on set $\mathbb{Z}$ is likely to be antisymmetric. Thus, I tried to use deductive to get a certain consluion




Subject ND starts writing down a definition of antisymmetric by using "$a$ R $b \wedge b$ R $a \Rightarrow a = b$" as the symbol. He relates the definition of antisymmetric and binary relation P, $a$ R $b$ indicating that $(a, b) \in$ P with $a - b = 7k$, which $k$ is whole number and $b$ R $a$ indicating that $(b, a) \in$ P with $b - a = 7l$, which $l$ is whole number. He calls $a - b = 7k$ as equation 1 and $b - a = 7l$ as equation 2. Then, he keeps substituting both equations until he finds $-k = l$. He states $k = l = 0$ for the whole numbers within $-k = l$ is 0. He substitutes $k$, $l = 0$ into both equations that $a = b$ to be reached. He concludes that binary relation P on set $\mathbb{Z}$ is antisymmetric. This is based on *think aloud* data done by the subject and his written work while completing the task.

Subject ND: "If $a$ R $b$ and $b$ R $a$ so it is $a = b$. Hence, the first $a$ R $b$ has $a$ and $b$ in set $\mathbb{Z}$ with ($a$, $b$) as the elements of P. This is in accordance to the definition stated in the task which $a - b = 7k$ to be equation 1. The second $b$ R $b$ indicating that ($b$, $a$) is an element of P so that $b - a = 7k$, this becomes equation 2. Based on both equations, Hemp… $a - b = 7k$ so that $a = 7k + b$, equation 1 can be substituted into equation 2, $b - a = 7k$, wait a minute… (*keeping silent for a while*) $a - b = 7k$ so that $b - a = 7l$. Thus, it will be $b - a = 7l$, $a$ is substituted into $7k + b$, $b - (7k + b) = 7l$, $b - 7k - b = 7l$, $b$ minus $b = 0$ becomes $-7k = 7l$, so, it will be $-k = l$. Hemp,… (*keeping silent for a while and then going back on his reading)* how comes….it is not allowed to be distributed into equation 1, $k$ is whole number. It means that the whole number that fits $-k = l$ is 0, indicating that 0 = 0. And, (*keeping silent*) let's distribute it into equation 1 and 2, respectively, for equation 1, $a - b = 7k$, $a - b = 7$ times 0, $a - b = 0$, then it will be $a = b$. For equation 2, $b - a = 7l$, $b - a = 7$ times 0, $b - a = 0$ then it will be $b = a$ or $a = b$. And yeach..it is antisymmetric" (*describing deductive warrant in detail*).

Based on *think aloud* data and the subject's written work on Figure 10, it seems that when giving a guarantee for the truth of his conclusion, subject ND uses a part of the definition of antisymmetric and manipulates the algebra. *Qualifier* of the conclusion in his mathematical argumentation is *certain* since the uncertainty of that conclusion has been removed. The structure of subject ND's thinking can be seen on Figure 11, whereas the scheme of subject ND's mathematical argumentation is presented in Figure 12.




| | | | |
|---|---|---|---|
| a | Read the task given | r | Decide (10, 10) ∈ P |
| b | Determine data used | s | Provide a *qualifier* to the conclusion, *probable* |
| c | Determine conclusion target | | |
| d | Make such a prospective element model of P with $a \neq b$, which is (5, -2) | t | Write down a definition of antisymmetric |
| e | Identify (5, -2) with the definition of binary relation P, $a - b = 7k$, with $k$ as whole number. | u | Relate $aRb$ within the definition of antisymmetric to the definition of binary relation P, $aRb$ indicating that $(a, b) \in$ P with $a - b = 7k$ |
| f | Determine (5, -2) ∈ P | | |
| g | Identify (5, -2) ∈ P and (14, 7) ∈ P with the definition of antisymmetric, "if $a \neq b$ and $bRa$ then $a \mathcal{R} b$" | v | Relate $bRa$ within the definition of antisymmetric to the definition of binary relation P, $bRa$ indicating that $(b, a) \in$ P with $b - a = 7l$ |
| h | Conclude that binary relation P on set $\mathbb{Z}$ is antisymmetric | w | Substitute $a - b = 7k$ into $b - a = 7l$ |
| | | x | Determine $-k = l = 0$ |
| i | Make such a prospective element model of P with $a \neq b$, (14, 7) | y | Substitute $k, l = 0$ to $a - b = 7k$ and $b - a = 7l$ |
| j | Identify (14, 7) with the definition of binary relation P, $a - b = 7k$, with $k$ as whole number | z | Provide a *qualifier* to the conclusion, *certain* |
| | | $B_i$ | *Backing* to inductive *warrant* |
| k | Determine (14, 7) ∈ P | $B_d$ | *Backing* to deductive *warrant* |
| l | Makes such a prospective element model of P with $a = b$, which is (3, 3) | C | Conclusion |
| | | D | Data |
| m | Identify (3, 3) by the definition of binary relation P, $a - b = 7k$, with $k$ as whole number | $W_i$ | *Warrant* inductive |
| | | $W_d$ | *Warrant* deductive |
| n | Determine (3, 3) ∈ P | → | The order of thinking when completing the task |
| o | Identify (3, 3) ∈ P with the definition of antisymmetric, "if $aRb$ and $bRa$ then $a = b$" | – → | The components of a scheme of mathematical argumentation is based on Toulmin scheme |
| p | Make such a prospective element model of P with $a = b$, (10, 10) | | Activity right thinking |
| | | | activity wrong thinking |
| q | Identify (10, 10) with the definition of binary relation P, $a - b = 7k$, with $k$ as whole number | | A set of thinking activities on the components of *warrant* |

**Figure 11.** The structure of undergraduate student's thinking in mathematical argumentation based on the components of Toulmin scheme.

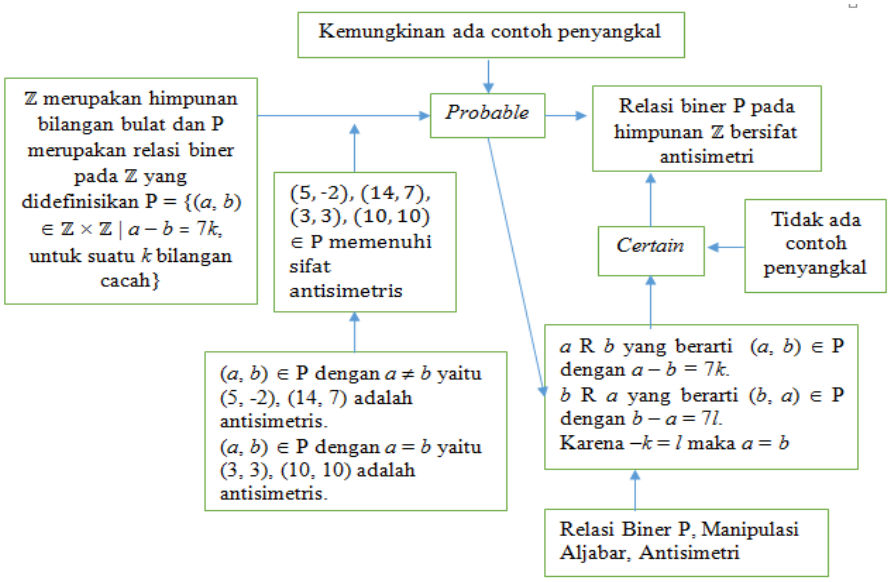



**Figure 12.** The Scheme of Subject ND's Mathematical Argumentation based on Toulmin Scheme.

## DISCUSSION

Based on the data analysis of *think aloud*, interview and written work done by the subject, it shows that in constructing a deductive warrant in mathematical argumentation, the subject needs to use inductive warrant. The subject does not directly use some abstract objects; he uses some concrete objects as the bridge to understand those abstract ones. This is in line with Martin and Harel (1989) and Fischbein and Kedem (1982) that neither inductive nor deductive argument can stand by its own as mathematical evidence. This indicates that inductive framework is constructed at the beginning of deductive framework.

Construction deductive warrant occurs when a student uses inductive warrant in mathematical argument resulting in a conclusion, because the conclusion obtained qualifier is still probable, then there is a need to use deductive warrant in mathematical argument that the uncertainty of conclusions can be removed. A process of constructing deductive warrant begins when *qualifier* of a conclusion derived from inductive warrant is *probable*. Thus, the conclusion is questionable that a disclaimer may exist. Therefore, it is necessary to have deductive warrant so that any hesitancy can be vanished.

Soejadi (2007) suggested that a nature/theorem/principle is initially found through inductive ways, that should be strengthened by deductive ones. A conclusion derived from inductive warrant may be different from that with deductive one. Thus, a deductive warrant may whether strengthen or even weaken the conclusion derived from inductive warrant. However, it is common that undergraduate students should have changed their inductive mind-set into deductive, since a deductive scheme is the only warrant accepted for the truth of mathematical argumentation (Inglis, Ramos & Simpson, 2007; Harel, 2001; Harel and Sowder, 1998; Tall, 2004).

The study data indicate students do not always reach the conclusion through mathematical argumentation with deductive warrant. However, students are required to reach the conclusion through mathematical argumentation with deductive warrant. Therefore, educators must help students to construct a valid mathematical argumentation. Valid mathematical argumentation is argument with warrant deductive. In constructing mathematical argument with deductive warrants can be through inductive warrant because mathematics in finding theorem or definition of indirect deductively. Educators in helping students to construct mathematical argumentation can use Toulmin scheme, educators can indicate the possibility of rebuttal if using non-deductive warrant. Educators can also indicate qualifier on the conclusions reached through non-deductive warrant.

## Conclusion

Students do not directly use deductive warrant in expressing their mathematical argumentations. They initially need an inductive warrant as a bridge to construct

such a deductive one. Based on the data analysis, undergraduate students construct a deductive warrant due to the lack of a conclusion derived from inductive warrant. Thus, a deductive warrant is needed to strengthen the conclusion. A deductive warrant will change the *qualifier* of a conclusion from *probable* to *certain*. Inductive warrant plays an important role in mathematical argumentation in the term of generating a deductive warrant. Although a deductive warrant is needed in mathematical argumentation, it still requires an inductive mind-set that includes presentation of its nature, theorem, and definition with some models in the first phase, consisting of specific things that lead to a general conclusion.

## Conflict of Interests

The authors have not declared any conflict of interests.

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Educational Research and Reviews

*Full Length Research Paper*

# Status of biology laboratory and practical activities in some selected secondary and preparatory schools of Borena zone, South Ethiopia

**Tolessa Muleta Daba*, Baressa Anbassa, Bula Kere Oda and Itefa Degefa**

Department of Biology, Bule Hora University, P. O. Box144, Bule Hora, Ethiopia.

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**Science laboratory is a very important resource input for teaching science. Learning science is enhanced and the understanding level is improved when students are engaged in science laboratory for practical experiments. The current study aimed to assess the status of Biology laboratory and practical activities in some selected secondary and Preparatory schools of Borena Zone. A random sampling technique was employed to collect data from students, Biology teachers and technicians of the study schools. Structured and semi-structured questionnaires and observation of laboratories and other facility was used. All respondents (100%) from Kilenso School respond as there is no laboratory room while majority of respondents (80.2%) from Bule Hora School respond as they have common laboratory for each science and no separate laboratory for Secondary and Preparatory school. In all schools there is no facility, equipments and chemicals are simply stored in non-ventilated laboratory room due to absence of skilled laboratory technicians and even no cooling system. The current study is similar to report of Hunde and Tegegne (2010) in which Jimma University community school and Yebu School have laboratory which is not functional while Bilida School has no laboratory set up at all. The study is also similar to the report of Tesfamariam et al. (2014) in which most laboratory rooms available in secondary schools of Mekele town were not built for laboratory purpose and lacked even the most facility. Absence of laboratory practical activities makes students at secondary and preparatory schools of the study area lack interest to join science class.**

**Key words:** Laboratory, secondary school, practical activity, biology.

## INTRODUCTION

Science laboratory is a very important resource input for teaching science and is an important predictor of academic achievement (Dahar, 2011). Science laboratories made this world very advanced and scientific in its purposes. Many researchers suggested that learning science is enhanced and the understanding level is

*Corresponding author. E-mail: tolessan2012@gmail.com.

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improved when students are engaged in science laboratory for practical experiments (Hofstein and Lunetta, 2004; Hofstein, 2004). The laboratory has been given a central and distinctive role in science education, and science educators have suggested that rich benefits in learning science come as a result of using laboratory activities (Hofstein and Lunetta, 2003). However, the facilities for teaching science are not up to the standard at secondary and higher secondary school stages (Dahar, 2011). Secondary school is the base in preparing students for science education. It is at this level they were exposed to laboratory equipments, activities and precaution or safety rules. A secondary school laboratory should have the equipment necessary to conduct meaningful demonstrations and experiments. Teachers should understand that students with limited strength or mobility can have a full laboratory experience with appropriate accommodation, such as a lab assistant (Tenaw, 2015).Hunde and Tegegne (2010) reported that**,** despite the fact that laboratories have multiple benefits ranging from making learning concrete to lying basis for science education; students were deprived of such opportunities.

Many countries have given attention to the effective implementation and practice of science education at their secondary schools (Beyessa, 2014). China and India are the two outstanding countries strengthening their science curriculum standards to become economic and industrial powerhouses and in several ways compete effectively with developed countries (Hallinan and Sorensen, 1987). Malaysian Government had announced a new education policy to strengthen the education standards in science and technology to compete with advanced countries and vowed to stand in the list of developed countries in 2020 (Mahathir, 1991). The Commission for Africa report recommends that African countries have to take specific action that strengthen science, engineering and technology capacity since such knowledge and skills help countries to find their own solution to their own problem (Teshome, 2007). Similarly, currently the Ethiopian government determined and introduced what is now known as a "70:30 professional mix which 70% will be Science and technology streams while 30% will be Social Sciences and Humanities streams at higher education. This demonstrated that the government has given due consideration to science education (Tesfaye et al., 2010). However, production of quality professionals in science and technology is influenced by entrants who in turn influenced by the extent to which secondary education laid foundation in Natural Sciences (Swail et al., 2003). The implementation process of science education is limited in Ethiopian schools and students in Ethiopia generally perform poorly in science subjects (Samuel and Welflord, 2000). Academically less prepared students of secondary schools prefer Humanities and social sciences than science and technology. This not different in the study area where majority of preparatory complete students join social science and humanities for their higher education study. Therefore, the current study is aimed to assess the status of Biology laboratory and practical activities in biology class of selected secondary and Preparatory schools of Borena Zone.

## METHODS AND MATERIALS

### Description of study area

Borana zone is one of 13 administrative zones within Ethiopia's Oromia state. It is located in the Southern part of the state and borders of Kenya. Yabello is the capital town of the zone and lies 570 km south of Addis Ababa. The zone covers 48,360 $km^2$ of which 75% consists of lowland; the zone is frequently exposed to droughts (Lasage et al., 2010).

### Study population and sampling techniques

The subject of this study is students of grade nine to twelve, Biology teachers, laboratory technician and observation of the laboratory.

### Study design, methods of data collection and sampling

Descriptive survey study was used to assess the status of Biology laboratory and practical activities in biology class of selected secondary and preparatory schools of Borena zone from February 2016 to June 2016. The data was obtained from primary sources through self-administrated questionnaire. A sample from population was selected to generalize the whole students and science teacher's to make the overall conclusions. Stratified random sampling technique was used in order to get more precise estimators which represent the whole population. Five secondary and preparatory schools were randomly selected from the schools available in Borena zone. The target population was students of grade nine, ten, eleven, twelve and science teachers.

### Data analysis

The gathered data was reviewed, and then analyzed to form some sort of finding or conclusion. It was analyzed using SPSS, interpreted quantitatively and qualitatively, presented in tables and statements.

### Ethical consideration

Consent Letter was written from Bule Hora University to each school. Before collection of data through observation and questionnaire from students and teachers formal permission was taken from the schools and informants.

## RESULTS

### Status of biology laboratory

Figure 1 shows the status of Biology laboratory in each

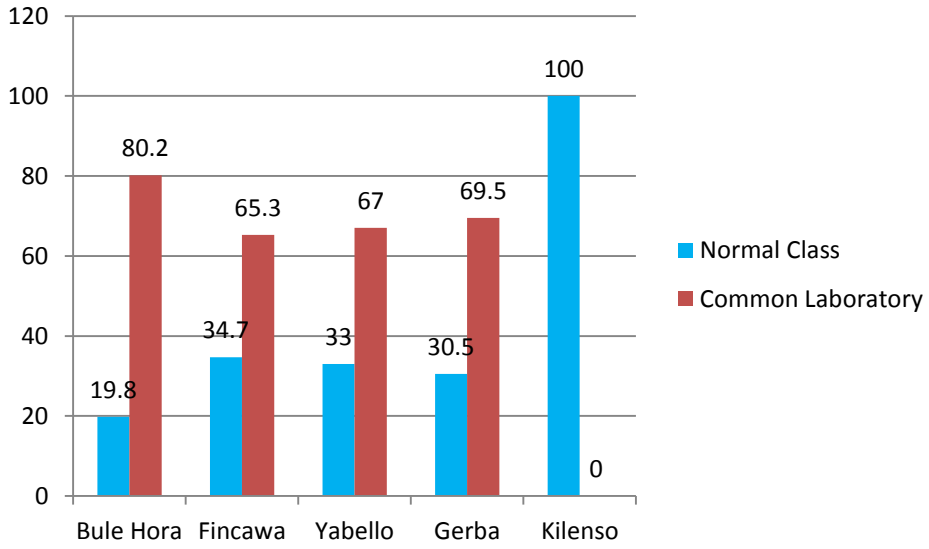


**Figure 1.** Status of biology laboratory in schools understudy.

school under study. Of the total student and teacher respondents from Bule Hora, Fincawa and Yabello schools, majority of respondents (80.2%) from Bule Hora School respond as they have common laboratory for each science and no separate laboratory for Secondary and Preparatory school. Similarly of respondents from Fincawa 65.3% responded as there is no separate laboratory for each science education while 34.7% respond as they use normal class for laboratory. This may be because since preparatory schools have no any laboratory facility and it is only the room that is found and the teachers use normal class for laboratory. The result also shows that of the respondents from Yabello, 67% of them responded that they use common laboratory for all sciences and for both secondary and preparatory schools. Respondents of Gerba secondary school, 69.5% responded as there is one common laboratory room which is not functional and remains closed through each year. All respondents (100%) from Kilenso School responded as there is no laboratory room and its facility in Kilenso Secondary school.

## Facility available in biology laboratory

The Figure 2 shows that, of the total respondents from Bule Hora School, 75% of them responded as the existing laboratory is empty while 25% of them respond as the laboratory is poorly equipped. Of respondents from Fincawa, 90% of the respondents replied as the existing laboratory is empty while 10% said that the laboratory is poorly equipped. But 50% of respondents from Yabello School responded as the existing laboratory is empty. Respondents from Gerba School said that even though they do not know whether laboratory have facilities since it was not opened yet and not functional through each year, 65% of them replied as the available laboratory is poorly arranged. In Kilenso secondary school all respondents (100%) said no science laboratory at all rather empty normal teaching classroom.

## Arrangement of biology laboratory

Figure 3, indicates arrangement of Biology laboratory and of the total respondents from all schools, 87.5% of the respondents from Fincawa school replied as the existing laboratory is not arranged while 70.1% from Gerba also indicated as the laboratory is not arranged. Half of respondents (50%) from Bule Hora School respond as the existing laboratory is not arranged while lowest number (37.5%) from Yabello school responded as the existing laboratory is not arranged. Due to absence of any laboratory or laboratory room in Kilenso School, all of the respondents (100%) replied as the laboratory is not arranged.

## Frequency of practical activities performed in the schools

Table 1 shows the frequency of practical activities in all schools. Of total respondents, 70% replied that they were not used practical activities available on their book at all while 8.8% of them responded as they always use practical activities.

## Performed practical activities from text book

Figure 4 shows the percentage performed practical

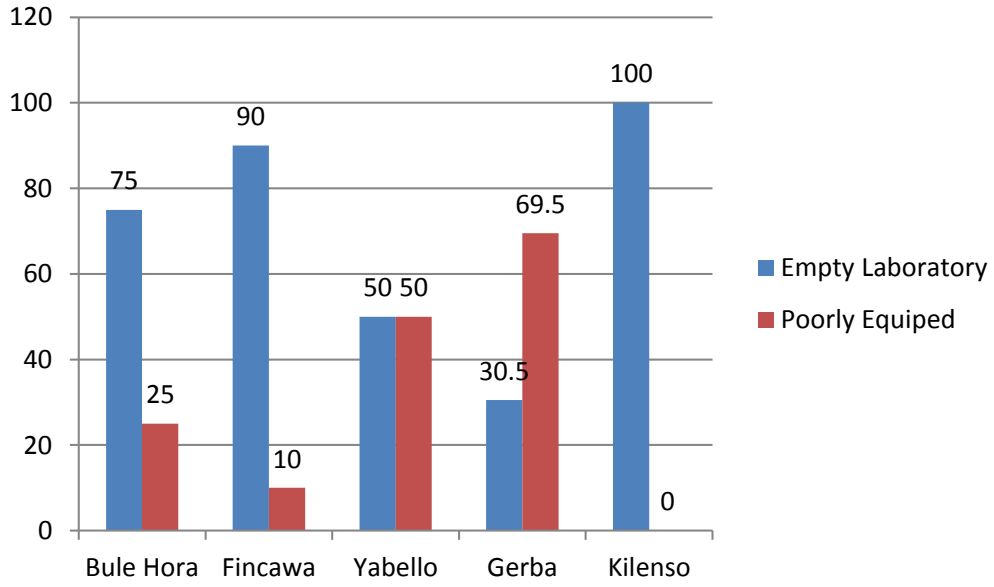


**Figure 2.** The facility of each school biology laboratory.

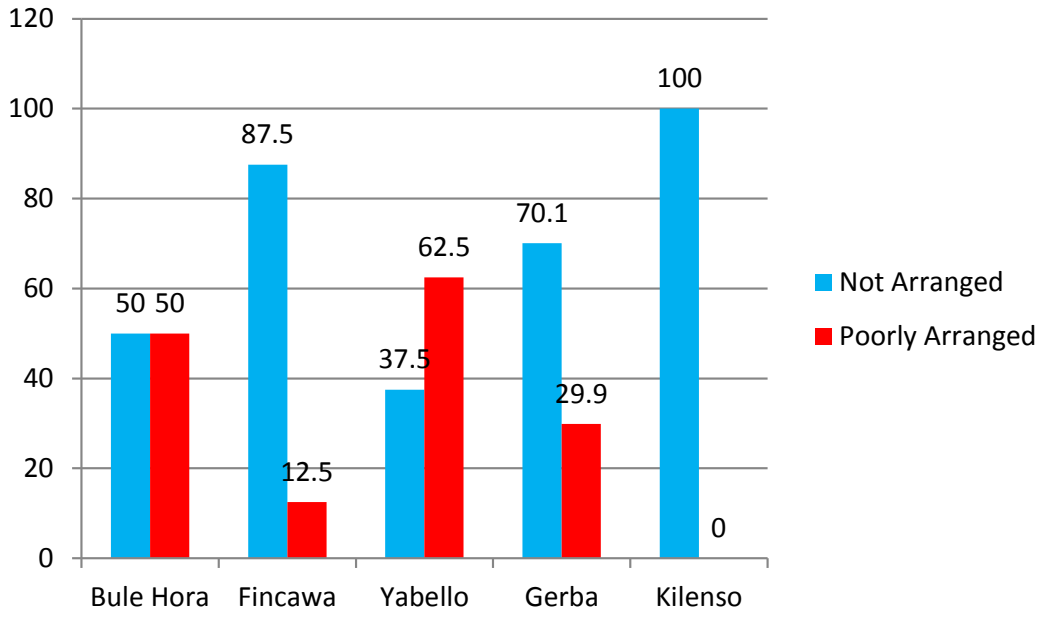


**Figure 3**. Arrangement of biology lab.

**Table 1.** The frequency of practical activities in schools.

| Variables | Frequency | Percent |
|---|---|---|
| Not at all | 182 | 70.0 |
| Sometimes | 55 | 21.2 |
| Always | 23 | 8.8 |
| Total | 260 | 100.0 |

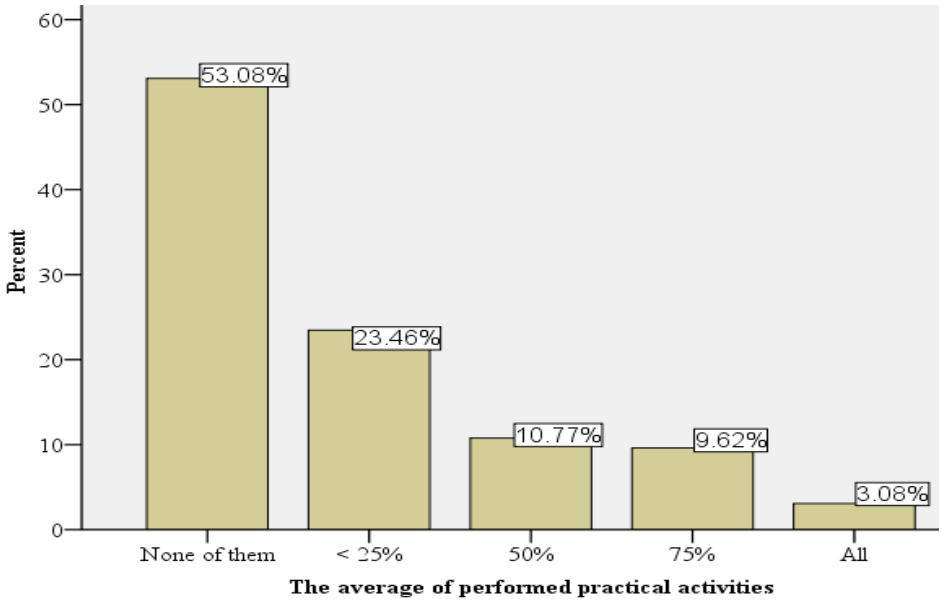


**Figure 4.** Average of the performed practical activities in schools.

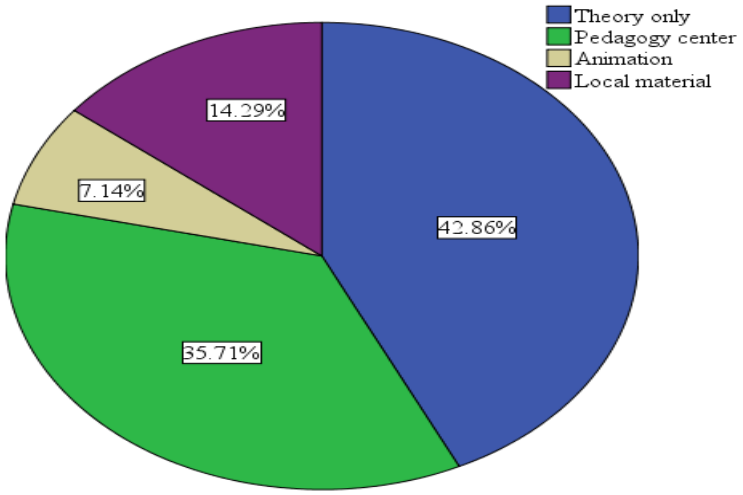


**Figure 5.** The other possible ways of teaching in the schools.

activities on text book. Of the total respondents from all schools, majority (53.08%) of them replied as none of practical activities found on their text book is performed while 23.46% of them replied as they perform one fourth (25%) of the total practical activities found in their text book. Only 3.08% of the respondents replied as they perform all of the activities found on their text book.

### Availability of other ways of teaching

To componset the absence of laboratory, schools may use different ways of teaching which may help students to acquire practical areas of the lesson. Figure 5 shows that out of the total respondents from all schools, the majority (42.86%) of them replied as they use only theory for any lesson while about 35.71% of them use pedagogical center to cover the practical lesson of the subject. Lowest number (7.14%) of respondents replied as their teachers use animation to teach sciences.

### Interest of students towards the practical work

Table 2 indicates the interest of students towards

**Table 2**. The interest of students towards practical work.

| Variable | Frequency | Percent | Valid percent |
|---|---|---|---|
| Less | 51 | 19.6 | 19.6 |
| Fair | 14 | 5.4 | 5.4 |
| Very much | 195 | 75.0 | 75.0 |
| Total | 260 | 100.0 | 100.0 |

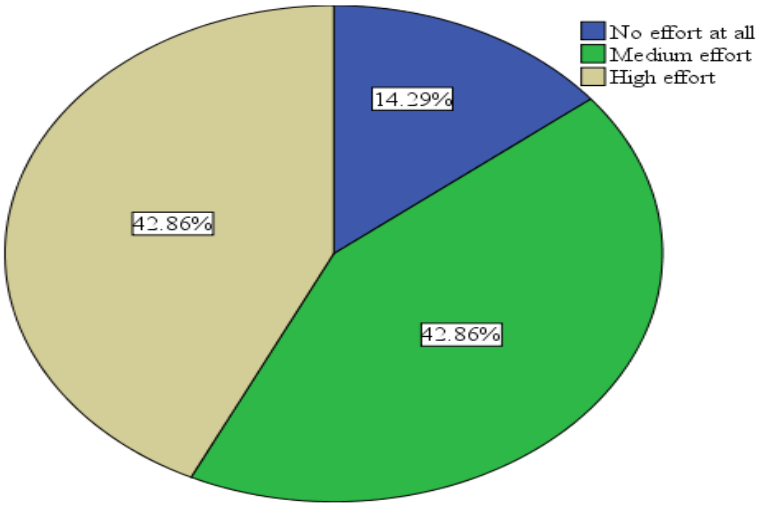


**Figure 6.** The effort of teachers to perform practical activity.

practical activities, of the total respondents, 75% of the respondents replied as they are interested towards practical activities whereas 5.4% respondents said as practical activities are fair.

### The effort of teachers to solve problem laboratory

Of the total respondents from all schools (Figure 6), 42.86% of the respondents replied that there is high effort of teachers to solve the problem of laboratory while 14.29% of the respondents replied as their teacher did not make any effort to solve problem of laboratory.

### Challenges for Biology Laboratory

Many challenges made the availability of science laboratory in general and biology laboratory in particular in the study area. Among these; absence of chemicals, absence of laboratory equipment, unsuitable laboratory class room, absence of separate biology laboratory and other challenges were observed. Figure 7 shows that, of the respondents from all schools, majority of them 28.57% replied abscence of separate laboratory is the major challenge while 21.43% of them responded that absence of laboratory equipment and other related factors are challenges for biology laboratory activities to be conducted. Others (14.29%) respond as unsuitable laboratory room made the challenges of biology laboratory in the study area.

### Factors affecting absence of science laboratories in school of study area

In majority of Ethiopian secondary and Preparatory schools science laboratories are not available or the available ones are not furnished and fully equipped so as to conduct practical activities. This may be due to different factors. The following factors are some of the factors raised by respondents that hinder the availability of laboratories and less facility even in the existing laboratory. Majority (35.71%) of respondents replied, less attention of school principal to laboratory and practical activities in science education is the major factor of unavailability of laboratory while 21.43% responded as lack of finance and other related factors are the cause for

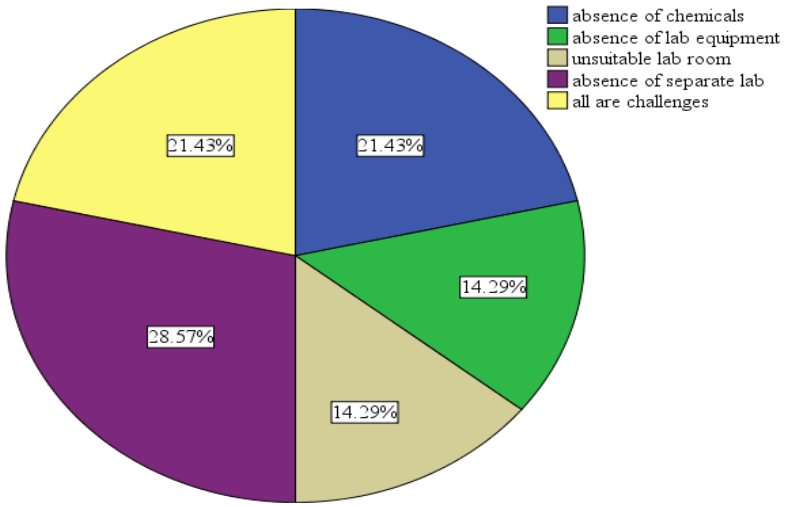


**Figure 7.** Challenges of biology laboratory the schools.

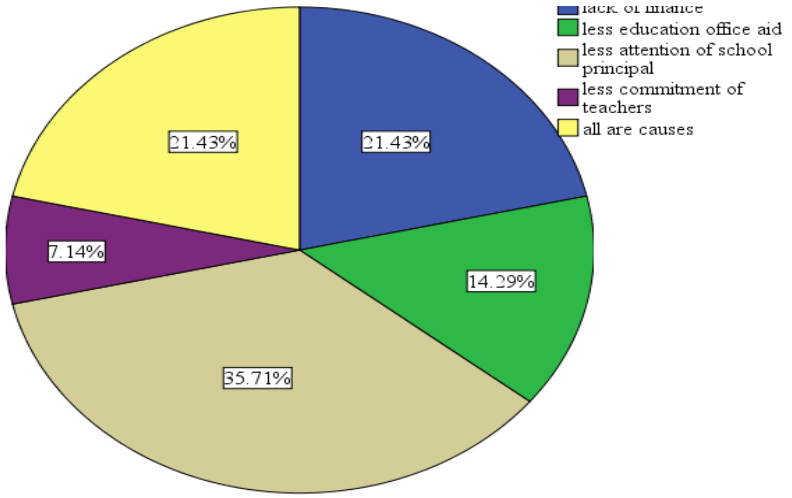


**Figure 8.** Major causes of laboratory challenges in schools.

functioning of laboratories in the study area (Figure 8). The other factors are less attention from education office (14.29%) and less commitment of teachers (7.14%) to use the available local material to practice some of the activities.

### Help that school require

To tackle the challenges raised above, the schools need the following help from the concerned bodies (Figure 9). Of the total respondents, majority (50.00%) of respondents replied that they need basic laboratory chemicals and reagents while 28.57% require basic biology laboratory training for their staff to improve the challenges. The other 14.29 and 7.14% respondents replied that they need all aspect of help and laboratory setup, respectively.

## DISCUSSION

Secondary school is the base in preparing students for science and technology education, and it is at this level where they were exposed to laboratories equipments, activities and precaution or safety rules. If there is no practice either individually or in a group, all what have been learnt become inert knowledge (Jonassen, 1991). In

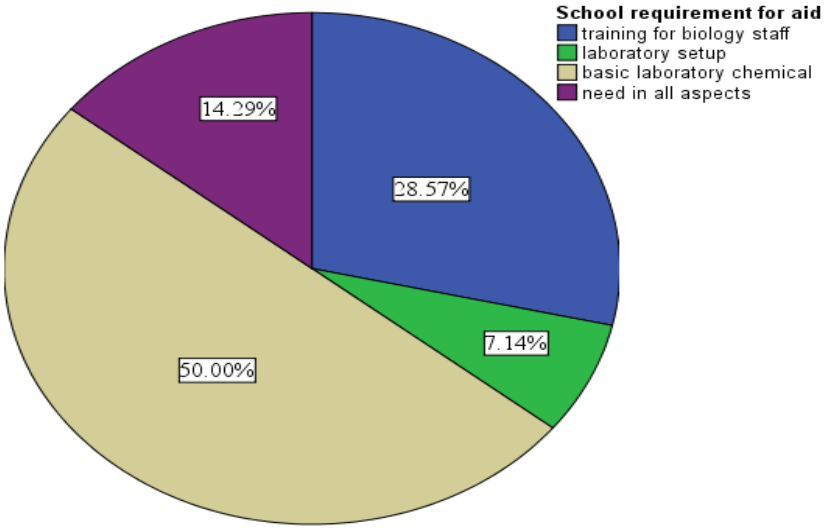


**Figure 9.** Help request of schools under study.

the current study, for each science subjects, almost all secondary and preparatory schools have no laboratory and the existing laboratories are non-functional due to different factors. In school like Kilenso secondary school there is no even laboratory room while Fincawa Preparatory school there is only empty laboratory room. In Fincawa working bench, laboratory equipments, chair and other important materials are missing. In each school where laboratory is available, laboratories are not equipped and chemicals which are even important to small extent practical activities are missing. In all schools there is no facility, laboratories are not functional, equipments and chemicals are simply stored in non-ventilated laboratory room due to absence of skilled laboratory technicians and even no cooling system. The majority of chemicals in Gerba secondary school, Bule Hora secondary and preparatory school, Fincawa secondary school and Yabello secondary school stored for long period of time without any usage and expired. There is no separate laboratory for preparatory and secondary school as well as for each science in Bule Hora and Yabello schools.

The study revealed that majority students have interest to learn practical activities. This is indifferent from the study conducted by Negassa (2014) in which the students were not interested to conduct practical activities. However, the less admission and participation of students to science education results from assumption that is less or absence of any practical activity in science subjects have influence on their score in science and on their future study due to lack of laboratory facilities. Another factor is that the room of available common laboratories is too small to hold all students and unsuitable to work in, and there is no ventilation in it. In some schools, even the rooms did not build for laboratory purpose, doors, windows and roof are broken and closed for long period of time. Totally the laboratory rooms and laboratory environments are dirty and not suitable to work in. The chemicals available in schools like Gerba, Bule Hora, Fincawa and Yabello secondary schools were bought when the schools started work, and now they are expired. This shared truth with the report of Tesfamariam et al. (2014) which most laboratory rooms available in secondary schools of Mekele town were not built for laboratory purpose and lacked even the most basic facilities like running water, source of electricity; working tables, sinks, hoods and the rooms windows, roofs and doors are broken. These forces all under study school teachers to use only theories to teach their students. The issue is similar with idea that “most high schools in Ethiopia used to teach practical subjects theoretically without adequate support with experiments due to high scarcity of laboratory equipments and chemicals” (FDRE, 2004).

Students’ interest and their academic achievement in science education have direct relation and at the same time affect practices of students in classroom and are strongly related to their academic achievement (George and Kaplan, 1998). Students are effectively successful through practicing the subject matters. Farounbi (1998) argued that students tend to understand and recall what they see more than what they hear as a result of using laboratories in the teaching and learning of science students so as to get better achievement. Laboratories have multiple benefits ranging from making learning concrete to lying basis for science education in the subsequent levels (Hunde and Tegegne, 2010). Students in current study schools were deprived of such

opportunities because of the following hindering factors, which makes negative impact on students' preference to science education.

1. The absence of separate well-equipped laboratory in each school under study.
2. The absence of laboratory technician for each science (Biology, Chemistry and Physics) in the school, who can carefully facilitate and lead the laboratory procedure.
3. Absence of well-prepared laboratory manuals.
4. Chemicals, apparatus and laboratory room give no function for the fact that the chemicals on the laboratory are highly expired and outdated, and dangerous for the students.
5. The available laboratory room does not match with the number of students.
6. Some schools do not have total laboratory rooms and even those which are available not suitable for work.
7. Less attention is given from administrative government of the region and school administrators to sciences education.

## CONCLUSIONS AND RECOMMENDATION

It has been found that teaching science without practical activities have effect on student's interest towards science disciplines which result in less student enrolments in science class. The hindering factors identified in the current study makes students not to get satisfactory laboratory practices. As a result of these, students at secondary and preparatory schools of the study area lack interest to join science class. From the study, it is possible to conclude that even though there is no separate laboratory for each science and even the existing laboratory is not well equipped which is not suitable for conducting activities, there is no efforts made by science teacher to use local material even to show demonstration to science students. This results in less student motivation to practical activity which has influence on student's preference to science education. In general, less local government education office, school administrators and community attention to fulfill laboratory facility, and less implementation of practical activities in secondary and preparatory school of the study area results in less preference and admission of students in science classes.

Therefore, Ministry of Education, Borena zone education bureau should launch science education project in the study area which focuses on school laboratory establishment and facility fulfilling as well as enhancing knowledge and skills of science teachers. A great awareness on the importance of science education has to be given to students by role model professionals, educational structural organizations and science teachers. Science teachers and other concerned bodies should check the practice of students' science education for students in general and to female students in particular so as to enhance the low performance of students in the science subjects. On the other hand, students should take an active role by taking responsibility for their own learning, ask their teachers and school principals for the fulfillment of their laboratory and ask their teachers to encourage and assist them to use local material for practice. Ministry of Education and/or Oromiya education Bureau should construct standard laboratory classes separately to each science subjects; fulfill well-trained laboratory technicians, chemicals, apparatus, well-designed laboratory manuals and fix cooling system to chemical store and the laboratory at whole. Local or international NGOs should focus in improving science education in general secondary schools.

The nearby Bule Hora University in collaboration with other institution should work on the schools science teacher capacity building, make the available laboratory functional by giving training, by making arrangements of the laboratory through their community service project. In general**,** since Ethiopia's higher institution training focuses on science and technology through 70:30 policy to transform agricultural led industry to industry led agriculture, the country needs well trained man power in the fields of science and the central missions of all schools are to produce good citizens, academically talented and future scientists. Therefore, in order to have students with high science achievement, schools should give special attention to the implementation of effective practical and laboratory activities in science teaching and attract students to science classes in secondary schools.

## Conflict of interest

The authors have not declared any conflict of interest.

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Educational Research and Reviews

*Full Length Research Paper*

# Intercultural sensitivity levels of Turkish pre-service foreign language teachers: Examples from education faculties of two universities in Turkey

**Veda Aslim Yetiş* and Çiğdem Kurt**

Anadolu University, Turkey.

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**The aim of this study is to determine whether intercultural sensitivity levels vary among foreign language teacher candidates in terms of variables such as target language, year of study (grade), and gender in both intra and inters programs. Research sample consists of 1,049 Turkish freshmen, sophomore, junior, and senior foreign language teacher candidates who are studying German, English and French Languages at two universities during the spring semester of 2015 to 2016 academic year. The research employs survey model, a quantitative research method which uses a positivist paradigm. Intercultural Sensitivity Scale (ISS) was used as data collection tool. All research data were subjected to inferential analysis via Mann-Whitney U, Kruskal Wallis H, Friedman Tests, and Kendall's tau_b correlation analysis in terms of participant related and environmental variables. Research findings revealed that inclusion of intercultural approach into foreign language teaching programs equipped Turkish foreign language teacher candidates with high level intercultural sensitivity. In this regard, it is of paramount significance to incorporate intercultural approach into the curricula of education faculties in order to have future foreign language teachers who can serve as intercultural models, negotiators, and mediators. Based on the need to reform general qualifications of teaching profession in accordance with contemporary requirements, the roles of intercultural model, negotiator, and mediator should also be added as part of the approach into the current conceptual framework of professional qualifications for foreign language teachers which is in a restructuring process.**

**Key words:** Foreign language teacher competence, intercultural communication skill, intercultural attitudes, intercultural sensitivity, intercultural mediator.

## INTRODUCTION

The Common European Framework of Reference for Languages, published by Council of Europe in 2001, has brought radical changes into learning, teaching, and assessment of foreign languages with its Action Oriented Approach. Action-oriented approach can be considered as an extension of communicative approach, which was

*Corresponding author. E-mail: vaslim@anadolu.edu.tr.

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introduced to the field of foreign language teaching at the end of the 70s and which surpassed all other foreign language teaching methods. Since then, no new method has been developed; yet the basic characteristics of communicative approach (learner-centered, learner autonomy, motivation, etc.) have been improved and adapted to new technologies and demands emerging as a result of globalization. The most significant result of transition from communicative approach to action oriented approach is the move from "communicative competence", which had been the primary goal of language teaching/learning since the 80s, to "intercultural communication competence" (Puren, 2002; Windmüller, 2011). In this regard, "intercultural communication competence" including five components and developed by Byram (1997) served as the foundational model: which includes (1) knowledge; (2) intercultural attitudes; (3) skills of interpreting and relating; (4) skills of discovery and interaction; and (5) critical cultural awareness.

All these changes and many other reports, along with CEFR in which Council of Europe underlies the significance of intercultural awareness and self-awareness, point that the dimensions of intercultural communication competence have been included within the boundaries of foreign language teaching/learning by the Council (Byram et al., 2002: p.7). Accordingly, "Terms such as intercultural competence, intercultural skills, intercultural awareness, or intercultural communication competence are often referred in texts outlining the goals of foreign language teaching' (Byram, 2011: p.253). Council of Europe has been employing these terms for a long time especially in fields related to teachers' sensitivity to intercultural approach (Conseil de l'Europe, 2002). Underpinning that conceptual complexity has increased together with the recent interest in intercultural sensitivity in today's multi-cultural and globalizing world, Chen and Starosta (1996, 1998; as cited in Chen and Starosta, 2000) noted that the main problem arises from the confusion among intercultural sensitivity; intercultural awareness, and intercultural communication competence. These three concepts that are closely related but different are defined as follows (Chen and Starosta, 2000: p.3):

1. Intercultural communication competence is an umbrella concept which is comprised of cognitive, affective, and behavioral ability of interacts in the process of intercultural communication.
2. The cognitive aspect of intercultural communication competence is represented by the concept of intercultural awareness that refers to the understanding of culture conventions and how they affect how we think and behave.
3. The affective aspect of intercultural communication competence is represented by the concept of intercultural sensitivity that refers to the subjects' active desire to motivate themselves in order to understand, appreciate, and accept differences among cultures. Comprising the affective aspect of intercultural communication competence, 'intercultural sensitivity' serves as the basis for Bennett's Intercultural Sensitivity Development Model (Bennett, 1986; 1993; Hammer et al., 2003). This model consists of 6 stages ranging from resistance to openness for intercultural differences. The first 3 stages of this process are ethnocentric phases (in which an individual assesses the other cultures based on his/her culture): (1) denial: in which one denies the existence of cultural differences among people; (2) defense: one's struggle against differences; (3) minimization: in which one accepts the similarities but conceals the differences among cultures. The second 3 stages of this process are called "etnorelativist phases" (in which an individual attempts to know and understand the other cultures without using the value judgments of his/her own culture): (4) acceptance: in which one accepts and respects the cultural differences; (5) adaptation: in which one starts interacting/communicating with the members of other cultures; (6) integration: in which one regards and experiences the differences as a part of life (Figure 1). Intercultural competence and intercultural communication competence are two different concepts. Intercultural competence 'is a competence that a native speaker has or can develop, which enables such person, among other things, to interact with people speaking their language as a foreign language (second language)' (Risager, 2007: p.125).

Intercultural communication competence, on the other hand, "is a competence that enables a person to interact with others whilst speaking a foreign language (second language)" (ibid.). Similarly, Byram (1997:p.71) underlines the differences between these concepts as follows: "someone with Intercultural Communicative Competence is able to interact with people from another country and culture in a foreign language. They are able to arrive at a mode of communication which is satisfactory to them and others, and they are able to act as mediator between people of different cultural origins" (Byram, 1997: p.71). "Cultural mediation", which determines the difference between intercultural communication competence and intercultural competence and which is actually the most immediate reason of this difference, is also one of the end goals of "intercultural attitudes", which is one of the components of intercultural communication competence. "Firstly, developing cultural attitudes means understanding and accepting other cultures. There must be an awareness and appropriation of the other culture. Ultimately, attitude aims internalizing of own values and development of a system of values promoting otherness and empathy; the ultimate goal is to play the role of cultural mediator in situations of tension, conflict" (Lussier et al., 2003: p.198-199). The term "mediator", which is one of the most important factors of intercultural communication competence, was first used in the

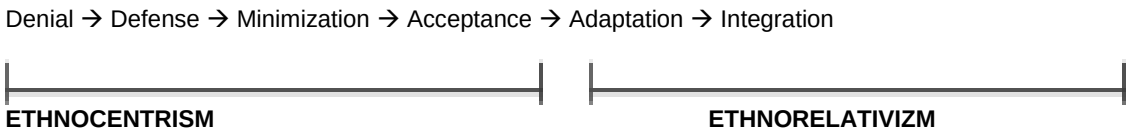


**Figure 1.** Intercultural sensitivity development model; Source: Hammer, Bennett, and Wiseman, 2003.

conceptual part of Common European Framework of Reference for Languages (CEFR, 2001). However, Guide for the Development of Language Education Policies in Europe clearly states how significant the role of an intercultural mediator is in foreign language education/ teaching: "Intercultural communication competence is crucial in the development of mutual understanding of 'different groups, and is the role of *intercultural mediators* of all kinds, from travel guides, to teachers, to diplomats and so on. Intercultural competence and the capacity for intercultural mediation are thus, one of the potential goals of language teaching" (Beacco and Byram, 2003: p.34).

Many researchers (Zarate et al., 2003; Gohard-Radenkovic et al., 2003; Gautheron-Boutchatsky and Kok Escalle, 2003; Byram, 2008, 2009; Rozon, 2011; Vergues, 2011) have also focused on the role of intercultural mediator, among many others, for foreign language teachers since the publication of the Guide for the Development of Language Education Policies in Europe. This is because teaching a foreign language requires performing the role of a mediator; the mediator teacher builds connections between linguistic and cultural differences, makes these differences acceptable for the students […] (Gautheron-Boutchatsky and Kok, 2003: p.45). In fact, the prefix "inter" bound to the word "intercultural" means establishing more connections, relations, transitions, and interaction between cultures rather than holding simple comparisons (Porcher, 1995; Conseil de l'Europe, 2002; Chaves et al., 2012). In this regard, the role of a "cultural mediator" turns each speaker, especially the foreign language teacher, into a "cultural mediator" (Zakhartchouk, 1999; Kohler-Bally, 2003). "The teacher as a mediator helps the student make progress by anticipating situations and levels of difficulty. His function is not only to transfer knowledge, but also to help overcome obstacles which may be encountered in academic and cultural environment. He becomes a "cultural mediator" by helping the learner to be self-sufficient in discovering and decoding the culture of their host country" (Kohler-Bally, 2003: p.140).

As stated by Davcheva (2002: p.78), "Mediation is, thus, not only a matter of improving understanding of the "other", but also of creating reflexivity and self-awareness." This is a reminder that teachers may also display reactions towards other cultures just like other people. Byram et al. (2002) state that teachers may have difficulty staying interested, and the clichés and bias they bear should be analyzed with respect to their potential influence on the students. Since students regard foreign language teachers as avenues to communicate with the country of the target language, the assessments and comments concerning of such countries and cultures by the foreign language teachers are broadly accepted as the most reliable information; thus, foreign language teachers' cultural representations may have monumental effect on students. Therefore, how sensitive foreign language teachers are matters significantly within the cultural domain? In today's multicultural world where intercultural interaction is constantly increasing, foreign language teachers shoulder a major responsibility as an intercultural mediator with respect to building a peaceful world based on mutual understanding and tolerance among cultures. Thus, "a teacher should question and redefine his/her traditional roles for today and tomorrow" (TED, 2009a: p.144). So, it would be wise to reconsider the roles and responsibilities of foreign language teachers. In this sense, many researchers propose that foreign language teachers should also be considered as educators and cultural mediators (Lazar, Huber-Kriegler, Lussier, Matei and Peck, 2007: p.41). On the other hand, Byram and Doyé (1999; Byram, 2008) strongly underline that teachers have to have an acceptable level of intercultural communication competence and intercultural skill in order to function as foreign language instructors. If all the above were to be accepted, what is the level of intercultural sensitivity adopted by Turkish foreign language teacher candidates who are expected to play the roles of intercultural model, mediator, and or negotiator? This research aims to identify whether intercultural sensitivity levels of freshman, sophomore, junior, and senior students studying at Foreign Language Education Departments of Education Faculties vary across participants in terms of environmental variables such as target language, grade, and gender, and also to determine if there is any statistically significant difference intra and inter programs. Accordingly, the following research questions were asked:

1. What is the level of intercultural sensitivity among foreign language teacher candidates, and what are the sub-dimensions of their intercultural sensitivity?
2. What is the distribution of their intercultural sensitivity and its sub-dimensions across programs?
3. What is the distribution of their intercultural sensitivity

across grades?
4. What is the distribution of their intercultural sensitivity across genders?

## METHODS

Focusing on intercultural sensitivity among foreign language teacher candidates, this study employed survey model that follows the positivist paradigm, which is one of the quantitative research models.

### Research model

Due to the fact that the aim of this research is to determine the intercultural sensitivity levels of foreign language teacher candidates inter and intra programs, its design is in accordance with survey model. “Survey research model is often employed to determine a relatively large sample or participants’ (larger than those in other research models) features such as opinions, interests, skills, talents, or attitudes concerning a topic or a case.” (Büyüköztürk et al., 2008: p.177). On the other hand, according to Creswell (2013: p.201), survey method “provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population.”

### Universe and sample

The research universe consists of 2467 foreign language teacher candidates studying at Education Faculties of a university in central Anatolia (University A) and one another in Mediterranean Region of Turkey (University B). The research sample, on the other hand, are 749 female and 300 male participants (a total of 1049) aged between 18 and 54, all of whom are freshmen, sophomore, junior, senior Turkish foreign language teacher candidates studying German, French, and English Languages in Education Faculties at Universities A and B. The foreign language teacher candidates in question have a compulsory preparation class for one year. After the successful completion of the one year, they continue their aforementioned programs in education faculties, and then they graduate as foreign language teachers at the end of a four-year training.

Since foreign language teacher candidates of the university study different programs, the research employed a heterogeneous structure, which led to use of stratified sampling technique in order to reach the required number of participants for the research sample. In stratified sampling, the universe is divided into strata, and random sampling is conducted from each stratum in a number proportional to the stratum’s size when compared to the universe (Beaud, 2009; Neuman, 2009). Provided that enough number of samples is guaranteed, stratified sampling is more representative than other simple random sampling methods. Within this scope, the numbers of English, German, and French language teacher candidates from each university were identified through use of Sample Size Formula for Continuous Data by Cochran (Bartlett et al., 2001, p.46-47). In accordance with stratified sampling, Programs in English, German, and French Language Teaching were divided into 4 sub-groups (freshmen, sophomore, junior, and senior), and each was represented within the sample proportionate to their sizes via random assignment. The researchers made effort to reach 50% more participants than the minimum number of foreign language teacher candidates at both universities in order to prevent data loss that might happen during the return of scales.

Based on the figures provided by relevant units at Universities A and B, total number of candidates in foreign language teaching department of University A is 1142 (823 ELT, 214 GLT, and 105 FLT) while a total of 1325 candidates (815 ELT, 391 GLT, and 119 FLT) study at language programs of University B. Following the use of Sampling Size Formula, adequate number of candidates (from both universities) to partake in the research was calculated to be 316 for ELT, 256 for GLT, and 176 for FLT, which adds up to a total of 748 foreign language teacher candidates. Because the researchers wanted to reach 50% more candidates than the adequate amount, the numbers of participating candidates from each department ended up as 494 for ELT, 371 for GLT, and 184 for FLT (a total of 1049 candidates). Accordingly, Tables 1 the numbers of participating candidates across each program and grade at both universities.

A closer examination of Table 1 reveals that the total number of ELT candidates in both universities is 1638, 823 in University A and 815 in University B. Based on the results of stratified sampling calculations, the minimum number of ELT candidates from each university had to be 158, a total of 316. On the other hand, the minimum numbers of students from each university and each grade had to be 33, 34, 38, and 53 (158) for freshmen, sophomore, junior, and senior grades respectively for University A, and 35, 25, 50, and 48 (158) (in the same order) for University B. So, total number of candidates from both universities was 316. However, the researchers had to reach 50% more candidates than the minimum number in order to eliminate possible data loss. Therefore, 272 students (38, 62, 79, and 93 freshmen, sophomore, junior, and senior candidates respectively) from University A and 222 students (37, 30, 83, 73 freshmen, sophomore, junior, and senior candidates respectively) from University B partook in this study. On the whole, 494 EFT teacher candidates (more than the minimum number required) participated in this research, which is a large enough sample.

Table 1 also shows that total numbers of GLT candidates from Universities A and B are 214 and 391 respectively, a total of 605 candidates. Based on the results of stratified sampling calculations, the minimum numbers of GLT candidates were 117 and 139 for Universities A and B respectively, a total of 256. On the other hand, the minimum numbers of GLT students from each university and each grade had to be 29, 32, 25, and 31 (117) for freshmen, sophomore, junior, and senior grades respectively for University A, and 22, 23, 38, and 56 (139) (in the same order) for University B. So, minimum total number of candidates from both universities was calculated to be 256. However, the researchers had to reach 50% more candidates than the minimum number in order to eliminate possible data loss. Therefore, 153 students (31, 49, 29, and 44 freshmen, sophomore, junior, and senior candidates respectively) from University A and 218 students (46, 49, 56, 67 freshmen, sophomore, junior, and senior candidates respectively) from University B partook in this study. On the whole, 371 GFL teacher candidates (more than the minimum number required) participated in this research, which is a large enough sample.

Total numbers of FLT candidates from Universities A and B are 105 and 119 respectively, a total of 224 candidates (Table 1). Based on the results of stratified sampling calculations, the minimum numbers of FLT candidates were 85 and 91 for Universities A and B respectively, a total of 176. On the other hand, the minimum numbers of FLT students from each university and each grade had to be 36, 19, 19, and 11 (117) for freshmen, sophomore, junior, and senior grades respectively for University A, and 27, 20, 28, and 16 (139) (in the same order) for University B. So, minimum total number of candidates from both universities was calculated to be 176. However, the researchers had to reach 50% more candidates than the minimum number in order to eliminate possible data loss. Therefore, 86 students (36, 19, 20, and 11

**Table 1.** Distribution of English, French, and German Languages Teaching Candidates within the Universe and Sample across Grades and Universities.

| | | The Number of Teacher Candidates in the Universe | | Sufficient Sample Number | | Real Sample Number | |
|---|---|---|---|---|---|---|---|
| | **Grade** | **N** | | **n** | | **n** | |
| Universities | | A | B | A | B | A | B |
| English Language Teaching Program | Freshmen | 174 | 182 | 33 | 35 | 38 | 37 |
| | Sophomore | 175 | 128 | 34 | 25 | 62 | 30 |
| | Junior | 198 | 254 | 38 | 50 | 79 | 83 |
| | Senior | 276 | 251 | 53 | 48 | 93 | 72 |
| **Total** | | **823** | **815** | **158** | **158** | **272** | **222** |
| **Grand Total** | | **1638** | | **316** | | **494** | |
| German Language Teaching Program | Freshmen | 53 | 62 | 29 | 22 | 31 | 46 |
| | Sophomore | 58 | 65 | 32 | 23 | 49 | 49 |
| | Junior | 46 | 106 | 25 | 38 | 29 | 56 |
| | Senior | 57 | 158 | 31 | 56 | 44 | 67 |
| **Total** | | **214** | **391** | **117** | **139** | **153** | **218** |
| **Grand Total** | | **605** | | **256** | | **371** | |
| French Language Teaching Program | Freshmen | 45 | 35 | 36 | 27 | 36 | 32 |
| | Sophomore | 23 | 26 | 19 | 20 | 19 | 20 |
| | Junior | 23 | 37 | 19 | 28 | 20 | 30 |
| | Senior | 14 | 21 | 11 | 16 | 11 | 16 |
| **Total** | | **105** | **119** | **85** | **91** | **86** | **98** |
| **Grand Total** | | **224** | | **176** | | **184** | |

**Table 2.** Mean Scores of Foreign Language Teacher Candidates Concerning Levels of Intercultural Sensitivity and Sub-categories of Intercultural Sensitivity.

| Sub-categories | N | n | Ss |
|---|---|---|---|
| Intercultural interaction | | 4.03 | 0.43 |
| Respect for differences | | 4.20 | 0.54 |
| Interaction confidence | 1049 | 3.72 | 0.72 |
| Interaction enjoyment | | 4.21 | 0.65 |
| Interaction attentiveness | | 3.87 | 0.58 |
| Intercultural sensitivity | 1049 | 4.01 | 0.41 |

**Table 3.** Results of Correlation Analysis Regarding the Sub-categories of Intercultural Sensitivity among Foreign Language Teacher Candidates.

| variables | Intercultural interaction | Respect for differences | Interaction confidence | Interaction enjoyment | Interaction attentiveness |
|---|---|---|---|---|---|
| Intercultural interaction | 1 | 0.347 | 0.314 | 0.378 | 0.350 |
| Respect for differences | 0.347 | 1 | 0.137 | 0.317 | 0.178 |
| Interaction confidence | 0.314 | 0.137 | 1 | 0.490 | 0.147 |
| Interaction enjoyment | 0.378 | 0.317 | 0.490 | 1 | 0.224 |
| Interaction attentiveness | 0.350 | 0.178 | 0.147 | 0.224 | 1 |

freshmen, sophomore, junior, and senior candidates respectively) from University A and 98 students (32, 20, 30, 16) freshmen, sophomore, junior, and senior candidates respectively) from University B partook in this study. On the whole, 184 FLT teacher candidates (more than the minimum number required) participated in this research, which is a large enough sample.

**Data collection tool**

Developed by Chen and Starosta (2000) and adapted to Turkish by Küllü-Sülü (2014), Intercultural Sensitivity Scale was employed in this study. Cronbach alpha coefficient of Intercultural Sensitivity Scale was found to be 0.758 during the translation and adaptation study (op.cit. p.35 to 36). Containing 24 items, it is a 5 point Likert type scale ranging as follows: "1=Definitely No; 2= No; 3=Indecisive; 4=Yes; 5=Definitely Yes." Items 2, 4, 7, 9, 12, 15, 18, 20, and 22 have a reverse score pattern. This scale consists of 5 sub-categories which are Intercultural Interaction (items 1, 11, 13, 21, 22, 23, and 24), Respect for Cultural Differences (items 2, 7, 8, 16, 18, and 20), Interaction Confidence (items 3, 4, 5, 6, and 10), Interaction Enjoyment (items 9, 12, and 15), and Interaction Attentiveness (items 14, 17, and 19). Within the scope of this research, foreign language teacher candidates were asked to state their Program and gender on the scale form. Data obtained through the scale were assessed in averages/means. Accordingly, the averages between 1.00 and 2.59 point individuals with "Low Intercultural Sensitivity", those between 2.60 and 3.39 indicate participants with "Moderate Intercultural Sensitivity" whereas those between 3.40 and 5.00 show individuals with "High Intercultural Sensitivity".

**Data analysis**

Scores obtained from the scales administered to foreign language teacher candidates were analyzed through the use of SPSS. Distribution of those scores were compared with normal distribution criteria to see if they deviated meaningfully or not across participants and other environmental variables both intra and inter programs. Skewness and kurtosis values of the scores were used in order to make sure if they matched with normal distribution criteria or not, and neither of the values was found to be between -1.96 and +1.96. Furthermore, distribution of the scores was once again determined to deviate from the normal pattern based on central distribution criteria and Kolmogorov-Smirnov

Test. Therefore, instead of parametric tests that require normality hypothesis, non-parametric tests were employed for all inferential analyses. Accordingly, Kruskal Wallis H test, a non-parametric test, was utilized in order to determine if intercultural sensitivity levels of foreign language teacher candidates varied across environmental variables such as programs and grades. Likewise, Friedman Test, another non-parametric test, was used to see whether the difference among the sub-categories of intercultural sensitivity levels of foreign language teacher candidates were statistically meaningful or not. Moreover, the level of relation among these sub-categories was identified via Kendall's tau_b corelation analysis. Lastly, Mann-Whitney U test, another non-parametric test, was also employed in order to understand if gender, as a variable among participants, had any meaningful effect over intercultural sensitivity of teacher candidates.

**Validity and reliability of the study**

As part of reliability efforts, Cronbach Alpha coefficients were calculated to be 0.86 and 0.88 in two different practices during the development of Intercultural Sensitivity Scale (Chen and Starosta, 2000). Chen and Starosta (op. cit.), who developed the scale, stated that Intercultural Sensitivity Scale is a reliable one, and advised the use of it across different contexts and variables. In this regard, Fritz et al. (2002), tested Intercultural Sensitivity Scale on a German sample in a different context by using confirmatory factor analysis, and concluded that the scale was reliable in general.

## FINDINGS

Table 2 presents findings regarding levels of Intercultural Sensitivity and Sub-categories of Intercultural Sensitivity among foreign language teacher candidates. A closer look at Table 2 yields that foreign language teacher candidates have higher levels of intercultural sensitivity ($\overline{X}$=4.01). With respect to sub-categories of intercultural senstivity, "Interaction Confidence" ($\overline{X}$=3.72) and "Interaction Attentiveness" ($\overline{X}$=3.87) are two most neglected categories although, mean scores of foreign language teacher candidates are considerably high. On the contrary, "Interaction Enjoyment" ($\overline{X}$= 4.21) stands as the most significant sub-category followed by "Respect for Differences" ($\overline{X}$= 4.20) and "Intercultural Interaction" ($\overline{X}$= 4.03) for the participants. A non-parametric test, Friedman test was employed to determine if the difference across sub-categories was statistically meaningful or not. Since the significance value was (p=0.000) smaller than 0.01, teacher candidates' levels of intercultural sensitivity across sub-categories were concluded to vary significantly. Besides, Kendall's tau_b corelation analysis was administered in order to determine the level of relation among these sub-categories. Results indicated that the strongest relation was between "Interaction Enjoyment" and "Interaction Confidence" (r=0.490, p<0.01). In other words, foreign language teacher candidates who care about interaction enjoyment as part of intercultural sensitivity also assign importance to interaction confidence. However, this is a moderate level positive relation (in case of r=0.30 to 0.64, the relation is classified as moderate level relation) (Ural and Kılıç, 2013, p. 244). The weakest relation (r=0.137, p<0.01) was found to be between "Respect for Differences" and "Interaction Confidence." The results of Kendall's tau_b correlation analysis are given in Table 3.

Table 4 displays findings regarding levels of Intercultural Sensitivity and Sub-categories of Intercultural Sensitivity among foreign language teacher candidates in different programs. According to Table 4 depicting levels of intercultural sensitivity for foreign language teacher candidates in three programs, French language teacher candidates have the highest level of intercultural sensitivity although the difference across programs is not so prominent. While the mean score of sensitivity is 4.13 for French language teacher candidates, English and German Language teacher candidates' average scores

**Table 4.** Mean Scores of Intercultural Sensitivity and Sub-categories of Intercultural Sensitivity for Foreign Language Teacher Candidates in Different Programs.

| Program | Sub-categories | n | $X^2$ | Ss |
|---|---|---|---|---|
| German Language Teaching | Intercultural Interaction | 371 | 3.97 | 0.48 |
| | Respect for Differences | | 4.05 | 0.59 |
| | Interaction Confidence | | 3.76 | 0.71 |
| | Interaction Enjoyment | | 4.2 | 0.66 |
| | Interaction Attentiveness | | 3.83 | 0.65 |
| | Intercultural Sensitivity | | 3.96 | 0.44 |
| English Language Teaching | Intercultural Interaction | 494 | 4.04 | 0.42 |
| | Respect for Differences | | 4.25 | 0.51 |
| | Interaction Confidence | | 3.66 | 0.74 |
| | Interaction Enjoyment | | 4.17 | 0.65 |
| | Interaction Attentiveness | | 3.86 | 0.56 |
| | Intercultural Sensitivity | | 4 | 0.41 |
| French Language Teaching | Intercultural Interaction | 184 | 4.14 | 0.34 |
| | Respect for Differences | | 4.36 | 0.39 |
| | Interaction Confidence | | 3.79 | 0,69 |
| | Interaction Enjoyment | | 4.35 | 0.58 |
| | Interaction Attentiveness | | 3.97 | 0.49 |
| | Intercultural Sensitivity | | 4.13 | 0.29 |

**Table 5.** Mann-Whitney U Test Results Concerning Levels of Intercultural Sensitivity among Foreign Language Teacher Candidates in terms of Gender.

| Gender | n | Order mean | U | p* |
|---|---|---|---|---|
| Female | 749 | 504.14 | 96727.5 | 0.000 |
| Male | 300 | 577.08 | - | - |

p*<0.01.

are 4.00 and 3.96, respectively. Kruskal Wallis H test was utilized to determine if there was a statistically significant difference across sensitivity levels, which revealed noteworthy differences ($X^2$ = 21,737; p (=0.000) <0.01). With respect to order of mean scores, French language teaching program has the highest score (613.65), English language teaching is the second high (520.57), and German language teaching has the third highest score (486.93).

Another finding shown in Table 4 is that the order of importance concerning the sub-categories of intercultural sensitivity is the same for English and French language teacher candidates whereas there is a slight difference in the order for German language teacher candidates. As for both FLT and ELT candidates, “Respect for Differences” is the most important sub-category and “Interaction Enjoyment” is the second one. However, “Interaction Enjoyment” has the highest score for GLT candidates and “Respect for Differences” is the second most important sub-category. The order of remaining sub-categories is the same for all the participants, which is “Intercultural Interaction”, “Interaction Attentiveness”, and “Interaction Confidence.” Table 5 displays findings regarding the levels of intercultural sensitivity among foreign language teacher candidates in terms of their gender across the entire sample while Table 6 shows the same findings in more detail across different teaching programs. A closer examination of Table 5 reveals that there is a statistically significant difference between female and male teacher candidates’ levels of intercultural sensitivity, and the difference is in favor of male participants (U=96727.5, p<0.01).

As shown in Table 6, male teacher candidates have higher levels of intercultural sensitivity than female participants in all three programs. However, statistically significant differences are observed only in German (U=12013, p<0.01) and English (U=21328; p<0.01) language teacher candidates, not in French language

**Table 6.** Mann-Whitney U Test Results Concerning Levels of Intercultural Sensitivity Between Female and Male Foreign Language Teacher Candidates in Different Programs.

| Program | Gender | n | Order mean | U | p* |
|---|---|---|---|---|---|
| German Language Teaching | Female | 260 | 176.70 | 12013.0 | 0.011 |
| | Male | 111 | 207.77 | - | - |
| English Language Teaching | Female | 360 | 239.74 | 21328.0 | 0.048 |
| | Male | 134 | 268.34 | | - |
| French Language Teaching | Female | 129 | 89.14 | 3114.50 | 0.190 |
| | Male | 55 | 100.37 | - | - |

p*<0.01.

**Table 7.** Kruskal Wallis H Test Results for Levels of Intercultural Sensitivity among Foreign Language Teacher Candidates in Diffe
rent Grades.

| Grades | n | Order of mean | sd | $X^2$ | p* |
|---|---|---|---|---|---|
| Fresmen | 221 | 536.98 | 3 | 8.57 | 0.036 |
| Sophomore | 228 | 504.88 | - | - | - |
| Junior | 296 | 494.73 | - | - | - |
| Senior | 304 | 560.85 | - | - | - |
| Total | 1049 | | - | - | - |

p*<0.01.

**Table 8.** Kruskal Wallis H Test Results for Levels of Intercultural Sensitivity among Foreign Language Teacher Candidates Studying in Different Grades of Different Language Teaching Programs.

| Program | Grades | N | Order of means | sd | $X^2$ | p* |
|---|---|---|---|---|---|---|
| German Language Teaching | Freshmen | 77 | 202.91 | 3 | 8.277 | 0.041 |
| | Sophomore | 98 | 166.44 | | | |
| | Junior | 85 | 174.15 | | | |
| | Senior | 111 | 200.61 | | | |
| English Language Teaching | Freshmen | 76 | 225.58 | 3 | 8.351 | 0.039 |
| | Sophomore | 91 | 247.62 | | | |
| | Junior | 162 | 232.82 | | | |
| | Senior | 165 | 271.95 | | | |
| French Language Teaching | Freshmen | 68 | 90.26 | 3 | 1.825 | 0.610 |
| | Sophomore | 39 | 101.83 | | | |
| | Junior | 49 | 87.24 | | | |
| | Senior | 28 | 94.13 | | | |

p*<0.01.

teacher candidates (U=3114.5, p>0.01). Kruskal Wallis H Test was employed in order to determine if there was a relation between levels of intercultural sensitivity among foreign language teacher candidates in different grades. Table 7 depicts the results across the entire sample while Table 8 shows the same results across different language programs. Based on the order of means, values depicted in Table 7 indicate that the difference among different grades is in favor of senior students. Statistical analysis of the means revealed that the difference was

significant ($X^2$ = 80.57; p<0.01) across levels of intercultural sensitivity among foreign language teacher candidates in all grades. As for the order of mean scores, senior students have the highest level of intercultural sensitivity followed by freshmen, sophomore, and junior students. As for the candidates in German language teaching program, freshmen have the highest level of intercultural sensitivity followed by senior, junior, and sophomore students. There is a statistically significant difference across grades ($X^2$ = 8.277; p<0.01). Considering English language teaching candidates, senior students' level of intercultural sensitivity is the highest, followed by sophomores, freshmen, and junior candidates. The difference among these candidates is also statistically significant ($X^2$ = 8.351; p<0.01). With respect to French language teacher candidates, intercultural sensitivity level is the highest for the sophomore, followed by senior, freshmen, and junior teacher candidates. However, the difference across different grades is not statistically significant for this program ($X^2$ = 1.825; p>0.01).

## DISCUSSION, CONCLUSION, AND SUGGESTIONS

Research results have indicated that Turkish foreign language teacher candidates bear high levels of inter-cultural sensitivity, which is an indispensable component of intercultural communication competence. However, detailed analysis of sub-categories has yielded that "Interaction Competence" and "Interaction Attentiveness" are two least important categories for foreign language teacher candidates while "Interaction Enjoyment" is the most favored one followed by "Respect for Differences" and "Intercultural Interaction." Besides, statistically significant differences have been noted among the levels of sub-categories for teacher candidates, and a very strong relation has been determined between "Interaction Enjoyment" and "Interaction Confidence" while the weakest one has been found between "Respect for Differences" and "Interaction Confidence." Examination of current curricula in all three programs has shown that all have integrated intercultural approach into their programs, which may be noted as a reason as to why foreign language teacher candidates in this study have high levels of intercultural sensitivity. Nevertheless, inclusion of intercultural approach into the curricula does not necessarily mean improving intercultural communi-cation competence due to heavy loads of courses such as advanced reading, writing, listening, and speaking courses designed to enhance communication skills. Therefore, the fact that only these four basic components of communication skill are studied in all the programs can be stated as the reason why "Interaction Confidence" and "Interaction Attentiveness", components of intercultural communication competence, are two least important aspects of "intercultural attitude" for the participants.

In this sense, "Interaction Confidence" and "Interaction Attentiveness", the sub-categories of intercultural sensitivity, are two dimensions that Turkish foreign language teacher candidates should improve on. The strong relation between "Interaction Enjoyment" and "Interaction Confidence" indicate the need to incorporate activities that will increase foreign language teacher candidates' motivation in order to help them feel more confident during intercultural interaction. Accordingly, it is of great importance to design lesson plans in a way that will include intercultural communication competence as well as communication skill for courses that focus on communicating in the target language. Comparison of foreign language teacher candidates' levels of intercultural sensitivity across programs has revealed that FLT candidates are the most sensitive, ELT candidates are the second, and GLT candidates are the third, although, the difference is minimal. With respect to the sub-categories of intercultural sensitivity, the order of importance is the same for French and English language teacher candidates, which is as follows: "Respect for Differences", "Interaction Enjoyment", "Intercultural Interaction", "Intercultural Attentiveness", and "Intercultural Confidence." As for German language teacher candidates, the order of sub-categories remains the same except for a change in the first two ones: "Interaction Enjoyment" and "Respect for Differences." The finding that "respect for differences" dimension of intercultural sensitivity is one of the most important sub-categories for foreign language teacher candidates is consistent with the results of Cubukçu's study (2013), stating that English language teacher candidates have sympathy and tolerance for other cultures. So, it is possible to conclude that foreign language teacher candidates have confidence issues especially during intercultural interaction although they generally have higher levels of intercultural motivation.

Another result of the current study points that intercultural sensitivity required for intercultural communication competence, is higher in male Turkish foreign language teacher candidates than in the female participants. Integrating inconsistent studies such as those concluding that intercultural sensitivity is higher for females (Banos, 2006; Holm et al., 2009; Talib and Hosoya, 2010) with those stating that intercultural sensitivity does not vary across gender (Fretheim, 2007; Westrick and Yuen, 2007; Bayles, 2009; Spinthourakis, 2009; Yazıcı et al., 2009), Üstün (2011) concludes that there is no statistically significant difference between female and male teacher candidates' levels of intercultural sensitivity. In addition to many studies (Eisenberg and Fabes, 1998; Karniol, Gabay and Ochion, 1998; Zhou et al., 2002) indicating that intercultural sensitivity is emphatically in favor of female participants, Holm et al. (2009) also concluded that women are a lot more

sensitive than men. Considering a large body of research conducted on the effect of gender over intercultural sensitivity with inconsistent results, this study has yielded totally different findings favoring male participants over female teacher candidates. At this point, it is conceived that further research to be designed in order to specify if gender is an influential variable or not in terms of intercultural sensitivity will significantly contribute to the literature.

With respect to the relation between levels of intercultural sensitivity and Turkish foreign language candidates' grades, it has been recorded that senior students graduate with the highest level of intercultural sensitivity. Subsequently, freshmen are the second, sophomores are the third, and junior are the fourth in terms of levels of intercultural sensitivity. Likewise, a more detailed analysis of intercultural sensitivity levels across grades in different teaching programs has revealed that freshmen participants from GLT are the most interculturally sensitive group, followed by the senior, junior, and sophomore. As for ELT candidates, senior students bear the highest level of intercultural sensitivity, followed by the sophomore, freshmen, and junior. However, the highest level of intercultural sensitivity in FLT candidates belongs to the sophomore, followed by the senior, freshmen, and junior. A closer examination of curricula employed in these programs has shown that both compulsory and elective courses relevant to intercultural approach are compiled especially in sophomore and junior years, which leads to higher levels of intercultural sensitivity on behalf of senior students. However, when others studies are examined, it is seen that is not always so. For example, the majority of students teachers in the Yuen and Grosman's (2009: p.349) study "tended to see the world from an ethnocentric perspective and tended to simplify or polarize cultural differences." and "showed difficulties in comprehending and accommodating complex cultural differences". That's why, researchers recommended to develop a suitable intercultural training program for future teachers.

Another noteworthy finding of the present study is that the level of intercultural sensitivity for ELT candidates follows an ascending pattern from the freshmen year up until to the senior year whereas GLT and FLT candidates start with a considerably high level of intercultural sensitivity even in their freshmen years when courses are mostly directed to improve communication skills in the target language. Because, English language is the primary foreign language in Turkey, all foreign language teacher candidates (be it English, French, or German) study either German or French language as part of their compulsory or elective curricula; so, they start university by already knowing some German or French. Compared to ELT candidates, both French and German language teacher candidates continue their education in their second or third foreign language, which reminds us that multilingualism may have a crucial influence over intercultural sensitivity. Moreover, the fact that German and French language teacher candidates, unlike ELT candidates, go through a compulsory preparatory year to learn a language different from English when they start university, it is possible to deduce that multilingualism may have an important effect over intercultural sensitivity. Besides, student exchange programs offered by universities throughout four years and the faculty acting as an intercultural model, negotiator, and mediator may also be contributing positively to intercultural sensitivity.

There are "6 qualifications, 31 sub-qualifications, and 233 performance indicators" in the current national report published by the Ministry of National Education on general teacher qualifications (MEB, 2008). One of the sub-skills of "Personal and Professional Values-Professional Development", "Caring about National and Universal Values" defines one of the performance indicators as 'A teacher is able to help students develop national and universal values, and act as a role model' (MEB, 2008, p.10).

In this regard, MNE stipulates that all teachers be role models about national and universal values. However, a closer study of English language teachers' qualifications published by MNE (MEB, 2008) as part of general qualifications of foreign language teacher candidates yields that communication skills are heavily underlined, and English language teachers are advised to become role models for speaking skill.

This "model" expecting foreign language teachers to be role models in only communication skills is rather shallow based on 21st century teaching qualifications. In addition, foreign language teachers should save themselves from these traditional roles and adopt new roles as intercultural models, negotiators, and mediators as required by the contemporary professional qualifications of teaching.

It is obvious that general teaching qualifications determined by MNE is far beyond our time; so, Turkish National Committee of Teacher Training, Board of Higher Education, MNE, and Education Faculties should collaborate in order to associate teacher qualifications with pre-service and in-service training programs that would provide constant supervision to establish more qualified teacher training programs (TED, 2009a, 2009b). In this sense, the conclusion of this research that foreign language teacher candidates bear high levels of intercultural sensitivity should be seen as an outcome of joint and coordinated policies and practices. Being highly sensitive interculturally, the participating candidates are expected to become intercultural role models, negotiators, and mediators. Considering that professional qualifications of teachers is still under construction in Turkey, especially qualifications concerning foreign language teachers should be recast in accordance with

contemporary standards, and the roles of “intercultural model, negotiator, and mediator” should be incorporated within the conceptual framework of those qualifications based on intercultural approach.

## Conflict of Interests

The authors have not declared any conflict of interests.

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