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Research Article

Students' Opinions Toward Game Elements Used in Gamification Application

Yasemin Mert [1], Yavuz Samur [2]

Abstract

Gamification is defined as the use of game elements in non-game contexts. The use of gamification in education is stated as the successful integration of the course contents to increase the students' motivation, performance, and attitudes towards the course. However, when gamification is integrated into education, it may result in unexpected outcomes. The aim of study in this context is to examine the students' views towards game elements used in gamification application. Therefore, 12 students' view from 2nd, 3rd, 4th, 5th, 6th, and 7TH grades were collected to analyze in categories of game elements such as an avatar, feedback/reinforcers/points/reward, leaderboard, use, and announcements-notifications. Qualitative research methods were used to analyze the views from the semi-structured interviews. The findings were evaluated and interpreted in terms of the motivation of students and game elements (points, leaderboard, announcements-notifications, avatar).

Keywords: *Gamification, game elements, classroom management, motivation, opinion*

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Oyunlaştırma Uygulamasında Kullanılan Oyun Elementlerine Yönelik Öğrencilerin Görüşleri

Öz

Oyunlaştırma oyun olmayan ortamlarda oyun elementlerinin kullanılması olarak tanımlanmaktadır. Eğitimde oyunlaştırmanın kullanılması, öğrencilerin motivasyonlarının, başarılarının, derse yönelik tutumları ve ilgilerinin artırılması, oyunlaştırma yapısının ders içeriklerine başarılı bir şekilde entegrasyonu olarak belirtilir. Ancak oyunlaştırma eğitime entegre edildiğinde beklenmedik çıktılarda doğurabilmektedir. Bu bağlamda çalışmanın amacı oyunlaştırma uygulamasında kullanılan oyun elementlerine yönelik öğrencilerin görüşlerini incelemektir. Öğrencilerin görüşlerini detaylı bir şekilde elde etmek için avatar, geri bildirim/pekiştireç/puan/ödül, liderlik tablosu, kullanım ve duyuru-bildirim gibi oyun elementleri kategorize edilmiş ve araştırmaya oyunlaştırılmış sınıf yönetimi uygulamasını kullanan 2, 3, 4, 5, 6 ve 7. sınıflarda okuyan toplam 12 öğrenci katılmıştır ve görüşleri incelemek için nitel yöntem kullanılmıştır ve öğrencilerden veriler yarı yapılandırılmış görüşmeler sonucu elde edilmiştir. Elde edilen bulgular öğrencilerin motivasyonu ve oyun elementleri (puan, liderlik tablosu, duyuru-bildirim, avatar) açılarından değerlendirilmiş ve yorumlanmıştır.

Anahtar Sözcükler: *Oyunlaştırma, oyun elementleri, sınıf yönetimi, motivasyon, görüş*

Introduction

Nowadays, It is known that people are spending a lot of time on games and they are thought to have a good time with games. Due to these reasons, the idea of turning a component into a game has emerged (Yıldırım & Demir, 2014). The use of the game in education has been a known and preferred method for a long time (Ar, 2016). Because games are played at home, on the streets and in any environment where opportunities are available, the thinking skills are processed and game strategies are used in education to make learning easier for the students (Gelen & Özer, 2009). It is seen that one of the important issues that should be emphasized in researches which aimed to increase students' academic achievement, is to teach through games which is the most favorite activity of the children (Yıldırım, 2016, Bozan, 2014, Akçetin & Akçetin 2013). If the games are used for teaching purposes, they may be suitable tools for the children in elementary school to increase their interest towards lessons and they also may increase the motivation and desires of the children during the teaching process (Karataş, 2014).

It is difficult to say that there is a harmony between today's students and traditional education systems (Ar, 2016). Researchers who are aware of this situation are working on the use of games in education (Sarıtaş & Yıldız, 2015, Samur, 2012, Gelen & Özer, 2009). However, there are many situations that make use of games difficult in education. At the beginning of these, it takes a long time to provide necessary economic requirements and design the games. The use of game elements- in other words -gamification- in education settings can help overcome these issues. Motivation and lack of interest are observed when the students' basic problems in the teaching process are examined (Yıldırım, 2016; Lee & Hammer, 2011). It is envisaged that this deficiency can be eliminated through gamification which can affect the students positively by helping them learn from making mistakes in the learning process and it also can support students' emotional experiences and social positioning (Lee & Hammer, 2011).

Werbach (2012) describes gamification as using game elements and game design concepts in non-game environments (Werbach, 2012). In other words, gamification can be described as a use of game mechanics, playful thinking, and aesthetics in order to encourage people to get together and learn. The purpose of the gamification method is to increase learners' motivation and improve their problem-solving skills. In another definition, gamification can be described

as a method which aims to educate individuals in a fun way, to utilize their ideas while having fun and providing problem-solving skills. It is one of the most used and effective methods in education to make individuals learn through using game elements. The use of this method in education provides positive development. Users enjoy more when they work with pleasure (Akçetin & Akçetin, 2013). When it comes to the common points of gamification definitions, they vary according to disciplines which used in the applications increasing individuals' motivation and desire to be involved in the process and making the process more attractive (Bozkurt & Kumtepe, 2014).

In the concept of gamification, it is necessary to use means such as levels, rewards, mastery, which cause the players to participate in the activity. For this reason, infrastructure and logical schema in games can be used to make teaching fun and motivating (Gökkaya, 2014). It has emerged that gamification can be used in education when children's interest and curiosity especially towards digital games are taken into consideration along with the acquisitions that games provide (Kırkkılıç, Kılıç & Topal, 2005). There are usually two terms used in gamification: game mechanics and game dynamics. Game mechanics involve various actions, behaviors and control mechanisms. Points in the game, gifts and virtual goods are examples of game mechanics. They are used to enhance the user's experience and interest. On the other hand, Game dynamics can be defined as products of the interest and passion of the player towards games. Award, status and achievement can be given as examples of game dynamics (Sarıtaş & Yıldız, 2015).

In recent years, gamification method is a learning and teaching strategy that enables learning and teaching processes to be goal-oriented, feedback-driven, rule-based and fun. Using today's and tomorrow's education systems, and in particular, the use of gamification in terms of education integration of technology can offer significant opportunities. However, it is first necessary to develop teaching materials and learning systems in order for gamification to take place in education (Ar & Akgün, 2015). After that, the game design has to be clarified. If there is no non-game content in this design and if it can be applied to the field, the gamification process will be worked (Yıldırım & Demir, 2014). Lee and Hammer (2011) predicted that using the gamification method in education may have positive effects on the students. When the studies in the field have been examined, it has been noticed that studies on the use of the method of gamification are not sufficient (Ar, 2016). For this reason, well-designed researches and applications in the field of gamification are required. It is also important to design the

gamification experience in accordance with the instructional objectives (Akçetin, Akçetin & Koldemir, 2013).

It is necessary to examine the characteristics of the gamification methods (Bozkurt § Kumtepe, 2014), knowing that it is a method used to make the learning process remarkable and more permanent. Gamification is an economic and easily applicable method (Gelen and Özer, 2009). This method, which can be used effectively with preparation and a few simple materials arranged before the lesson, will lead students to enjoy and also affect the attitude and motivation towards the lesson (Gelen & Özer, 2009). There are the studies showing that gamification may help students learn through making mistakes so that it may have a positive effect on students. This method also may increase students' emotional and social development. (Lee & Hammer, 2011). In addition, it is seen that the use of the gamification method, has increased learners' motivation and interest towards the courses. It also improved learners' attitudes towards the lesson and facilitated learning process (Arkun-Kocadere & Samur, 2016). In order to fulfill that purpose, first of all, children should love the lessons, then effective ways of teaching should be found (Gelen & Özer, 2009). In contrast, Hanus and Fox (2015) used gamified learning activities in their research studies. It has been revealed in their research studies that the use of these activities has reduced the motivation and satisfaction of the students. In addition, the leaderboards and badges have contributed negatively to the learning outcomes of users (Hanus & Fox, 2015). In a different research, it is stated that the imaginary avatars in a gamification application move the students away from reality (Bayraktar, 2014).

In the field of education, it is seen that many different methods and tools have been used from the past to the present (Erümit, 2016). With the advancement of technology, the use of these methods and tools has changed over time. Each one's goal is to make the learners learn better and increase their motivation. In addition, through the use of technology with these tools, students' interest and technologies that they use has changed. The factors that motivate the students have also been differed by the development of technology (Prensky, 2001). The purpose of using gamification is not to create a new world like the one in the game, but to bring the things in the game to the real world and bring similar feelings here (Arkun-Kocadere & Samur, 2016).

In Yıldırım's (2016) gamification-based study, the effects of the gamification on the educational process were investigated. There is information about how to gamify a teaching

program and how to evaluate this gamified teaching program. According to the results of the study, the gamification method seems to have a positive effect on the achievements and attitudes of the students. When the gamification perception is examined, it is seen that the most active effect is in dynamics and then in components. When it comes to the evaluation part of the gamification method, it is seen that the researcher has obtained positive results.

Rouse (2013) studied the effect of gamification on student achievement and motivation in a microbiology course. A gamification method was used with 40 students in the experimental group of the study. According to the findings, it was determined that the gamification method has a positive effect on the success and motivation of the students.

The study of Samur (2015), which is a semi-experimental study, lasted for an academic period (15 weeks). In order to increase the effectiveness of teaching, the components of the game such as story, score, leadership, level, badge, and challenge are adapted to the curriculum. The data collected in the study were obtained from the online attitude questionnaire made by the students, the gamification outputs, and interviews with the postgraduate students and observation reports made by the researcher. Students were interviewed at the end of the semester. According to the findings obtained at the end of the study, it was determined that the attitudes and motivation of the 19 students in the experimental group were high. However, students' grades did not differ significantly from those in the control group.

The study by Burger (2015) is a phenomenological study of the perception of the effectiveness of the ClassDojo application on learners and teachers. According to research, it is enough to examine the use of the ClassDojo application in order to be able to see the position of the gamification method in education. The study group was randomly selected and completed by three teachers and 12 students. Questionnaires, interviews and group interviews were used to collect data in the study. The ClassDojo application provides opportunities to facilitate classroom management for teachers and aims to increase the motivation of primary school students. When the results of the study are examined, the ClassDojo application appears to be a positive and effective application for teachers and students. The use of ClassDojo by teachers has also been influential on classroom management (Burger, 2015).

Hanus and Fox (2015) conducted the study to measure the effect of gamification on motivation, pleasure, satisfaction, learning orientation and achievement score of the learners. This study is

an experimental study and conducted with 80 undergraduate students for 16 weeks. In these lessons, gamified learning activities were used, and the students in the courses using gamified activity were less motivated and satisfied than the other students. The reason for the low final exam grades of the students in the environment where these activities were used is the low motivation level of the students. According to this study, the leaderboards and badges have also contributed negatively to the learning outcomes of the users (Hanus & Fox, 2015).

In the scope of this study, a study has been carried out to use the ClassDojo, which is used as an application to help teachers in classroom management, in order to get students' opinions about game elements in the application. The study investigates students' perception of use of gamification as a method or material in the learning environment through ClassDojo application, known as a gamification tool. The research question was determined, as “What are the views of the students for the gamification application used? ” and the study has been developed within the concept of this research problem.

Methodology

This section consists of the research model, participants, data collection tools and materials, ClassDojo application, analysis of data, validity and reliability measures, and researcher's role.

Research Model

In this study, semi-structured interview which is one of the qualitative research methods were used. In this context, the uses of gamification method in education and student opinions about this method were obtained through semi-structured interviews. Students in the study used the gamification application for a period of time. The data were collected from the students started to use the application from the beginning of the first semester. Therefore, students have five months of experience with the application. In addition, the English, Science, Turkish, Physical Education, Social Sciences, Visual Arts and classroom teachers in the research process used the ClassDojo application.

Participants

This research was carried out with 12 students in a private school in Istanbul in the academic year of 2015-2016. Three of the interviewed students were in the second grade, two in the third grade, five in the fourth grade, one in the fifth grade and one in the sixth grade. Students were selected according to their levels (mild-moderate-high), status of usage, and points they got in the application (mild-moderate-high). For this purpose, 4 students use the application less, 4 students use the application at the middle level and 4 students use the application very frequently. In addition, students are categorized according to their scores in the gamification (students with low, medium and high scores). First grade students have not been included by the school administration as they are illiterate. On the other hand, students in the 7th and 8th grades did not use the application because they were in preparation for the high school exam.

The semi-structured interview form was checked by a subject matter specialist. Subject matter specialist has been working as an instructor for 6 years in the field of Computer and Instructional Technology Education (BÖTE). The researcher is a CEIT teacher who has been working for 4 years and she is also a master student in Educational Technology.

Data Collection Tools and Materials

Within the scope of the research, the application was used during the five months of 2016-2017 educational year. The students actively used the application in this process. Data were gathered by interviewing the students using the application. The interview questions were prepared by the researcher and subject experts to get students' opinions about the application. The interview questions were prepared together by the researcher and the subject expert by making reference to the previous studies in the field. There are 29 questions in this interview form. These questions are collected under 4 categories and prepared according to the game elements. These categories include avatar, feedback/reinforcer/points/reward, leaderboards and announcement-notification. For the feedback/reinforcer/ points /award element, the question "What kind of behaviors did the students begin to exhibit when the teachers started giving scores by using the ClassDojo application?" was asked.

The data were collected from semi-structured interviews. The interviews were recorded by using voice recorder. Then, recorded audio files were reported.

ClassDojo Application

ClassDojo is a classroom management application based on certain privacy principles and used on gamified web-based IOS, Android or any computer online (Garcia, Hoang & Brown, 2015). The ClassDojo application can be used in any lessons where student performance evaluation can be done.

Figure 1. Reinforcers are provided in the ClassDojo application.

As shown in Figure 1, it is possible to grade students' scores and give homework with the ClassDojo application. As a result, a leaderboard is formed in the application. In this leaderboard; daily, weekly, monthly and overall ratings can be shown. Thus, students can be given feedback on their behaviors, assignments, and performance continuously. The scores in the application are called positive and negative reinforcer and they can be changed by the teachers when it is needed.

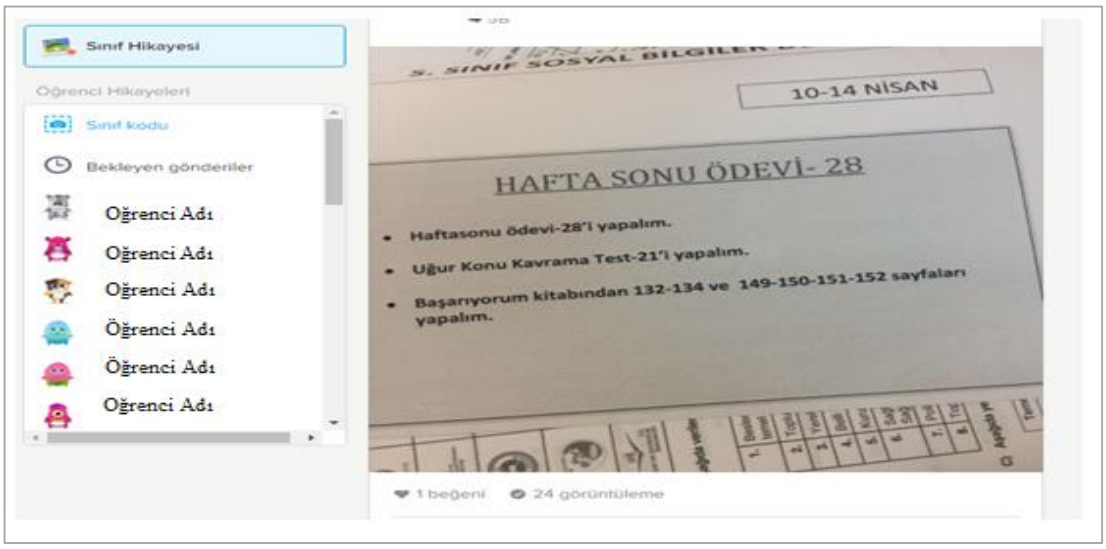

Figure 2. Announcement and photo sharing in ClassDojo application (example).

As shown in Figure 2, teachers can share photos and make announcements with their ClassDojo application. Students and parents can see these posts instantly. There is also an option for teachers and parents to share and comment on photographs and classroom stories shared by teachers. In this way, parents learn about the activities that students perform in the classroom. Decisions and school activities also can be shared with the parents through this way.

Data Analysis

For data analysis, the first step was to report the recorded interviews. Then, in order to analyze collected data, the inductive content analysis that is frequently used by the researcher in qualitative studies has been done. Qualitative data analysis consists of reading, organizing, segmenting, synthesizing, identifying important points and determining what to present (Bogdan & Biklen, 1998). The interview reports read by the researcher were examined by considering the research question. The data were coded using the Maxqda, which is a data analysis program, but the sub-themes appeared during the interviews. At this stage, the researcher received comments and suggestions from subject matter experts on the categories and themes. The data were described according to the theme and codes in the process of content analysis. The direct citation is also included in the study. Semi-structured interview data were organized and coded. At the end of the generated codes, the study was reported. Student names were not used in the study in order to prevent ethical issues. Codes were used instead of student names.

The reliability of the study was provided by receiving opinions from subject matter expert in the process of data analysis, category interpretation, and also establishing common themes. The last version of the research was checked by the subject matter expert and his comments were taken into consideration.

Validity and Reliability Measures

Semi-structured interviews were recorded by the investigator by using a voice recorder. Recorded audio files were reported with the researcher and subject matter expert. Participants in the research are also described in detail so that the transferability of the study can be ensured. After making sure that the consistency was achieved, the data were divided into themes. However, it was aimed to reflect the opinions of the students in a striking way by giving a direct citation in the study.

Findings

What Are the Views of the Students Who Have Used the Gamification Application? Student Findings Related to Research Question

12 students using the gamification application were asked about their opinions. An inductive content analysis was performed on the data. As a result of this analysis, the codes and detailed findings of the determined theme were indicated separately with subheadings. The views of the students on the application were collected under seven themes. These are the purpose of use, usefulness, reinforcers/ points / reward, leaderboard, motivation, avatar and parents. In the process of forming themes, no coding was created. Instead of codes, direct thematization was used. The reason is that students have clearly expressed their views on the application.

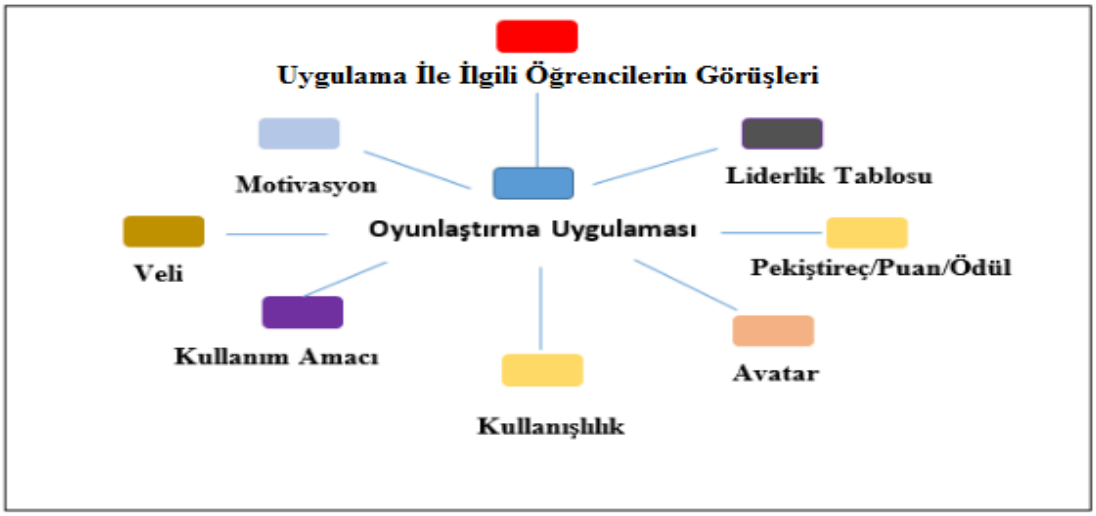

Figure 3. Students' views on the application.

Intended purpose

The "purpose of use" theme consists of opinions about how students use the application. Examples of the themes and opinions of the students are given in the form of citations.

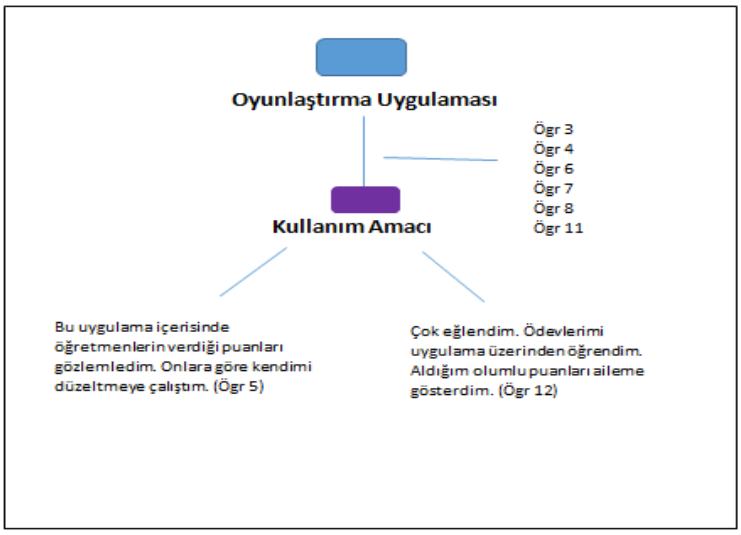

Figure 4. Students's purpose of use the application

As indicated in Figure 4, students expressed their views on the intended use of the application under the theme. Opinions which are similar to those of Ögr 5 and Ögr 12 were also expressed by 6 students.

Ögr 3, Ögr 4, Ögr 6, Ögr 7, Ögr 8, Ögr 11 and Ögr 12, which stated the purpose of use, indicated the effects of the application on themselves.

" It showed me my weakness and strength. Thus, I was able to choose what I did well and my hobbies. I tried to fix the things that I did wrong. Therefore, I am a more successful student than before." (Ögr 6)

Usability

The "usability" theme consists of students' opinions about the usability aspect of the application. Examples of the themes and opinions of the students for their intended use are given in the form of citation.

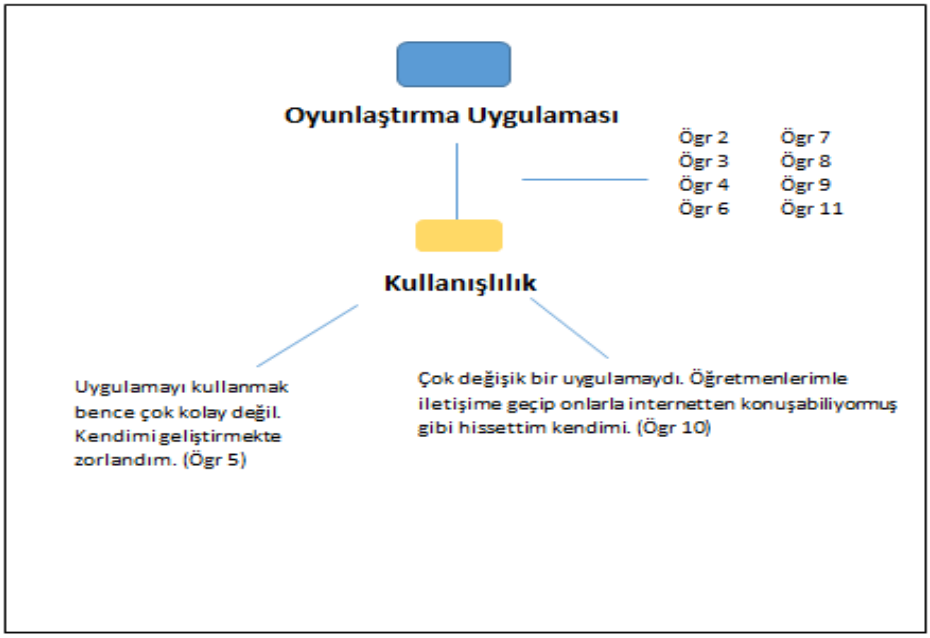

Figure 5. Usability

As it can be seen, the students expressed their views on the intended use of the application. The opinions which are similar to those of Ögr 5 and Ögr 10, were also expressed by 8 students.

Ögr 2, expressed his/her views of the application about the usefulness of it:

"There was a rectangular piece of paper. Names of my teachers were written on the paper. I typed the numbers next to the monsters." (Ögr 2)

Ögr 6, indicated a distinctive feature of usability theme:

> *"My experience with ClassDojo was sometimes good and sometimes bad. There are times when I have forgotten my homework at home and then I get minus. My motivation drops when I take the minus. I feel I need to increase my motivation. I'm having a hard time because it is tiring. But I am happy to use it anyway." (Ögr 6)*

In contrast, Ögr 3 stated her/his opinions about the usability of application:

> *"I can not see everything I want in the application in my I-Pad because there is a missing key in the student accounts (Ögr 3)."*

Ögr 5 and Ögr 7, who said that there is little parental participation in the application, shared similar views:

> *"It's not easy because I could not load most things. For example, I could not load the I-pad. I could not even load my father's phone and it was only loaded on my mother's phone (Ögr 7). "*

Reinforcers / Points / Awards

The "Reinforcers / Points / Rewards" theme consists of the students' views on the reinforcement / point / reward aspect of the application they use. Examples of the themes and opinions of the students regarding the reinforcers / points / credits are given in figure 6 below.

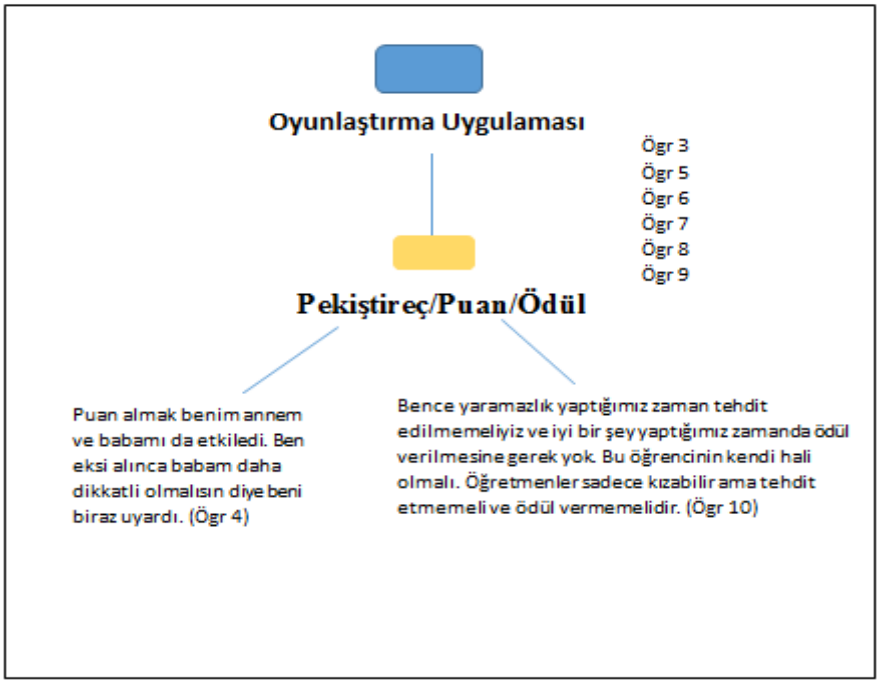

Figure 6. Reinforcers / points / reward.

As seen in the figure, the students expressed their views on the reinforcers / points / reward under the reinforcement / points / reward theme. Opinions similar to those of Ögr 4 and Ögr 10 were also expressed by 6 students.

Ögr 7, indicated the views of the application about the reinforcement / points / reward theme and how they got points:

> *"The application created a competition between two people. One of them got the score and the other one completed the test at home. Some of my friends said that the students completing their test at home are cheating. My friends who behaved like this continued to do the same thing as they got points. They started to run a contest with these scores. " (Ögr 7)*

Similarly, Ögr 8 and Ögr 9 stated the points that students have in the application:

> *"While we were preparing for the activity, our teacher gave -5 points to those who did not study and +5 points to those who studied well. This affects us in a good way" (Ögr 8).*

On the contrary, Ögr 5: pointed out that taking points by using the application had a negative effect on the students.

"I was not happy to get points because I think, this application is a bit unnecessary. They're pushing us with ClassDojo. For example, I could not write the story properly and the teacher insisted me to think about it. I was affected because of this situation. " (Ögr 5)

Leaderboard

The "Leaderboard " theme is based on the views of the students about the leaderboard in the application. Themes and students' examples on the leaderboard are given in the form of citation.

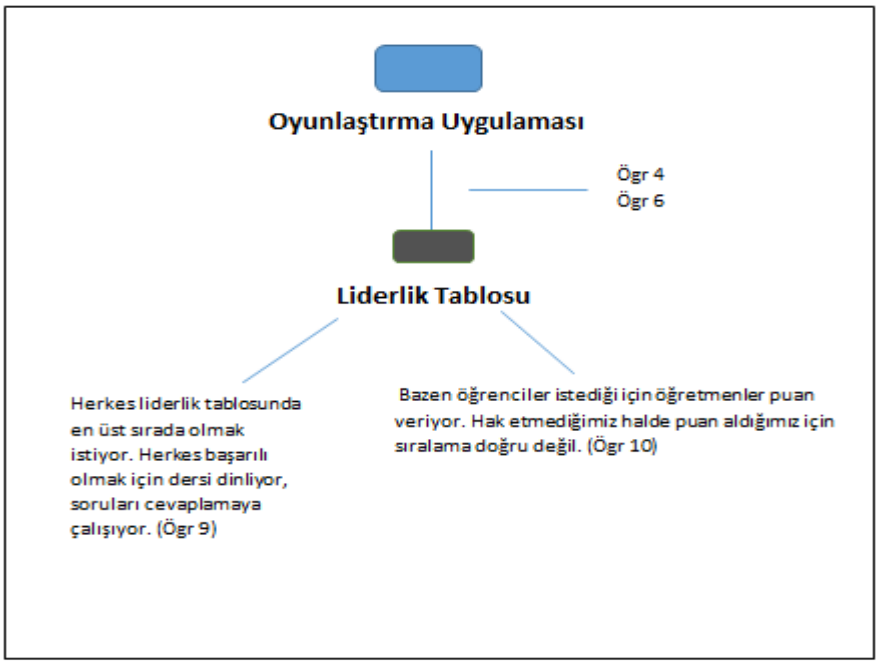

Figure 7. Leaderboard.

As can be seen, the students expressed their opinions about the leaderboard in the application under the leaderboard theme. Opinions similar to those of Ögr 9 and Ögr 10 were also expressed by 2 students, Ögr 4 and Ögr 6.

Ögr 6 and Ögr 4 shared similar views, stating that the leaderboards in the application created a competitive environment among the students:

> *"There was always competition in the class. They said "I will take higher score than you!" each other. This gave a more sincere competitive environment (Ögr 6). "*

Avatar

The theme "Avatar" consists of the opinions of the students about the aspect of the avatar in the application they use. Themes and examples from students' opinions on avatars are given in the form of citation.

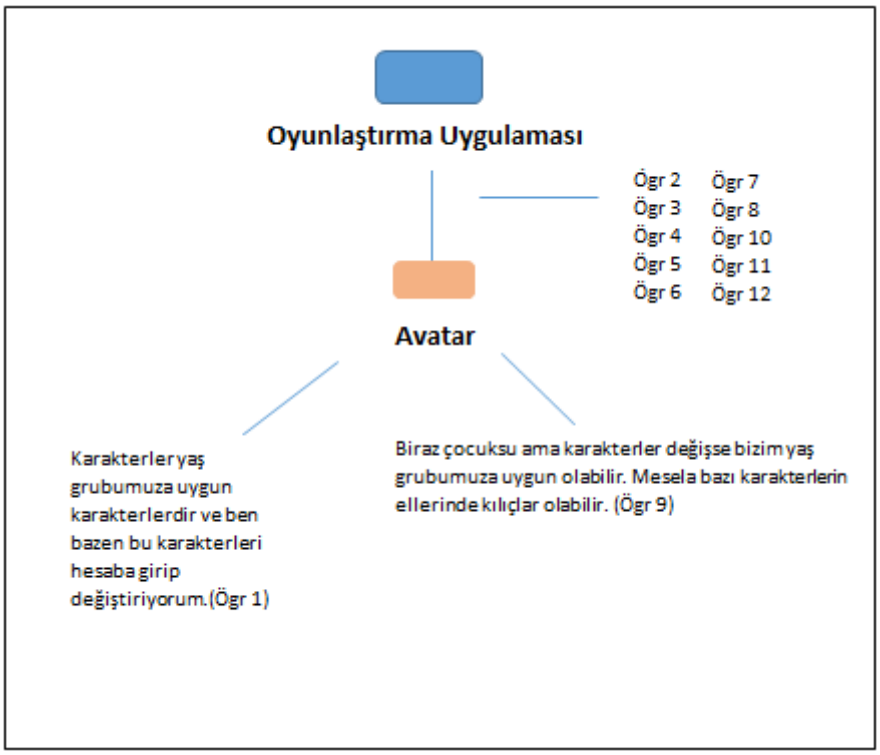

Figure 8. Avatar.

As you can see in figure 8, students pointed their views about the avatar generated within the application. Opinions which are similar to those of Ögr 1 and Ögr 9 were expressed by also 10 students.

Ögr 6, which expresses opinions about avatars in the application,

> *"The characters are very nice. You can create your own characters. You can create your own soul (Ögr 6) "* by referring to features related to avatars.

Similarly, Ögr 8 mentioned the use of avatars in the application:

> *"I used another character before dental braces. After dental braces, I was able to choose a character with braces. I think it was beautiful and it reflected my personality ". (Ögr 8)*

Ögr 12, Ögr 2, Ögr 3, Ögr 4, Ögr 5, Ögr 7, Ögr 10 and Ögr 11 shared similar views by mentioning the features of avatars in the application:

> *"I loved the monsters. They are very sweet and I paid my attention to them. I could change my character and make it better (Ögr 12)."*

Motivation

The theme of "motivation" consists of the code "student motivation" and it is shown in Figure 7. In this context, there are quotations from students' views expressing for both codes. The opinions of Ögr 9 and Ögr 10 were quoted directly related to the "student motivation" code and nine students shared similar opinions with them.

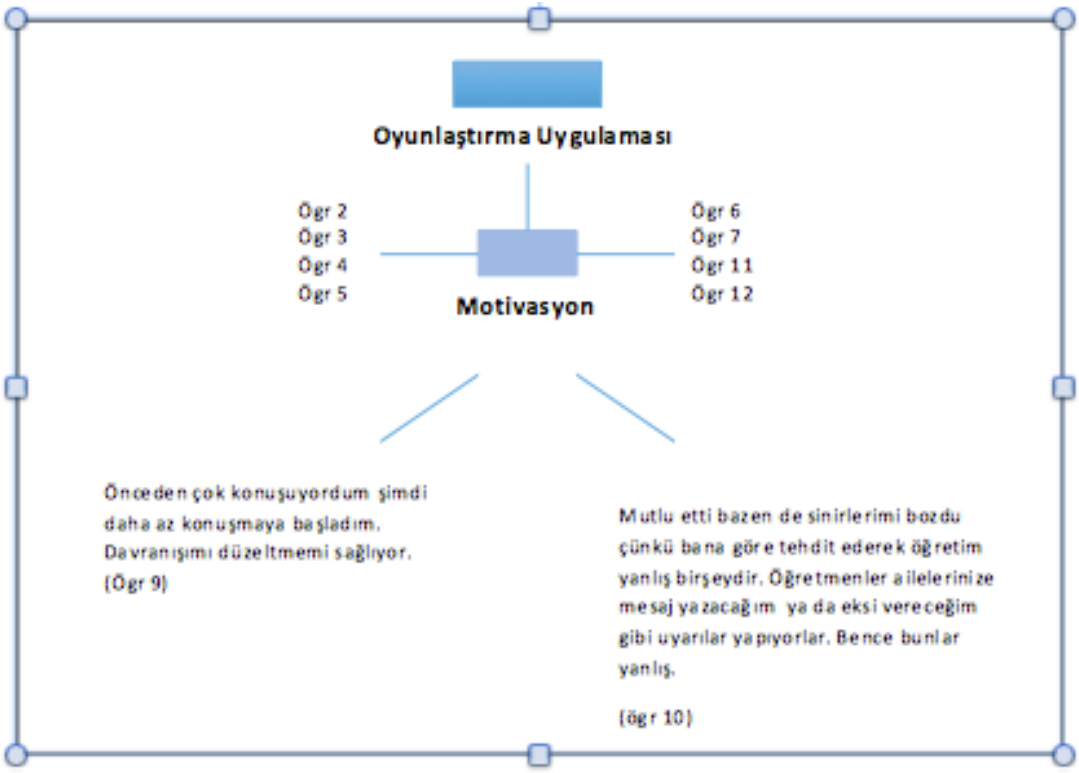

Figure 9. Motivation

The views of Ögr 9 and Ögr 10 have been quoted directly under the "Student motivation" theme. Opinions similar to those of Ögr 9 and Ögr 10 were indicated also by 6 students.
Ögr 6 expressed his views of the student motivation code under the motivation theme of the application:

> *"I'm very motivated. This application also increases students' interest and participation in the classroom (Ögr 6)."*

Ögr 6 mentioned the positive points about the motivation of the students who use the application.

Similarly, Ögr 2, Ögr 3, Ögr 4, Ögr 11 and Ögr 12 mentioned the effects of the application on the student motivation:

> *"I think students started to show more positive behaviors. They started not to talk during the lessons. They did their homework on time (Ögr 12) "*.

On the contrary, Ögr 5 talked about the negative aspects of the application about student motivation:

> *"The use of the application did not make me very happy because there is an unfair system. When someone misbehaves in the classroom, the whole class is affected (Ögr 5)"*.

Parent participation

The "Parent Participation" theme is based on the opinions of the students regarding the aspect of parental involvement on the application used by the students. Themes and examples of students' views on parental involvement are given in the form of citation.

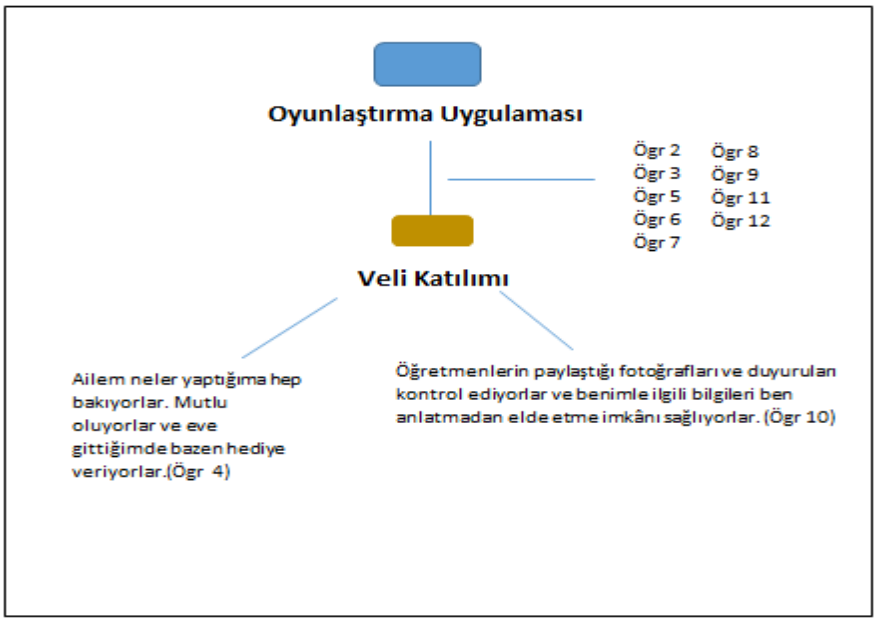

Figure 10. Parent participation.

As can be seen, the students expressed their opinions about the participation of parents in the application. The opinions of Ögr 4 and Ögr 10 were also expressed by 9 students.

Ögr 11, indicated their views under the theme of parental involvement in the application:

> *"When the assignment is missing, my parents can see it in the application. I have to explain why I did not do it (Ögr 11).*

Similarly, Ögr 2, Ögr 3 Ögr 8, Ögr 9 and Ögr 12:

> "*They looked at the messages sent by the teachers. They have learned whether I did my homework or not. (Ögr 12).* "

On the contrary, Ögr 5 pointed out the negative aspects of the participation of the parents using the application:

> "*My family is not very involved, but it was my mother who was most interested in this application. My mother has complained about minus points I got. (Ögr 5).*"

On the other hand, Ögr 6 and Ögr 7, who said that there is little parental participation in the application, shared similar views:

"My parents are not interested in this application. Because they think that they do not need this application (Ögr 6)."

Conclusion, Discussion and Suggestions

Opinions About Motivation Of Students As A Result Of Use Of Gamification Method

The students stated that the use of gamification method in education makes the education competitive, fun, useful and more efficient. In the study of Yıldırım, Demir (2014) and Samur (2015), It has been stated that the use of the gamification method increased the motivation of the students and had a positive effect on the course. Similarly, in the studies of Karahan, Aytuğ Koşan and Demirören (2014) related to basic microbiology education, the effect of using gamification method in microbiology lesson on student motivation and achievement was examined. The lessons were conducted using the gamification method in the experimental group. At the end of the study, it was revealed that the use of gamification method positively affected the success and motivation of the students. It has been determined in the study of Fidan (2016) that using the gamification method increases the attendance and motivation of the students to the classes, makes the education process more fun and consequently affects the academic success of the students positively. Lee and Hammer (2011) have stated in their research that gamification method provides an opportunity to make mistake and learn from mistakes. For this reason, it is stated that this method has a positive effect on student motivation and it helps them increase their interest in the lesson because it supports the students socially and emotionally. Students who have increased interest and motivation have expressed that their academic achievement is also increasing. Similar to these results; the use of the gamification method has also contributed to the more cautious listening of the lesson. Teachers began to give points in the course according to behaviors they wanted students to have. Accordingly, as the teachers gave points, students tried hard to get more points. Getting points made students feel more hardworking and happy. This also shows that their motivation and interest towards the lesson has increased.

On the other hand, the use of application negatively affects the motivation of some students because they think that the use of this application is unfair. The reason for this is that the teacher

blamed on the whole class because of a student who misbehaved in the class. Teacher's behavior indicates that students' motivation and interest to the lessons has decreased.

Some students also think that their teachers have been putting pressure on themselves by using gamification application. The reason for this is that teachers force students to do their homework and projects completely through the application. This shows that students perceive their responsibilities as obligations because of teachers' statements such as " I will give you extra points if you do your homework" or " I will increase your grade if you complete your homework".

Students' Opinions about Gamification Elements in the Application

In the studies examined, there is the positive foresight related to the use of gamification method in education (Yıldırım, 2016). Some of these predictions are that the gamification method is a process-oriented design and it is designed according to the needs of the learning situations, the game elements in the application (points, leaderboard, announcement-notification and avatar) When Yıldırım (2016) examined student perceptions of gamification application, he stated that dynamics, components and mechanics are obtained with the order of importance. Additionally, the most important aspects of gamification are given as the process of logic, emotion and progression. On the other hand, some of the terms used in this research such as points, leaderboards, avatars and announcement-notification have a significant influence on the student.

Students' Opinions about Point Element in the Gamification Application

The use of the gamification method is seen as an incentive for students to improve their behavior. There is a system that allows students to earn points for demonstrating desired behaviors. This system is just an indicator. The scoring system is used to eliminate undesired behaviors of the students. Using this system, teachers try to keep students away from undesired behaviors. Giving points to students is an indicator that teachers use to promote desired behavior. In addition, Garcia, Hoang & Brown (2015) have also explained in their research that feedback and points should be given to the students not only to promote positive behaviors but also prevent negative behaviors. This system may also have negative effects on some students. There may be students who do not study to get points, students who are trying to get points or

students who cannot get points although they are hardworking in the class. At this point, the teacher should control the use of the gamification to balance in the class.

Ar (2016) stated in his study that he has made learning fun with gamification. Similarly, this system may be fun for the students. They can see their own progress by including this system. They will be able to see the rewards they have earned in the course and they may have the opportunity to see their progress on the leaderboards within a certain period of time. Scores are concrete systems and they may give the winners some privileges. The scores given by the teacher can be taken back or given to other students. As students get points, they may want to use the application continuously. A change in the classroom behavior of students can be observed after the application is used.

Yıldırım and Demir (2014) suggested that the achievements of the subject should be associated with points and medals. In this study, it has been concluded that the teacher should create a point system according to his / her course, except for the situation that the gamification application may have already a point system. Similar to this result, Garcia, Hoang & Brown (2015) concluded that the teachers should identify point system and this system should be based on the concrete data. This also indicates that students have to pre-determine what they need to do to get these scores, which is a sanction on the awarding students because they expect to get positive and negative scores on the right and wrong behavior. According to this point system, the students try to improve their ranking in the leaderboard and increase their success by getting points. If this behavior is repeated frequently, after a while, it becomes a desire to leave the lesson and to get points through the application. Contrary to students who have positive points, negative scores may cause discomfort, irrelevance to the lesson and it may affect their self-confidence. Parallel to this result, Garcias, Hoang & Brown (2015), have found that students may want to get points continuously. Therefore, teachers should pay attention when using this system. Before using the application, teachers and students should take a decision on points together. In line with these decisions, points must be able to meet the behaviors of the students and their achievements in the classroom. Thus, learners will learn how to behave in order to get points and they do not experience shame, indifference to the lesson, and reduced confidence. Knowing the scores, the students will try to improve their behavior and performance in line with the scores they earn.

Another positive effect of the use of the point element in the application is that the parents can see the points given by the teachers. Their parents have increased their motivation by encouraging them because of their success. It is also indicated that there are the parents who rewarded their children for their success. It is thought that these behaviors of the parents contribute to the increased collaboration between teacher-student and parents. This finding is similar to those of previous studies by Garcia, Hoang & Brown (2015) and Burger (2015).
The fact that the teachers gave scores to the students by using the gamification application in the course negatively affected some students. The reason for this is that the race of points has emerged among the students. As students get points, it is seen that the motivation of the students decreased because some of them said that "I got a higher score than you," "my score exceeded your score". Another reason is that students get negative scores. As the students get a minus grade, their interest and desire towards the lesson decrease. It is seen that students have anxiety related to understanding the courses. They express their feelings by saying "I do not understand the course and I cannot do it". Families who have seen this situation through the gamification have started to warn their children. It seems that these warnings also cause lack of motivation. Fitz-Walter, Tjondronegoro & Wyeth (2011) emphasized similar results in their research but stated that students who are reluctant to use the gamification application should be encouraged.

Students' Views on the Leaderboard Element in the Gamification Application

The use of the leaderboards varies according to the age of the students. According to the findings obtained within the scope of the research, older students loved and used the leaderboards more than the others. Gamification application can provide a visual system, such as a leaderboard, so that the students can instantly see their own situation and progress. Students who see their achievement in the leaderboard will also have information about their progress. Similar to this result, Sillaots (2014) and Garcia, Hoang & Brown (2015), have concluded that their students has been supported externally through the use of the leaderboard.

In the study of Hanus and Fox (2015), it was concluded that the leaderboard has contributed negatively to the learning outcomes of the users. On the contrary, the ranking system in the leaderboards can create an entertaining competition environment for the students. In this environment, students will begin to work harder in order to pass score of their friends. It must be used in all lessons with all of the students to provide a fair classroom environment.

Otherwise, when the student is not in the classroom, he/ she will not get point and consequently her/his place in the leaderboard will go down. This will prevent a fair result as it will not reflect the actual performance of the student. In addition, students who are quiet in the class, who have difficulties in adapting to the class, may not go up to the top level in the leaderboard as they get minus points even if they complete their homework. The use of this application, in this case, may create a negative effect on students.

Students' Opinions about Announcement-Notification Element in Gamification Application

Aytekin (2016), points out in his study that the applications provide elements such as sharing, appreciation, commenting, creating a competitive environment, announcement, notification and following. Thanks to these elements, it is possible to follow a lot of information through gamification application. The announcement notification is an element that affects and increase students' success. Similarly, Burger (2015) stated that the announcement-notification influenced the success of the students positively.

When teachers share daily and weekly homework on the platform, they not only inform parents about the due-dates of the assignments but also remind students who forget what the homework is. In this way, students can do homework regularly. When parents learn students' homework through the gamification application, they can motivate students to complete their homework.

Students' Opinions About Avatar Element in the Gamification Application

Each student is represented by an avatar in the classes created by the teachers in the gamification application. Each of these avatars has a different appearance, and avatars can be edited within the application. Students who wish to make changes to the avatars can add new features to their own accounts.

While the gamification application is used, it is seen that avatar has a positive effect on the students. In his study Bayraktar (2014), he emphasized that students should be interested in game avatars and game environments. Students stated that the avatars in the application are remarkable and their appearance is funny, cool, angry, fancy, bald, cute, feathered, with cd-like eyes. Because of these features, it is seen that avatars have a positive effect on them and their motivations because avatars are suitable for their age

groups and they can change the characteristics of the avatars through their accounts. Bayraktar (2014) stated that avatars also affect student and their motivation. Avatars make learning easier and the lesson fun. Furthermore, Sheldon (2012) stated that each student must create and use an avatar. The students who design their avatars are happy and they can create their avatars reflecting their own characteristics. For example; Ögr 8 student stated that *"I used another character before dental braces. After dental braces, I was able to choose a character with braces. I think it was beautiful and it reflected my personality ". (Ögr 8)* Students also think that avatars are suitable for their age. A different positive effect is that the characters are randomly assigned, and students indicate that these avatars do not affect their own development.

On the other hand, some students stated that the avatars in the gamification application have a negative effect on the students. The reason for this is that avatars are not appropriate for the age of middle school students as it looks childish. It is also stated that the fact that the avatars are ugly makes the students feel bad. Some students stated that avatars are imaginative and they are alien characters with 3 eyes. In addition, Bayraktar (2014) stated that avatars in the application are not realistic. There are some factors that affect students' motivation such as a warrior character who looks real. The characters also can change according to gender and students can use their own pictures.

Teachers who expressed their views on the effects of avatars in the gamification application have shown that they have more positive effects on the students. Students find them funny, they compare their avatars with each other and love them. Ögr7 coded teacher stated that many students find their avatars nice because they associate avatars with cartoon characters. Teachers who showed negative effects stated that students paid attention to the avatars until they accustomed to them. However, they did not care about avatars after a while. It is also noted that avatars are not suitable for students in grades 5, 6 and 7. The reason for this is that the students see themselves as a young group and avatars look childish according to their age. Therefore, the avatars have to be changed and the current characters should be preferred. Another negative point is that teachers give too much importance to the avatars. It is related to how these characters are perceived and imposed on students. It is thought that the avatars should not be too important in the education of the students.

Suggestions

Based on the findings obtained from the research results, suggestions were given to researchers and practitioners. It is thought that the part of suggestions given to researchers will contribute to the literature while suggestions for practitioners will be for the teachers who want to use the gamification method in education and researchers who want to do research on gamification.

Suggestions for Researchers

It is seen that the number of the studies in this field is limited. Therefore, upcoming studies will shed light on gamification field.

- The studies related to how to operate the gamification application in education and how to integrate gamification into the curriculum will highly contribute to literature.
- The motivation and satisfaction of students using gamification was lower in some studies than in this study (Hanus & Fox, 2015). For this reason, exploring the effects on participants' internal motivations using gamification will guide the studies in this area.
- Gamification has positive effects on adults but it is not known exactly how it will affect the young learners. Therefore the literature has been contributed by this research. However it may be investigated whether the gamification elements in this group directly contribute to the achievement and motivation of the students or not.
- In this area, the effects of the reinforcer on the participants can be investigated through the use of gamification application in classroom management.
- More data may be collected to learn the views of the parents in the field as it is important to observe students out of classroom.

Suggestions for Practitioners

Gamification method should be used carefully in education. It is necessary to design the method according to the acquirements of the course. The reason is that student' success, perception, attitudes and comments on the course can be positively influenced when the gamification method is used correctly.

- Gamification is a good stimulus for students when it is used carefully. Using scores based on this system eliminates the need for positive-negative reinforcer in the class and allows students to earn points in the maximum amount. Moreover, if the gamification application is well planned and used correctly, it can be a good teaching tool for the teacher and it can encourage the students to learn in the classroom.
- If teachers use the system of points positively, all students can provide positive feedback to this system. Students' behavior can be observed constantly and their grade also can increase. If the application is used negatively, it may lose its influence after a while and the students may have less confidence in the application and they may be less willing to learn. In order to prevent these situations, the teachers should determine the scoring system that they will use in the course in a good way.

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Research Article

E-Portfolio Implementation Experiences of Prospective Primary School Teachers

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Abstract

In the information society, as in all other institutions the functions of educational institutions have changed by the phenomenon of globalization, the rapid spread of knowledge and reaching broad masses, the necessity of co-existence of differentiated cultures, and the development of science and technology. Portfolios help students to assess themselves and improve their ability to express themselves and allow observation of the development that takes place over a specified period due to the collection of work during a specified period, taking these characteristics into account, the use of portfolios in the assessment and evaluation process is suggested. Considering the progress in educational technology, it can be said that e-portfolio implementations, which can provide the products of teachers or prospective teachers to move on to the next teaching process and other teachers and prospective teachers, will become more prevalent. When these developments and changes are taken into consideration, it is expected that the evaluation of the e-portfolio implementation of the prospective primary school teachers enrolled in Science and Technology Instruction II and their related gains in the process will contribute to the field. In the research aimed to reveal the evaluations of primary school prospective teachers about their e-portfolio implementation, the approach of phenomenology was used which is one of the qualitative research designs. In this research, it was aimed to reveal the evaluations of e-portfolio contents and the outcomes related to themselves in the course of Science and Technology Education II of the prospective primary school teachers. In the research, the result that e-portfolio creation process is contributed to the prospective primary school teachers in the sub-headings of "Pedagogical Knowledge", "Field Information", "Technology Use Skill" and "Thinking Skill" was obtained.

Anahtar Sözcükler: *Prospective primar school teacher, e-portfolio, science education.*

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Sınıf Öğretmeni Adaylarının E-Portfolyo Uygulaması Deneyimleri

Öz

Bilgi toplumunda, küreselleşme olgusu, bilginin hızla yayılması ve geniş kitlelere ulaşması, farklı özellikteki kültürlerin birlikte yaşama zorunluluğu, bilim ve teknolojideki gelişmeler tüm kurumların olduğu gibi eğitim kurumlarının da işlevlerini değişime uğratmıştır. Öğrencilere kendi kendilerini değerlendirmede ve kendilerini ifade etme becerilerini geliştirmede yardımcı olması, çalışmaların belirli bir süreç boyunca toplanması nedeniyle belirli bir zaman diliminde gerçekleşen gelişimi gösterme olanağı tanıması gibi özellikleri dikkate alınarak portfolyoların ölçme değerlendirme sürecinde kullanımı öngörülmüştür. Eğitim teknolojisindeki ilerlemeler düşünüldüğünde öğretmenlerin ya da öğretmen adaylarının ürünlerinin bir sonraki eğitim sürecine ve diğer öğretmenlere ve adaylara taşımasını sağlayabilecek olan e-portfolyo uygulamalarının yaygınlık kazanacağı söylenebilir. Bu gelişim ve değişimler dikkate alındığında sınıf öğretmeni adaylarının Fen ve Teknoloji Öğretimi II dersinde e-portfolyo uygulamasına yönelik değerlendirmelerinin ve süreçte kendilerine ilişkin kazanımlarının belirlenmesinin alana katkı sağlayacağı ön görülmektedir. Sınıf öğretmeni adaylarının e-portfolyo uygulamasına ilişkin kendilerine yönelik değerlendirmelerinin ortaya konulması amaçlandığı araştırmada, nitel araştırma desenlerinden fenomenoloji (olgubilim) yaklaşımından yararlanılmıştır. Bu araştırmada, sınıf öğretmeni adaylarının Fen ve Teknoloji Öğretimi II dersinde e-portfolyo uygulamasına yönelik değerlendirmelerinin ve süreçte kendilerine ilişkin kazanımlarının ortaya çıkarılması amaçlanmıştır. Araştırmada e-portfolyo oluşturma sürecinin "Pedagojik Bilgi", "Alan Bilgisi", " Teknoloji Kullanım Becerisi " ve " Düşünme Becerisi" alt başlıklarında sınıf öğretmeni adaylarına katkı sağladığı sonucuna ulaşılmıştır.

Anahtar Sözcükler: *Sınıf öğretmeni adayı, e-portfolyo, fen öğretimi dersi.*

Introduction

In the information society, as in all other institutions the functions of educational institutions have changed by the phenomenon of globalization, the rapid spread of knowledge and reaching broad masses, the necessity of co-existence of differentiated cultures, and the development of science and technology. In this context, learners are expected to be individuals who can construct, internalize and use knowledge. They are also expected to have the ability to problem-solving, researching, questioning, reasoning, and critical thinking skills. In the information society, curriculums are also changing to train individuals with these qualities. Within this framework, education and training programs in social and numerical fields have been renewed in many countries including the United States, Australia, Finland and New Zealand (Yaşar, 2005). In Turkey, the necessity of the use of portfolio is included in the primary education program developed in 2004. In the training curricula, it was discussed by constructivist understanding as part of the assessment and evaluation teaching process (Gelbal & Kelecioğlu 2007). In this context, the use of portfolios in the assessment and evaluation process is envisaged, taking into account features such as helping students to assess themselves and improving their ability to express themselves, and the ability to show progress over a certain period due to the collection of work during a particular period. In this context, the use of portfolios in the measurement and evaluation process is suggested, taking into consideration the features of helping students to assess themselves and improving their ability to express themselves, and the ability to demonstrate progress over a certain period of time, as the work is collected over a specified period. The use of portfolio in everyday life is not a new phenomenon. For example, portfolios are used to help assess financial services industry investments. Portfolios are also used in areas such as fine arts, marketing or architecture (Briscoe & Wells, 2002; Lawrenz, Huffman, & Welch, 2000). In the 1990s, Pearl and Leon Paulson (1991) developed a metaphor for the portfolio. According to this metaphor, portfolios are expressed as laboratories where students configure their own experiences and meanings related themselves. According to them, each portfolio is a story of what students know and why they do not. Students demonstrate what they know and can do with examples of their work (Paulson, Paulson, & Meyer, 1991; cited by Kan, 2007). In simple terms, a portfolio is a collection of gathered evidence to show an individual's learning journey and talent over time.

Portfolios are a purposive collection of work (Jorgensen, 1994) that demonstrates the effort, progress, and success of learners at one or more fields; (Rhodes & Shanklin, 1993, p.3), a file consisting of contents reflecting and proving the work of the student (Paulson and Paulson, 1991), a collection of written material and products exhibited by the student (Brandut, 1989; Wolf, 1989; cited by Long, 2006). Portfolios can be used as educational materials and assessment tools in the educational setting and are intended to monitor the development of each student's own potential and characteristics, rather than comparing or racing them against each other. Such an understanding allows assessment criteria to be determined not only by the teacher but also with the students and other stakeholders. It allows observation of development based on individual differences (Anagün, 2016).

Recent developments in computer technology have contributed to the traditional pen and paper portfolio by enabling the portability of the portfolio to the electronic environment; In addition to having all the advantages of traditional portfolios, e-portfolios offer a more productive and more comprehensive view of learning improvement (Demirli & Gürel, 2007). At the same time, an advantage of e-portfolios in contrast to the traditional format is that they also contain digital files such as simulations and videos (Butler, 2006). E-portfolio can be contain materials accordance to course contents and learning outcomes such as puzzles, concept map, worksheets, research report, documentary, article, observation report, brochure, video recording, blog page, website, poster, story, animation, educational software, presentation, newspaper, voice recordings, exam questions, webquest, interview, drawing, poetry, self evaluation report and products (Gülbahar, 2009a). Although the content has the same properties as other portfolios, it is different from others in that it is created and stored in the electronic environment. The use of e-portfolios with teacher education focuses on the learning process and knowledge production of prospective teachers.

The development of teacher candidates can be documented, explained and reflected in the e-portfolio process (Granberg, 2010). It reflects the academic development of the students and contains important evidence and products for the teacher and the student to follow their development (Kutlu, Doğan, & Karakaya 2009). The conceptual interpretations of E-portfolios are very diverse (Shroff, Trent, & Ng, 2013), but are based on the learning portfolio (Zubizarreta, 2009), although the portfolio design is made electronically. According to Zubizarreta (2009), the learning portfolio is a flexible, evidence-based tool that directs students to an ongoing learning and collaborative analysis process.

In the context of teacher education, portfolios have some purposes: teaching prospective teachers how to be reflective, assessing their readiness to graduate, and providing accreditation as part of the teacher training program (Zeichner, & Wray, 2001). E-portfolios are one of the critical tool currently used by prospective teachers to support and document personal, professional and intellectual development as self-directed learners (Vam Wyk, 2017). In the use of e-portfolio, materials and product types to be included in the content should be determined, and guidelines which are also the basis for evaluation should be prepared. Also, proper planning should be done by deciding on the usage rules for the content production and use process and how to evaluate them. The general objectives for using the E-portfolio can be summarized as providing better learning, helping the student to take own learning responsibility, and ensuring that the student presents their development over time (Gülbahar & Köse, 2006).

E-portfolios can be used for different purposes, such as assessing the level of students' attainment of achievements, giving feedback and directing students in their future work. Generally, it is developed for three different purposes:

1. Learning Portfolio (for development purposes): It is used for evaluation of shaping, used to support professional development.

2. Assesment Portfolio (for evaluation purposes): It is used for performance-based level determining evaluation.

3. Working Portfolios (for presentation purposes): It is used for supporting the search for a career by presenting of electronic files and projects (Carliner, 2005; Irby & Brown, 2000; Lynch and Purnawarman, 2004; Mason, Pegler & Weller, 2004; cited by Gülbahar & Köse, 2006).

E-portfolios provides a safe, reflective, interactive, and individual-enhancing environment for the student (Chang, 2001). The use of e-portfolios has increased in teacher education programs in European countries and elsewhere. In addition to pedagogical goals, the driving forces behind the ongoing use of ePortfolios are generally defined as the need to meet national standards, address accreditation issues, or improve quality (Butler 2006; Dysthe & Engelsen 2008; Strudler & Wetzel 2005; Woodward & Nanlohy 2004). Butler (2006) describes the success criteria of e-portfolios as a planning process in which various "what, why and how"

questions need to be answered. A common understanding of the purpose and design of e-portfolios is needed. The creation process is important to the E-portfolio rather than the implementation (Granberg, 2010). The e-portfolio should be used within software and students must take responsibility as active participants in the creation of the file. The products should be taken into account when providing feedback to the students and giving information about their progress (Gülbahar, 2009b). Academicians argue that e-portfolios are being applied gradually in teacher training programs, especially in most higher education institutions (Granberg, 2010, Hoekstra & Crocker, 2015). The main reason for this practice is to promote a learner-centered approach and more active learning experiences and pedagogical changes in higher education (Joyes, Gray & Hartnell-Young, 2010). In teacher training programs, e-portfolios are formed as "living-learning experiences" by prospective teachers as an evidence-based approach (Wang, 2009).

Studies have shown that the development of e-portfolios can improve the way prospective teachers reflect their professional learning processes and skills in their work. In the same researches, it has been suggested that prospective teachers should receive training and support in order to be successful in their work. In the learning process, the importance of teacher presence and supporting feedback is emphasized (Beck & Bear 2009; Hauge 2006; Mansvelder-Longayroux, Beijaard, & Verloop 2007; Pelliccione & Raisen 2009; cited by Granberg, 2010). In this context, with the training of prospective teachers with knowledge on using technology will contribute to the formation of teacher profiles which can combine the technology with teaching skills in their professional lives. These teachers will also meet the expectations of the learners who have already got the consciousness about using technology and 21st-century learner characteristics (Önal & Çakır, 2015). Teachers and prospective teachers should be informed about useful technological tools and be encouraged to create and use their own materials that are produced by combining field knowledge with technology in their education process (Tatlı, Akbulut, & Altınışık, 2016). It can be said that, considering the development in educational technology, e-portfolio implementations, which can enable teachers or prospective teachers to carry their products to the next teaching and learning process, other teachers and prospective teachers, will become more prevalent. When these developments and changes are taken into account, it is predicted that the evaluation of the prospective primary school teachers about e-portfolio implementation in the Science and

Technology Instruction II course and the achievements related to them will contribute to the field.

Method

This study uses a qualitative phenomenological approach which is one of the qualitative research design to investigate the evaluations of prospective primary school teachers about their e-portfolio implementation. Phenomenology design focuses on phenomena that we are aware of but do not have an in-depth and detailed understanding. These phenomena can be events, experiences, perceptions, orientations, concepts, and situations in the world we live in (Yıldırım & Şimşek, 2011: 72). In this research, the phenomenon is "e-portfolio implementation". In the research, Phenomenology approach was used as a qualitative research approach because of the third-grade students' self-evaluations reports of e-portfolio creation process were gathered in written form within the electronic environment and analyzed in depth at the end of the process. In this research, it is aimed to reveal the evaluations of the e-portfolio implementation and the achievements related to themselves in the course of Science and Technology Education II of the prospective primary school teachers. In this context, for the following questions the answers were searched:

- What are the acquisitions of prospective primary teachers regarding their e-portfolio implementation process?
- What are the general evaluations of prospective primary teachers regarding e-portfolio implementation?

Participants

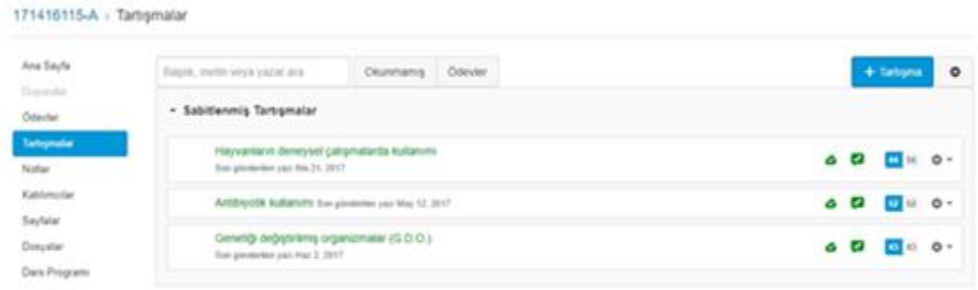
In qualitative research, the number of samples depends on what the researcher wants to know, what is the researcher's purpose, what is reliable and useful, and what can be done at the available resource and time (Patton, 2002). Criterion sampling was used for purposeful sampling methods in this study. Purposeful sampling allows for in-depth study of situations that are thought to have rich knowledge. In the studies in which the criterion sampling is used, the units of observation can be formed by persons, events or situations with certain qualities.

In this case, units that meet the criterion (primary qualifications) set for the sample are selected (Büyüköztürk et al., 2009; Patton, 2002). In this study, three key criteria were taken into consideration: participants should be willing to investigate, should be the third-grade students at the primary school teacher program, and have taken the Science and Technology Instruction I course. 35 class teacher candidates participated in the research.

Implementation and Data Collection Tool

Prospective primary school teachers implemented the e-portfolios in fourteen weeks according to the Science and Technology Instruction II course curriculum. The researchers were configured The Canvas Learning Management System (LMS) to allow the prospective primary school teachers to prepare e-portfolios. Canvas is a learning management system built on a modern web framework. The Canvas user-interface is well-designed for both teaching staff and students. Canvas LMS has many options for interoperability with other systems and services through its open-source application programming interface (API). For example, teaching stuff can assign collaborative projects through google docs and completed google docs can be submitted to instructors for review. Teaching staff and students can link not only google documents but can register for their Canvas account other social networking services and curricular content provided by publishers (Kandemir, 2013). Figure 1 shows the main student page of the Canvas LMS and the course instructions.

Fen ve Teknoloji Öğretimi II Dersi için öğrenme yönetim sistemi giriş sayfası. Bu bölümde öğrencilere derse ait izlence, etkinlik ve değerlendirme bilgileri verilmektedir.



Öğrenme yönetim sistemi üzerinde yer alan "Tartışmalar" bağlantısı ile erişim sağlanan sayfada 3 farklı tartışma konusu görülmektedir. Oynatma listesine https://goo.gl/xNcow1 bağlantısından erişim

Figure 1. *Canvas LMS main student page and the course instructions*

The researchers shared the lesson plans of the entire semester in the first week both through the Canvas learning management system and face to face lecture session. Evaluation methods are introduced and necessary information about how the e-portfolio method is implemented is explained to the students. The students weekly formed materials related to the topics that were followed and uploaded them to the learning management system. The implementation schedule is shown in Table 1 below.

Table 1
Implementation Schedule

Week	Date	Weekly Portfolio Scope
1	17 February 2017	Course overview
2	24 February 2017	1. Examination of learning outcomes and distribution of topaç within the science curriculum. 2. Overview and examples of 5E model
3	3 March 2017	1. Prospective teachers' course plans 2. Moon observation
4	10 March 2017	1. Prospective teachers' course plans 2. Overview and examples of Socio-scientific topics 3. Moon observation
5	17 March 2017	1. Prospective teachers' course plans 2. Introduction of technology-assisted applications 3. Moon observation
6	24 March 2017	1. Prospective teachers' course plans 2. Comic book creation steps with ComicLife application 3. Moon observation 4. Argumentation-based socio-scientific topic teaching (Use of animals in experimental research)
7	31 March 2017	1 Prospective teachers' presentations 2 Moon observation
8	21 April 2017	1 Prospective teachers' presentations 2 Moon observation 3 Argumentation-based socio-scientific topic teaching (Antibiotic usage) 4 Guidance for prospective primary school teachers on portfolio assignments
9	28 April 2017	1 Prospective teachers' course plans 2 Moon observation 3 Guidance for prospective primary school teachers on portfolio assignments
10	05 May 2017	1 Prospective teachers' course plans 2 Moon observation 3 Guidance for prospective primary school teachers on portfolio assignments
11	12 May 2017	1 Prospective teachers' course plans 2 Moon observation 3 Argumentation-based socio-scientific topic teaching (Genetically Modified Organisms) 4 Guidance for prospective primary school teachers on portfolio assignments
13	26 May 2017	1 Prospective teachers' course plans, Science Center Trip 2 Guidance for prospective primary school teachers on portfolio assignments
14	27-31 May 2017	1. Portfolio delivery and self-evaluation

Lessons were theoretically carried out weekly and the products created each week are uploaded to the LMS. In this process, prospective teachers have created two lesson plans based on learning through research and in the form of a 5E learning cycle. Three different observations were made on one of the selected observation days and a detailed drawing of the Moon was performed for each observation Prospective primary school teachers observed the Moon for at least three nights during a week at the same clock. There are two days between the two observations. In addition, in one of these days, three observations were made, which would be

at least an hour between the two observations. This observation process continued for nine weeks. The e-portfolio assignments and student uploads of the lunar observations are shown in Figure 2.

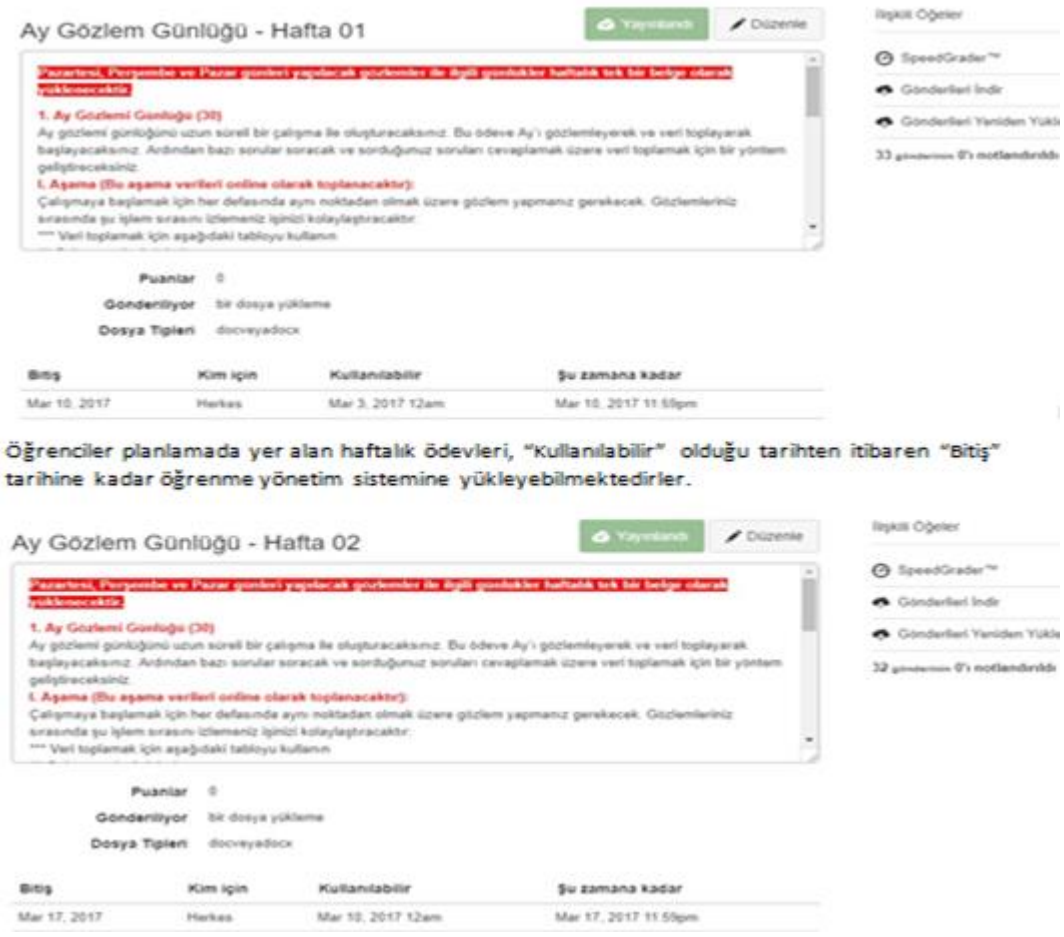


Figure 2. *Student Moon Observation assignment and log reports*

The researchers have created a discussion environment based on Toulmin's argumentation that includes "data, claim, warrant, backings, qualifier, rebuttal" on the learning management system. Also, various issues related to the argument-oriented teaching of socio-scientific subjects were assigned to prospective teachers. The students were provided with information about ComicLife software to create comic books on science subjects. Screen captures of the ComicLife learning modules are given in Figure 3.

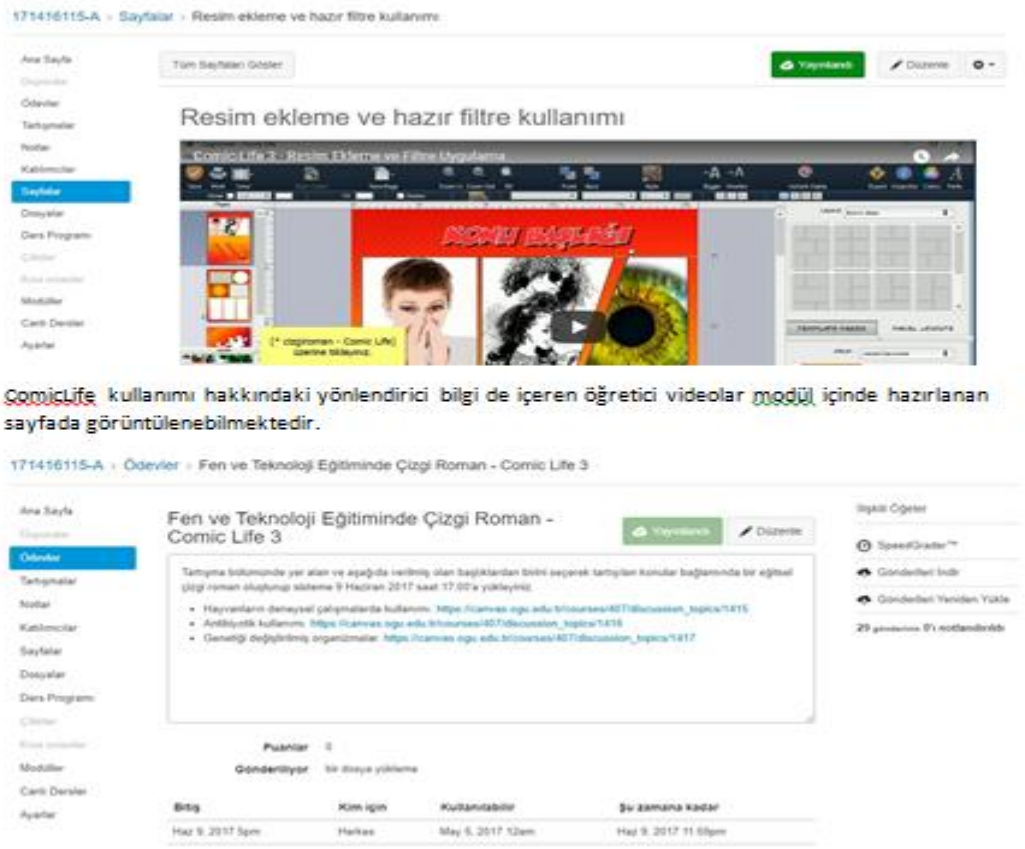


Figure 3. *ComicLife learning modül on Canvas LMS*

In relation to science education in the out-of-school environment, prospective primary school teachers prepared a report related to the trip to the Science Center. The evaluation of the e-portfolios was made during the last week of the work. At the end of the process, open-ended questions were asked, and answers given by teacher candidates to these questions via the learning management system were gathered in written form as research data.

Data Analysis

Descriptive analysis based on qualitative research method was used in analyzing the data gathered in the research, and data were examined in depth on the basis of the themes determined based on the theoretical framework of the research (Yıldırım & Şimşek, 2006). The analysis of research data, in the context of the research questions and conceptual framework of the research, has been conducted out in three stages. the In the first stage, the evaluations of the students related to the process were analyzed with the open-ended questions. In the second

stage, students' opinions were analyzed on the basis of the themes determined in the context of the theoretical framework of the research. In the third stage, the findings were interpreted after analysis.

Findings

In the findings section of the study, the results related to each sub-objective are interpreted and given respectively below.

Skill Acquisition of The Prospective Primary School Teachers During The E-Portfolio Implementation Process

Figure 4 shows the data obtained from the opinions of the prospective primary school teachers regarding skill acquisitions in the e-portfolio implementation process. Numbers in the figure indicate frequencies.

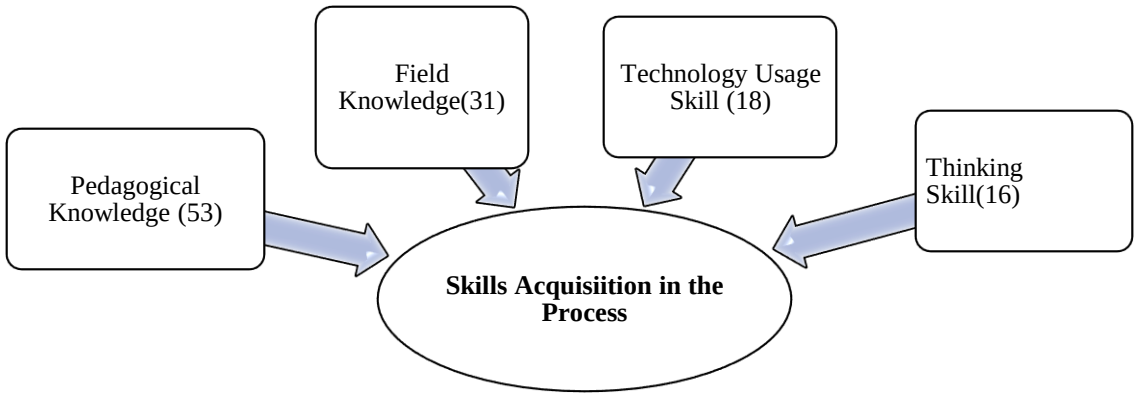


Figure 4. *Skill acquisition of the prospective primary school teachers during the e-portfolio implementation process*

Prospective primary school teachers stated that e-portfolio implementation process contributes significantly in the sub-headings of "Pedagogical Knowledge", "Field Knowledge", "Technology Usage Skill" and "Thinking Skill". Classifications and opinions of the prospective

primary teachers regarding subheadings are presented in tabular form. Prospective teachers expressed their views on pedagogical information acquisition in the process of e-portfolio implementation in three sub-dimensions.

Prospective teachers have indicated that the e-portfolio implementation process contributes to the pedagogical knowledge acquisition in sub-dimensions such as "providing experience in preparing and implementing lesson plans (31)", "providing awareness (6)", and "personal and professional development (16)" . The sample statements of the prospective teachers for facilitating the preparation and implementation of the lesson plan are given below. Prospective teachers were coded as PT1, PT2, PT3, … etc. in the statements.

> *PT1 "How to prepare a lesson plan according to 5E model? I learned what to watch out for when preparing the lesson plan, and what kind of activities might be for the stages of the 5E model. I have acquired experience in implementing the lesson plans for the class."*
>
> *PT2 "We had the opportunity to work on many subjects, not just on one subject. When I am a teacher in the future, I will apply my learning to my students."*
>
> *PT4 "I learned everything about how to teach a science course to 3rd and 4th-grade students."*
>
> *PT5 "It contributed to the preparation of lesson plans, both for learning the 5E model and for different methods and techniques that are interesting for teaching and learning."*

The majority of the participants agreed with the statement that e-portfolio implementation process has contributed to the process of preparing the lesson plans, creating content and implementing them. The opinions of prospective teachers who indicate that the process of creating e-portfolios is giving them awareness are presented below.

> *PT4 "I understood what I should pay attention to in my presentation, that I should give tangible examples to the students for science lessons."*
>
> *PT8 "In this study I learned how to teach according to the 5E model and why I can not always see the Moon in the sky."*
>
> *PT10 "When we were observing the moon, I realized that we could not perceive what we actually saw. In other words, I understood that to look and to see are two different things."*

Prospective teachers have indicated that their awareness was raised about the planning of the learning process, reasons and solutions to the problems they have faced. The opinions of the

prospective teachers that the process contributes to their personal and professional development in the context of acquiring pedagogical knowledge are summarized below.

PT1 "I think that I developed myself in the course."

PT5 "Now, I see myself as a prospective teacher who is more qualified and self-confident for professional competence and science teaching."

Prospective teachers stated their opinions on the field knowledge acquisition in the e-portfolio application process in three sub-dimensions. Some of the prospective teachers have stated that the e-portfolio implementation process has contributed to them in the context of "learning through experience (5)", "new knowledge acquisition(17)" and "research (9)". Prospective teachers stated the contribution of e-portfolio implementation process on learning by experience as follows:

PT7 "The trips to the Science Center, Underwater World, Space House or Zoo are also very useful. Because seeing and trying everything on the spot where they belong is a convenient way to learn by doing/living. The moon observation is the same. Instead of memorizing the phases of the Moon, Earth rotation and its influence on the Moon, we learn by observing the Moon"

PT16 "I would like to take my students to science centers in the future. I want children to learn by seeing and living. I'm sure there will be a trip that students can not forget."

PT20 ". A student learns better by doing and living. Researching, developing and implementing these programs also provided the permanence of learning."

Prospective teachers stated the following opinions on their acquisition of new knowledge and techniques in the context of field knowledge.

PT2 "We observed the Moon on specific days and hours every week. I never saw the Moon, but I learned why I can not always see the Moon."

PT3 "I learned that the moon will not always be visible. I learned to do argumentation based teaching of socio-scientific issues."

PT5 "I got the information about GMO foods, animals used in experimentation and antibiotics usage. Both topics are current, and I did not have sufficient information before."

In the e-portfolio creation phase, participants reported that they have been doing research in many stages, such as participating in discussion environments or updating their uploads. The following sample statements can be given in this context.

> *PT1 "In order to be able to participate in these discussions; first, we had to have the knowledge about the socio-scientific issue. For this reason, first of all, I have done research on the subject and read the article. So I had an idea for the discussion."*
>
> *PT18 "I learned to do academic research."*
>
> *PT21 "It was beneficial to regularly investigate things and constantly obtain new information."*

Eighteen of the participants expressed their view that developed the skill of using technology in the process of e-portfolio creation in the context of "learning by using different software". Sample statements are given below.

> *PT1 "On Comiclife assignment, we had the opportunity to use the technology in the class and implement with the student. We started to use the ComicLife software in the homework of our other courses."*
>
> *PT5 "I also learned ComicLife software which is a different and beautiful software that can be used for making cartoons and banners."*
>
> *PT12 "I learned that I could discuss any scientific topic on the internet."*
>
> *PT23 "When we do assignments we have also learned technological software that we can use in education."*

Sixteen of the participants stated that e-portfolio implementation process making contributed to their thinking skills in the context of "making use of thinking skills" and "a different perspective acquisition". Sample statements are:

> *PT3 "I have learned a lot of ideas about how to teach different subjects with the help of the presentations made by my classmates."*
>
> *PT4 "I shared my opinions on the discussion platform and learned to read people's different views. I also learned how I could defend my own opinions."*
>
> *PT22 "I think that all the assignments given in the course are beneficial and that I have improved my creativity."*
>
> *PT35 "During the moon observation assignment, I have learned to dream more, and ask more questions to myself about the universe and the creation of the universe."*

General Evaluations of The Prospective Primary School Teachers About The E-Portfolio Implementation Process

Figure 5 shows the data obtained from the opinions of the prospective primary school teachers regarding general evaluations in the e-portfolio implementation process. Numbers in the figure indicate frequencies.

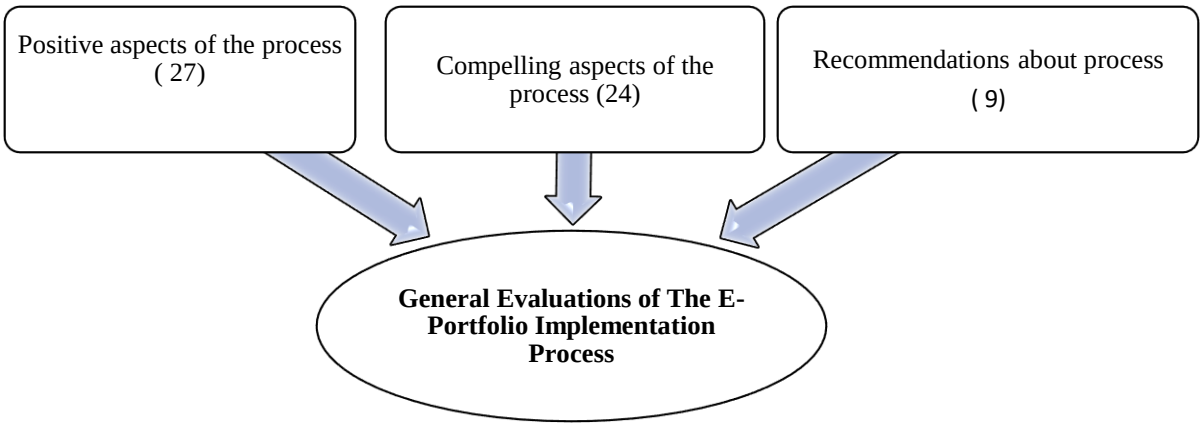


Figure 5. *General evaluations of the prospective primary school teachers about the e-portfolio implementation process*

Implementation process sample statements of the participants regarding the positive aspects of the implementation process are given below.

> *PT15 "The activities we did made the lesson more enjoyable. At first, I thought it was tough, but when I started to do it, I saw that it was enjoyable and effortless."*
>
> *PT16 "After the Science Center, my favorite task was to share my thoughts with my friends on the discussion board.."*
>
> *PT17 "Overall, from a curriculum point of view, we have completed a course that was both fun and educational."*
>
> *PT22 "I believe that all the assignments given will be very beneficial to me in the context of science education."*
>
> *PT24 "The trip to the science center has destroyed my prejudice against some courses since I was early age."*

Prospective teachers stated that the e-portfolio implementation process is pleasurable, fun and useful, eliminating their prejudices against the lesson. Also, they expressed that this kind of implementation has a lot of positive aspects in different dimensions. Prospective teachers have

indicated that they are the processes they are challenged to implement e-portfolio. Sample statements on this issue are as follows:

> *PT3 "I noticed that I did not do sufficient study in the research sections during discussion sessions. My classmates have done more research on this subject and - had more knowledge."*
>
> *PT11 "I can say that our moon observation exercise is a little tough. Because we had to look at the moon at the same time every week and shoot the photo, and regularly observing the moon and logged was a challenging task for me."*
>
> *PT12 "There were moments when I was having difficulty preparing a lesson plan according to Model 5E. Especially in the step of exploration and deepening."*
>
> *PT15 "Mostly I have difficulty in observing the moon. I saw the moon very rarely. And I had trouble researching about antibiotics usage."*
>
> *PT33 "I had trouble with moon observation assignment. Because I have had difficulty in taking pictures on specific days, hours and locations."*

As stated in the above opinions, the majority of the participants stated that they have difficulties in the research and observations to be done within the course. Prospective primary school teachers expressed their suggestions for the implementation of such activities in other courses. They also recommend that the activities which are implemented within the scope of e-portfolio implementation process be carried out in the primary schools. Sample recommendations for the e-portfolio implementation process are given below.

> *PT7 "Although it seems difficult, lessons should be taught like this."*
>
> *PT24 "I think that the science center trip will make a positive contribution to the primary school children's love of lessons. In this way, interests can also be attracted to science courses."*
>
> *PT32 "I think children will be very interested in science centers. So, I think that primary school teachers should go to similar places."*

Results, Discussion and Recommendations

When the opinions of the prospective teachers participating in the research are examined, it is concluded that the process of e-portfolio creation contributed to them in the sub-headings which are "Pedagogical Knowledge", "Field Knowledge", "Technology Usage Skill", and "Thinking Skill". They stated that the process contributed in the sub-dimensions of "providing

experience in the preparation of lesson plan and providing practical experience", "awareness-raising" and "personal and professional development". Many researchers have also show that e-portfolios help students learn to manage their own professional development. This contributes to lifelong learning as well (Barrett, 2000; Love and Cooper, 2004). Gömleksiz and Koç (2010) stated that the process of e-portfolio creation has positive aspects in taking responsibility for learning to prospective teachers, taking an active role in their own work and monitoring and contributing to their development. Similar results with this research were achieved in the study performed by Gömleksiz and Koç (2010). Furthermore, Lyons, Hyland, and Ryan (2002) stated that the aim of using e-portfolio as an alternative assessment tool is to improve the pedagogical knowledge content of prospective teachers and provide a reflective practice. Similarly, Belgard (2013) and Garrett (2011) have emphasized the positive effects of pedagogical and technical content knowledge of prospective teachers.

Participants expressed that the e-portfolio implementation process contributed to them in the sub-dimensions of the field knowledge acquisition such as "learning through experience", "new knowledge acquisition" and "research". In similar research, Gömleksiz and Koç (2010) found that the process of e-portfolio creation leads students to research, to add individuality to their work and to share with their friends. Participants indicate that they have developed the skills of using technology in the e-portfolio creation process in the context of "learning using different softwares". Heath (2005) stated that e-portfolio is a way to demonstrate technology skills. It has been determined that the process of portfolio creation contributes to the thinking skills of prospective teachers in the context of "using their thinking skills" and " a different perspective acquisition". Wade and Yarbrough (1996) stated that portfolio provides students with a focus on their thinking. The results of the research show that the e-portfolio creation process is enjoyable, funny, beneficial, and eliminates prejudices towards the lesson. In the e-portfolio creation process, it was determined that participants had difficulties in the research and the observations to be made within the course. Participants have made recommendations for the implementation of such activities in the other courses as well as for the activities they have carried out in the process in primary school.

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Research Article

University Students' Resistance Behaviors: Sample of Anadolu University[1]

Demet Sever[2]

Abstract

Affective problems which could affect learners in learning environment as well as teacher negatively are needed to be identified and solved. Student resistance behavior is an affective problem that is met in learning environments and effects each components of teaching-learning process mostly negative. This study aims to investigate university students' resistance behaviors which is one of the disruptive behavior in teaching-learning process. In descriptively designed study data were collected in 2013-2014 academic year autumn term via semi-structured interviews with 10 lecturers who have at least 5 years experience. During interviews lecturers basically asked to identify types of resistance behaviors, possible sources of them and suggestions for ways to overcome. Data was analyzed by using NVivo 9.0 qualitative data analysis program. According to results, most of the students have passive form of resistance like behaving irresponsibly, absenteeism, and not being interested in course. Lecturers said that primary source of resistance behaviors are students themselves. They treated resistance behaviors as destructive and exemplified their effects in classroom negatively. Communication with resistant students and their families, revealing the sources of these behaviors and being principled were the behaviors that lecturers prefers in order to prevent themselves from resistance behaviors. Directing resistant students to social and cultural activities, being role model, using various instructional methods, and developing empathy with resistant students were the common prevention suggestions of the lecturers'.

Keywords: *Student resistance, university students, lecturers, qualitative study*

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Üniversite Öğrencilerinin Direnç Davranışları: Anadolu Üniversitesi Örneği

Demet Sever

Öz

Öğrencilerin öğrenme ortamlarında sergiledikleri duyuşsal sorunlar kendilerini olduğu kadar öğretmenleri de olumsuz yönde etkilemektedir. Bu yüzden bu tür sorunların belirlenerek çözüm yollarının aranması önemlidir. Öğrenci dirençleri de öğrenme ortamlarında karşılaşılan ve öğretme-öğrenme sürecinin tüm bileşenlerini olumsuz biçimde etkileyen önemli duyuşsal özelliklerden biridir. Bu araştırmada üniversite öğrencilerinin direnç davranışlarının belirlenmesi amaçlanmıştır. Betimsel bir durum çalışması olarak yapılandırılan araştırmanın verileri 2013-2014 öğretim yılı güz döneminde en az 5 yıl deneyimi bulunan 10 öğretim üyesi ile gerçekleştirilen yarı-yapılandırılmış görüşmeler ile toplanmıştır. Görüşmelerde öğretim üyelerine temel olarak öğretme-öğrenme süreçlerinde karşılaştıkları direnç davranışları, kaynakları ve olası çözüm yolları sorulmuştur. Elde edilen nitel veriler NVivo 9.0 Nitel Veri Analizi programı yardımıyla analiz edilmiştir. Araştırma sonuçlarına göre öğrencilerin genellikle sorumluluk almama, devamsızlık ve dersle ilgilenmeme gibi edilgen direnç davranışları göstermektedirler. Öğrenci direnç davranışlarını yıkıcı ve sonuçlarını olumsuz değerlendiren öğreticiler, öğrencilerin direnç davranışlarının birincil kaynağını öğrencilerin kendileri olduklarını belirtmişlerdir. Öğreticiler direnç gösteren öğrenciler ve aileleri ile iletişim kurmanın, direnç davranışı kaynaklarının ortaya çıkarılmasının ve disiplinli davranmanın direnç davranışlarını önlemede etkili olacağı düşünülmektedir. Bununla birlikte, öğrencileri sosyal ve kültürel etkinliklere yönlendirmek, rol model olmak, kullanılan öğretim yöntem ve tekniklerini çeşitlendirmek ve direnç davranışı gösteren öğrencilere karşı empatik davranmak direnç davranışlarını önlemek için alınacak önlemler arasında gösterilmiştir.

Anahtar sözcükler: *Öğrenci direnç davranışı, üniversite öğrencileri, öğreticiler*

Introduction

Student resistance behaviors refer to students' oppositional behaviors to teachers' compliance gaining attempts (Burroughs, Kearney, & Plax, 1989; Kearney, Plax, & McPherson, 2006). When student resistance is discussed in the literature, it is almost invariably defined as negative, subversive, and rebellious (Burroughs et al. 1989). Thus, researches that aim to identify teachers' opinions about student resistance also indicate teachers often define resistance behavior as destructive, attention-seeking, uncooperative, and impulsive (Kearney & Plax 1992; Field & Olafsen 1999). Due to teachers' negative attitude resistant students usually have felt humiliated, rejected, and demeaned (Williams, 2006). On the other hand, according to outcomes, resistance behaviors can be classified as destructive or constructive. Student oppositional behaviors become constructive when on-task behaviors are enhanced. When teacher use an instructional method which is not suitable to students' learning style or inhibit active learning, students might have expected resist constructively by giving feedback, offering advice, correcting lecture and challenging teacher's credentials (Burroughs et al., 1989; Kearney & Plax 1992; Seidel & Tanner, 2013). Weimer (2013) recommend that it would be helpful to think about resistance positively. That is, this challenge would force and motivate us to keep asking and searching for what we are doing and what could we do to keep moving forward (Weimer, 2013).

Student Resistance Conceptual Clarification

Educational literature often treats and defines "resistance", "reluctance" and "misbehavior" similar phenomena. Within the instructional context, although overlapping to some extent, student resistance differs from student misbehaviors and reluctance in that resistance behaviors can be both constructive and destructive to the learning process, whereas misbehaviors and reluctance always threaten learning (Alpert 1991; Kearney et al. 2006). Misbehaviors could be shown at a particular moment in an ongoing classroom activity. On the other hand, resistance with its various sources makes student resolutely behave. Reluctant students differ in their learning motivation from resistant ones (Whiteneck, 2005). Whiteneck (2005) states that dealing with reluctant students more difficult than resistant students. Resistant students show willingness to solve their problems, but reluctant ones prefer to wait until instructor ask them what is wrong.

Categories of Student Resistance

In a typical college classroom although 5 or 6 students resist doing something that teacher asks them to do among 30 students, this number has potential to alter substantially a classroom environment and demotivate both other students and teacher (Burroughs et al., 1989; Kearney et al. 2006; Burroughs 2007). In a learning environment student resistance can appear in different forms. Burroughs, Kearney and Plax (1989) revealed a typology that states nineteen diverse categories of college students' resistance techniques to specific teacher compliance-gaining attempts. Table 1 shows these categories and representative of student resistance behaviors.

Table 1

Compliance-Resistance Techniques and Examples

How students exhibit resistance	Sample student behaviors
Teacher advice	"Prepare yourself better so you give better lectures."
Teacher blame	"You If you weren't so boring, I would do what you want."
Avoidance	"I'll sit in the back of the room."
Reluctant compliance	"I'll come prepared but not interested at all."
Active resistance	"I'll continue to come unprepared to get on the teacher's nerves."
Deception	"I'll make up lies about why I'm not performing well in class."
Direct communication	"After class, explain my behavior."
Disruption	"I'll ask questions in a monotone voice without interest."
Excuses	"The class is so easy I don't need to stay caught up."
Ignoring the teacher	"I would simply let the teacher's request go in one ear and out the other."
Priorities	"This class is not important as my others."
Challenging the teacher power	"How does the teacher know what will be good or bad for me?"
Rally student support	"I might get other students to go along with me in not doing what the teacher wants."
Appealing to powerful others	"I would complain to the department head that this instructor is incompetent and can't motivate the class."
Modeling teacher behavior	"I would participate more if you were more enthusiastic about what you're doing."
Modeling teacher affect	"You don't seem to care about this class, why should I?"
Hostile-defensive	"I'm old enough to know how I can do in this class."
Student rebuttal	"I'm doing fine right now without changing my behavior."
Revenge	"I won't recommend this teacher/class to others."

Adapted from Burroughs et al. (1989)

Burroughs, Kearney and Plax (1989) classified student resistance technique as passive and active forms of resistance (Kearney & Plax 1992). Whereas active resistance are overt, combative and observable actions, passive resistance refers to avoidance, withdrawal or covert responses (Kearney & Plax 1992; Farland, 2001). Active resistance (direct communication, disruption, challenge the teachers' basis of power) involves straightforward approach. Students

show active resistance want to be noticed by teacher or some other power source. On the other hand, passive resistance (reluctant compliance, deception, ignoring the request) is less harmful even seldom ignored. Another research carried out Kearney, Plax and Burroughs (1991) revealed that college students mostly avoid open and aggressive confrontations with teachers. In other words, students prefer passive more than active forms of resistance techniques.

In a follow-up study in 1991 Kearney, Plax, and Burroughs aimed to find out college teachers misbehaviors that are pushed students to show resistance. This time, they focused on different categorization of student resistance which are teacher-owned and student-owned. Teacher-owned resistance strategies like teacher advice, teacher blame, appealing to powerful others, modeling teacher behavior etc. arise when students think that teacher is the source of their own resistance by behaving in appropriately with their expectations or aims (Kearney et al., 1991). When students perceive themselves as a source of resistance decisions they choose strategies like deception, ignoring the teacher, hostile defensive or student rebuttal.

Source of Student Resistance

Knowing that students using various strategies in their resistance attempts overcoming these behaviors without questioning it's source would be just workaround. That is, for permanent an effective solution sources that prompt to students to show resistance behaviors also need to be known. Many studies that had tried to find out the sources of resistance behaviors indicated that students tend to blame teachers as a primary source of their resistance behaviors. Findings show that students are less likely resist teachers who are open to different instructional methods (Field & Olafsen 1999; Seidel & Tanner 2013), use prosocial over antisocial behavior alteration techniques (Kearney, Smith, & Sorenson, 1988) immediate (Burroughs et al. 1989; Kearney et al. 1991; Kearney et al. 2006; Burroughs, 2007) fair (Chory-Assad & Paulsen, 2004; Seidel &Tanner 2013), charismatic (Goodboy & Bolkan, 2011), and liked (Lee, Timothy & Cambra 1997). There are several other reasons for resistance which are either student or teacher owned: poor self-esteem, fear, irrelevance of learning activities (Brookfield, 2006), transformative learning experience (Vetter, Reynolds, Beane, Roquemore, Rorrer & Shepherd-Allred, 2012), learner-centered approaches (Weimer, 2013), misbehaviors of teachers (Kearney et al. 1991; Zhang, Zhang & Castelluccio, 2011; Seidel & Tanner 2013), emphasis on race, class or gender (Higginbotham 1996; Moore, 1997; Haddad & Lieberman 2002; Dunn, Dotson, Ford &

Roberts, 2014; Ferber, 2014), difficulty of course content (Whiteneck, 2005; Mbuva, 2007) student burnout (Cakir, 2015) and academic status (Davis, 1992; Haddad & Lieberman 2002).

Overcoming Student Resistance

How can a teacher avoid student resistance in learning environment? Since teacher (mis)behaviors play a central role in resistance behaviors first teacher should try to chance them. Diversifying teaching methods and reasoning behind his/her pedagogical choices, being immediate and maximizing fairness among students in the classroom activities could be some primary strategies for reducing student resistance (Seidel & Tanner, 2013). On the other hand, Seidel and Tanner (2013) and Plax and Kearney (1999) emphasized the importance of preventing such behaviors before students become resistant. "Providing a forum for each student to reflect on and share his or her ideas about how the course going-in the second week, mid semester, and multiple times before formal student evaluations are given at the end of the term- may help instructor identify, understand, and address student concerns about the teaching and learning in a course long before those concerns can grow into full-scale student resistance (Seidel & Tanner, 2013: 592)". Besides, Reichert (2007) stated that teachers should not affect themselves negatively by thinking that their teaching is ineffective. Instead, teachers should help students to realize their own resistance and guide them to overcome by discovering its sources. Weimer (2013: 212) offers that "resistance diminishes when you resist it and soften your firm response with the communication strategies." Goodman (2007) stated that a teacher should provide opportunities to every student for success by considering their capabilities and proficiencies in order to prevent student's resistance. Mbuva (2007) in his article mainly stated that motivation is the solution for resistant behaviors. Motivation to learn would distract students from resistant behaviors. Motivated students have greater academic performance and there is a reciprocal relationship between student's motivation and academic achievement. That is, students who are more motivated perform better and students who perform better become more motivated. Miles (2007) underlined the importance of establishing a classroom environment that is both well managed and emotionally healthy. Accordingly, he recommended some classroom management strategies which would be helpful in dealing effectively with students' resistant behaviors. Teacher should take students' opinions while structuring learning environment, always pay attention to the consistency of his/her behaviors, behave non-threatening, ensure students to have sense of belonging, trust and give responsibility, and include families in process (Miles, 2007). Vetter et al. (2012: 119-120)

recommend several guidelines to follow when encountering student resistance: “determine why student is resisting, talk to student about their responsibilities outside of school, help student understand that making mistakes is the part of the learning process, try several different strategies, engage in dialogue with colleagues about everyday moments of resistance.”

Method

The Aim of the Study

Eliminating students’ resistance behaviors those have mostly detrimental effect both on learning and instruction in teaching-learning environments has vital importance in order to make instruction effective and provide a consistent learning environment for all. Accordingly, student’s resistance behaviors, sources of them, and effective prevention methods should be identified in every level of education. There are very few researches on the subject of student resistance in the world. Especially in Turkey in every level of education literature there is a huge gap about this subject area. This study would be a starting point with its results. Resistance behaviors may chance from level to level, from culture to culture depending on features of students, lecturers, families, teaching-learning approaches, determinative foundations of social interaction etc. This study was designed to investigate university students’ resistance behaviors, sources of them, effects of them in the class, prevention methods of lecturers, and suggestions to preventing such behaviors. Later on, other studies could be done which are aiming to identify students’ resistance behaviors and sources of them in other education levels. This study basically seeks answers to the following questions:

1. What kind of resistance behaviors students exhibit?
2. What can be the sources of students’ resistance behaviors?
3. What could be done in order to retain students to show resistance behaviors?

Methodology

A basic qualitative study design was used in this study. Qualitative studies provide a holistic picture of a case, situation, activity, material, or fact (Fraenkel & Wallen, 1990) and bring the

researchers close to the practices and enable them to witness the actors' actions in-depth (Yıldırım & Şimşek, 2004). As indicated definitions above while all qualitative studies are dealing with meaning construction and words and feeling in that construction process, "the primary goal of a basic qualitative study is to uncover and interpret these meanings." (Merriam, 2009: 24). Since resistance is a behavior belong to students and easy to observe by teachers but not easily translated in numbers, it is found meaningful to use qualitative methods.

Sampling

In this study purposeful sampling approach was used in order to enable the researcher to select information rich cases from which can learn a great deal about the purpose of the study (Patton, 1987). Thus, participants of the study were ten volunteer lecturers in Xxx University Education Faculty who are at least 5 years of experience. Interviews were carried out by researcher according to appointments with the participants in their offices.

Data Collection Process

Data of the study were gathered in 2013-2014 Academic Year Autumn Term via semi-structured interviews. This technique lets researcher to add or omit questions or give explanations and change wording of some questions, which seem inappropriate with a particular interviewee (Fontana & Prokos, 2007; Robson, 2002; Wengraf, 2006). Depending on the permission of the participants audio recorder was used during the interviews.

Data Analysis Process

Interviews were subjected to descriptive analysis (Miles & Huberman, 1994) by using NVivo 9.0 Qualitative Data Analysis Program. In the process of analysis first transcription of the data were carried out. Then the accuracy of the casting was checked. In qualitative research, while using interview technique reading and listening of the data independently by two people from the area is important to ensure the reliability of the data (Kvale, 1996). In this study, three researchers made encoding independently under the light of research questions and identified main and sub themes separately. After completing this step researcher came together to discuss their findings by making a cause-effect relation. After negotiation on individual analysis, researchers used Agreement/ (Agreement+Disagreement)*100 formula in order to calculate

agreement rate and 85.7% agreement rate was achieved (Miles & Huberman, 1994). In addition, for internal validity member checking strategy was used. Member checking is an internal validity strategy that researcher solicit feedback on research findings from one or two of the participant of the interviewed or observed (Merriam, 2009; Saldana, 2013). According to this strategy after agreement on main and sub themes, the research report presented to two participant for consent. As a result of this process it is founded out that findings of the study reflects the views of the participant without any misunderstanding.

Results

Content analysis of the data suggested six main themes: students' resistance behaviors, source of resistance behaviors, activities to which students show resistance, affects of resistance behaviors in classroom, teacher behaviors in order to prevent resistance behaviors, and teacher suggestions in order to prevent resistance behaviors. Results were presented theme by theme respectively as mentioned. In addition, some examples from direct expressions of participants were used to specify common views. Participants were designated according to interview time sequence and this designation was used while giving direct expressions.

Students' Resistance Behaviors

Findings about students' resistance behaviors were summarized in Table 2.

Table 2
Students' resistance behaviors

	s
Behaving irresponsibly	6
Absenteeism	6
Not being interested in course	5
Disrupting course routine	3
Challenge the teachers' basis of power	2
Coming class unprepared	2
Refusing to comply with class rules	1

As shown in Table 2, sub-themes related with students' resistance behaviors that lecturers encounter in their classes were from the most common to rare: behaving irresponsibly, absenteeism, not being interested in course, disrupting course routine, challenge the teachers'

basis of power, coming class unprepared, and refusing to comply with class rules. Participant 4 and 7 thought that students behaving irresponsibly in learning environments and they expressed their thoughts as "*P4: Students think that here is not high school, I do not want to do homework. I believe I can achieve without doing them. P7: They don't want to do activities in the class or homework. They make excuses, and if you insist then they start to cheat."* Another common thought about resistance behaviors was absenteeism. *"P3: The biggest problem is they do not obey attendance rules"* was one of the expression stated.

Source of Resistance Behaviors

Table 3 summarizes findings related with "source of resistance behaviors".

Table 3
Source of Resistance Behaviors

		s
Student-Based	Habits	5
	Unrealized future plans	4
	Unfulfilled expectations	4
	Considering course content as an unimportant issue	4
	Poor self-esteem	3
	Adaptation problems to new environment	3
	Students' religious beliefs and ethnic origin	3
	Future anxiety	2
	Priorities	2
	Economic problems	2
	Competencies	2
	Need of attention	1
	Low cultural level	1
	Low success expectancy	1
	Fear of failure	1
Teacher-Based	Using unsuitable instructional methods to students' learning styles	3
	Placing academic career to forefront of instructor role	2
	Showing disrespectful behaviors to students	1
	Engrain mentality to students	1
	Undertake students' responsibilities	1
	Giving a source for the course content	1
Family-Based	Authoritarian family	3
	High expectancies of family	2
	Violence in the family	1
	Divorced family	1
Other	Malfunctioning of high schools	2
	Unfavorable physical classroom conditions	1

Students' resistance behaviors basically have three sources according to participant. They can be student-based, teacher-based and family-based. Most of the participants thought that such behaviors mostly result of students' own habits, dissatisfaction and problems in their lives.

"P3: there are some resistant behaviors based on high school and turned into habits. P6: First students should come here willing to be a teacher. But when you ask them, they said system sent them to here, his/her dream was to be a lawyer…" Participant put teachers into second place as a source of resistant behaviors. Depending on their opinions especially using unsuitable instructional methods to students' learning strategies push students to exhibit resistance behaviors. *"P5: May be instructor don't use methods or techniques that students' prefer. Then they started to resist to listen…"* Families also have role in this process. Authoritarian families, high expectancies of them, violence in the family and divorced families can be sources of resistant behaviors of their child. *"P10: Sometimes they are in a dilemma. They are far from their family and feel independence but again feel their families' authority. Don't know what to do".* A few participants also though that there can be other sources of these behaviors like malfunctioning of high schools and unfavorable physical classroom conditions. P1 shared her/his opinions as follows *"Private education institutions annihilate the education role of the high schools. Students go to high schools just to get the diploma. Here they behave in the same perception…"*

Activities to which Students Show Resistance

Findings related with activities to which students show resistance were presented in Table 4.

Table 4
Activities to which students show resistance

	s
Teacher-centered	6
Student-centered	4

More than half of the participants thought that students show resistant behaviors in teacher-centered learning process. *"P6: Students usually don't pay attention to teacher-centered instruction. They come class unprepared, just sit down at the back of the class even sometimes they don't come"*. On the other hand, some of the participants thought that students are more likely to show the resistance behavior in student-centered activities. *"P3: They like such activities but loose the point most of the time and use materials for different purposes."*

Effects of Resistance Behaviors in Classroom

Findings related with effects of resistance behaviors in classroom were presented in Table 5.

Table 5

Effects of Resistance Behaviors in Classroom

		s
Other students	Obstructing other students' participation	7
	Creating an inappropriate model for students	6
Teacher	Decrease in motivation	5
	Feeling sad	3
	Not effected	2
Resistant students	Academic studies affected negatively	3
	Self-perception affected negatively	2
	Feel excluded	1

Participants thought that resistant students' behaviors not only affect people around but also affect them. Thus, participants' opinions about effects of resistant behaviors in classroom were grouped under three main themes considering people affected by these behaviors. Results showed other students and teachers in classroom were affected more than resistant students. Resistance behaviors obstruct other students' participation and create an inappropriate model for them. P9 who thinks student participation affected negatively shared his/her opinion as, *"I think resistant students prevent other students' participation by interrupting them or lecture."* Participants thought most of the time resistant behaviors also affect teachers negatively and decrease their motivation. *"P4: My motivation is break down. I allocate too much time and make an effort for them. Then when you see they do not pay attention or care what you are doing, I feel exhausted…"* Academic studies of resistant students is one another aspect that affected negatively. *"P2: If we look at the results of such behaviors on resistant student, their academic development will be effected negatively, and they will live feel of failure."*

Teacher Behaviors in order to Prevent Resistance Behaviors

Table 6 summarizes finding related with teacher behaviors in order to prevent resistance behaviors in their classrooms.

Table 6

Teacher behaviors in order to prevent resistance behaviors

	s
Communicating with resistant student	4
Taking advices of others (family, school counselor, colleagues etc.)	3
Revealing the sources of resistance behaviors	3
Being principled	3
Motivating students	2
Directing to school counselor	2
Relating content with everyday life	2
Being patient with resistant students	2
Developing empathy with resistant students	2
Using student-centered activities	1
Ignoring	1
Being reliable for students	1
Behaving in a respectful manner	1

As shown in Table 6 teachers usually try to communicate with resistant students, taking advices of others, revealing the sources of resistance behaviors and being principled in order to prevent resistant behaviors. P9 is the participant who tries to communicate with resistant students says: *"sometimes I prefer to talk with resistant student one to one so that I can figure out what the situation is from his/her perspective."* P3 prefers to take advices of other and share his/her opinion as: *"If I couldn't solve the problem* by myself, then I ask school counselor, family or other people from social environment."

Teacher Suggestions in order to Prevent Resistance Behaviors

Themes related with participants' suggestions in order to prevent resistance behaviors were shown in Table 7.

Table 7

Teacher Suggestions in order to Prevent Resistance Behaviors

	s
Directing students to social and cultural activities	4
Being a role model	4
Using various instructional methods	3
Developing empathy with resistant students	3
Reminding students why they are here	2
Recognizing resistant students	2
Making learner contract	1

Directing students to social and cultural activities and being a role model are two themes that participant opinions were grouped under. P6 thought that directing students to social and cultural activities can prevent resistance behaviors and shared his/her opinions as: *"Social activities can solve students' resistance. It is not necessary just to be a good teacher. Also it will help them to deal with some other things and make them busy."* P9 supported being a role model idea to prevent resistance behaviors and said: *"Other than giving advices to resistant students, being a role model will be more helpful."*

Discussion and Conclusion

The aim of the study was to determine the resistance behaviors of university students, sources of them, effects of them in the class, prevention methods of lecturers, and suggestions to preventing such behaviors. Answers of the lecturers for the first interview questions which aimed to identify students' resistance behaviors overlapped with the findings in the literature. That is, students mostly show passive form of resistance behaviors like behaving irresponsibly, absenteeism and not being interested in course. Burroughs, Kearney and Plax (1989) proposed that adult learners prefer passive more than active forms of resistance techniques. With passive form of resistance, students make objections behaviorally as in the case of these study, as opposed to verbally.

Although students tend to blame teachers as a primary source of their resistance behaviors, when findings related with the sources of the students' resistance behaviors taken into account it is obvious that lecturers primarily blame students. First of all, they thought students have these behaviors as habits. Unrealized future plans, unfulfilled expectations and considering course content as an unimportant issue play secondary role in showing resistance. Poor self-esteem, adaptation problems to new environment and students' religious beliefs and ethnic origin are the other sources that are student-based. Even though, there is any statement that discuss student resistance as a habit, if it is not solved permanently by the effort of the student and teacher together it would be expected that student resistance can be turn into a bad habit. Nodding (2005) states there are two types of needs in human lives. First one is inferred needs that they are not needs expressed by the individual but identified by others like parents or teachers. Second one is expressed needs that are stated by an individual with his/her decisions to self-realization. If a lecturer focus on inferred needs of target group and do not pay attention

to their expressed needs and give chance to them in order to realize future plans and expectations in the long term students feel exhausted and burnout. Cakir's (2015) study reveals student burnout has a greater impact on student resistance than teacher immediacy. Thus, teachers should generate a mutual acceptance of both inferred and expressed needs in order to prevent student resistance behaviors. The question of "what we are learning for?" has been one of the common question among students. Learners need to know the benefits and gains of the learning unit. That is, when the learning content is irrelevant and meaningless for the students, they would likely to oppose fulfill their responsibilities, disrupt or violate the classroom rules (Benson, 2010; Bryant & Bates, 2010; Kim, 2010). Lecturers stated that when students have low self-esteem about their academic abilities then they could again become resistant. Brookfield's (2006) list of reasons for resistance supports this finding. Due to fear of failure, humiliation or disapproval of teacher students often feel in adequate in learning environment and show resistance. Ambiguity always makes people nervous. Being a part of new learning environment would have the same effect on students. They would try to explore how things going on. During this period, it is important to guide and help student while identifying responsibilities and mutual expectations (Wenning, 2005). Teacher should create open and positive classroom atmosphere in which student have self-esteem, sense of belonging, and motivation (Mbuva, 2007). Dunn et al. (2014), Ferber, (2014), Davis (1992), Higginbotham (1996), and Moore (1997) shared that as well as different factors resistance behaviors originated from racial, and cultural factors as current study's findings represented. Dunn et al. (2014) carried out a study with reflections of four professors in multicultural education courses. In that study professors put forth four major areas of students resistance: race, language, sexuality, and intersectionality. Ferber (2014: 142), stated that "making race and racial inequity "visible" for those who do not see it, they often exhibit resistance." Davis (1992) described student resistance as denial of "the existence or importance of inequality." Discussion about inequalities related with race, class and academic achievement would result in resistance of unprivileged students. Similarly, Higginbotham (1996) emphasized the complexity of teaching race, class, gender, and social class issues and agrees that these may often lead student resistance. She added that whereas privileged group uses vocal resistance, members of less privileged one often prefer to silence and avoidance as resistance strategies. On the other hand, Farland (2001) argues that student resistance is more a product of the formal or informal organization of classroom setting and achievement of students than their social and cultural backgrounds. Ethnicity, race, gender, and religious beliefs are the factors in people lives that can not convertible or hard to convert. People have these characteristics either from birth or

afterwards. In learning environment discussions on these characteristics and feeling of transformation makes students anxious and resistant (Williams, 2006). That is to say, if the content of teaching and learning contradicts with the beliefs, values and mental models that student bring with them to the class, it would be not surprising to encounter with resistance behaviors.

Even though lecturers gave students leading role being source of resistance behaviors, accepted that they had a hand in it. According to results, lecturers thought that using unsuitable instructional methods to students' learning styles makes them resistant. Once more it should be said that previous studies linked resistance with teachers more than students. On the other hand, literature supported lecturers' view that disjunction of learning and teaching styles would lead student resistance (Brookfield, 2006; Vetter et al., 2012). Learners can differ in their learning preferences as well as in many other things. Learning styles have cognitive, affective, and psychological aspects changing from one learner to another. Then, how can a teacher establish an effective teaching-learning process for all? It is better to use a variety of instructional approaches all together to address students' learning styles and instructional preferences as much as possible. Nevertheless, students' learning styles can be identified via a learning style inventory or just an open-ended questionnaire would be enough.

Results stated that authoritarian families could be the source of student resistance. Although there are very few studies covering family as a sub factor of student resistance, academic or non-academic expectation of families and their emotional stress can cause resistance (Kim, 2010; Vetter et al., 2012).

As opposed to literature, more than half of the lecturers stated that students show more resistance behaviors in teacher-centered learning process. Since student-centered approaches like active learning and inquiry-oriented instruction require more work and give more responsibility "students feel they are being asked to do the teacher's work" (Weimer, 2013: 202). In addition, as students get used to be dependent learners, open-ended student-centered approaches make them anxious and resistant (Weimer, 2013; Shekhar, Demonbrun, Borrego, Finelli, Prince, Henderson & Waters, 2014). Wenning (2005) emphasized the importance of organizing climate setting in order to overcome student resistance. Accordingly, he stated that students need to comprehend their role in the class. As the time passes they gain the

understanding of the value of various inquiry-oriented approaches and resistance to inquiry eventually dissipates.

Since the participant of this study perceived student resistance as negative and destructive behaviors, when effects of resistance behaviors in class was asked they expectedly listed negative effects. Lecturers said that those behaviors both affect resistant students and others in the class. Behaviors of resistant students obstructing other students' participation and create an inappropriate model for them. They also decrease motivation of the lecturer. In addition, such behaviors effect their academic studies negatively. Gross (2016) listed three outcomes of resistance as, it undermines the morale of the class, saps teachers' spirit, and results in student failure and discouragement. Likewise, Ferber (2001) by stating transformational potential of active resistance behaviors emphasizes the power of breaking the spell of the classroom. According to Burroughs (2007), resistance behaviors in class affect students' learning outcomes. In the study he aimed to identify the relationship of teacher nonverbal immediacy and student's compliance-resistance with learning and he found out that teachers' nonverbal immediacy is important mediator of students' compliance-resistance behavior, has a significant relationship with both cognitive and affective learning as well.

Lecturers asked to exemplify the behaviors they exhibit when met with resistance behaviors in the class. Common answers were communicating with resistant student, taking advice of family, school counselor and/or colleagues, revealing the source of resistance behaviors and being principled. As Weimer (2013) and Plax and Kearney (1999) stated using effective communication strategies would help to prevent student's resistance behaviors. In addition, Burroughs et. al. (1989) and Kearney et al. (1991) indicated that students like their more immediate teachers, and dislike their nonimmediate teachers so that it seems that students are less likely to resist teachers they like and more likely to resist teachers they dislike (Lee, Levine, & Cambra, 1997). Taking advice of others and trying to find out the source of resistance behaviors are the other behaviors that lecturers showed in the case of resistance. You can not solve a problem without knowing why. Therefore, "determine why student is resisting" is the first step of Vetter et al. (2012) guidelines to follow when encountering resistance in the class. After identifying source of resistance behaviors it would be easy to come up with a solution. Taking advice of family members, school counselor and/or colleagues could be another way to prevent such behaviors and may provide some clues for the root of the resistance. Vetter et al. (2012) suggested that engaging a conversation with colleagues about student resistance would

help to place resistance into a perspective and normalize it. On the other hand, according to literature finding being principled could not be an appropriate behavior toward resistant students. As resistance behaviors are not classified as disciplinary problems, teachers' strict classroom management techniques would result in student resistance (Burroughs et al., 1989; Kearney et al., 1991).

In this study lastly lecturers' suggestions were asked in order to prevent student resistance. Directing students to social and cultural activities and being a role model were the two common answers. It was also proposed that using various instructional methods and developing empathy with resistant student would be effective ways to prevent. While there was no finding that directing students to different activities would hinder student from resistance, it could be said that such precautions would save time and postpone resistance but not would have permanent effect. Being role model proposal contains displaying exemplary behaviors for students those are desirable for them. Since students like their immediate teachers more than non-immediate ones (Kearney et al., 1988), behaving in a friendly manner would lead students tread in teacher's footsteps and become non-resistant. Seidel and Tanner (2015) also stated that decreasing social distance between teachers and students that is being an immediate teacher could prevent or reduce student resistance. On the other hand, prevention way -using various instructional methods- that was less preferred by lecturers took more place in the literature than the most preferred ones. Sometimes lecturers may think that the way they best learn could be the same for their students. Bu this is not always the case. Learning styles and preferences are the most important individual differences that should be considered in learning environments. As mentioned before students are more likely to resist learning when teaching method and their learning preferences do not overlap (Brookfield, 2006). Thus, using different teaching approaches, methods and techniques in class would give chance to address as many students' learning style as possible (Seidal & Tanner, 2015; Shektar et al., 2014). Developing empathy was another recommendation of lecturers which is a component of verbal immediacy (Richmond, 2002). As verbal or non-verbal immediacy behaviors of teachers decrease the possibility of resistance, responding to resistant students with empathy would help to prevent such behaviors.

Suggestions

"Resistance is a valuable theoretical and ideological construct that provides an important focus for analyzing the relationship between school and the wider society (Giroux, 2001: 107)." As Giroux (2001) stated although resistance mostly perceived as ambiguous, meaningless, negative, and destructive, endeavors to understand resistance as a concept and the reasons of it would give the keys of many problems in learning environment. In this study mainly university students' common resistance behaviors, resources and effects of them, and also prevention behaviors and suggestion were tried to determine with the opinions of lecturers.

The findings showed that lecturers had negative understanding towards student resistance as indicated in the literature. Moreover, they had tendency to blame students as a main source of resistance behaviors. As a result, they mentioned that effects of resistance behaviors in class were always destructive. Although this disruption can be an opportunity for transformation, attitude of the lecturers almost eliminates the possibility of utilizing the constructive effect of resistance behaviors.

It is obvious that lecturers need to be informed about conceptual clarification of student resistance. By this way, they would be capable of turning resistance behaviors into an advantage, cope with them effectively and create a compatible learning environment for everyone.

Limitations of the Research

The present study has a number of limitations. First, as this study was carried out with a group of lecturer in Xxx University in Turkey, any generalizations to other contexts need to be made with caution. Second, the results only represented the opinions of lecturers on student resistance. Taking opinions of students would provide a comprehensive picture about the context. Future studies can overcome these limitations by involving students, utilizing quantitative methods and adopting a longitudinal methodology.

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Research Article

Comparison of 2017 5th Grade Information Technologies and Software Course Draft Curriculum and 21012 Information Technologies and Software Course Curriculum[1]

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Abstract

Advances in information technologies (IT) that became prominent since the 1980's gained significance in the 21st century based on the integration of computer technologies with the education-instruction processes and the developments in the fields of technology. In this context, one of the most important steps taken in Turkey was the introduction of the IT course in almost all educational levels to train qualified computer literate individuals. Various new regulations and developments have introduced to the junior high school information technologies and software (ITS) course curriculum based on the developments in science and technologies and the changes introduced to the education system by the Ministry of National Education. The last two of these changes were implemented in 2012 and 2017. The objective of the study was to examine and compare the 2017 draft ITS course curriculum with the 2012 ITS curriculum and demonstrate the advantages and disadvantages of the draft compared to the previous curriculum. The study was conducted as case study, a qualitative research method. The data were gathered with document review and semi-structured interviews. Participants included 20 junior high school ITS course teachers determined with snowball sampling method. The data were analyzed by the descriptive analysis method. Based on the findings, it can be stated that the 2017 draft ITS curriculum has more advantages compared to the 2012 curriculum and the teachers considered the new curriculum draft more effective and applicable. However, it was determined that the textbook should be immediately developed before the implementation of the curriculum.

Keywords: *Curriculum assessment, curriculum development, information technologies and software course.*

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Ortaokul 5. Sınıf 2017 Bilişim Teknolojileri ve Yazılım Dersi Taslak Öğretim Programı ile 2012 Bilişim Teknolojileri ve Yazılım Dersi Öğretim Programının Karşılaştırılması

Öz

Ülkemizde 1980'li yıllarda başlayan bilgisayar teknolojilerine, eğitim-öğretim süreçleri ile bütünleştirilmesine ve teknoloji alanında yaşanan gelişmelere bağlı olarak 21. yüzyılda daha fazla önem verilmeye başlanmıştır. Bu bağlamda, ülkemizde atılan en önemli adımlardan biri de nitelikli bilgisayar okuryazarı bireylerin yetiştirilmesi amacıyla hemen hemen tüm eğitim basamaklarını kapsayacak şekilde bilişim teknolojilerinin bir ders olarak okutulmaya başlanması olmuştur. Ortaokul bilişim teknolojileri ve yazılım (BTY) dersi, öğretim programında bilim ve teknolojideki gelişmelere ve Milli Eğitim Bakanlığı'nın eğitim sisteminde yaptığı yenilikler ile değişikliklere bağlı olarak çeşitli düzenlemeler ve geliştirme çalışmaları yapılmıştır. Bunlardan son ikisi 2012 ve 2017 yıllarında gerçekleştirilmiştir. Bu çalışmanın amacı 2017 BTY dersi taslak öğretim programının 2012 BTY dersi öğretim programı ile karşılaştırılarak incelenmesi ve bir önceki programa göre olumlu ve olumsuz yönlerinin ortaya konmasıdır. Araştırmada, nitel araştırma yöntemlerinden durum çalışması kullanılmıştır. Araştırma verileri doküman incelemesi ve yarı-yapılandırılmış görüşmelerle elde edilmiştir. Araştırmanın katılımcıları, kartopu örnekleme yöntemi kullanılarak belirlenen 20 adet BTY dersi ortaokul öğretmeninden oluşmaktadır. Elde edilen veriler betimsel analiz yöntemiyle çözümlenmiştir. Araştırmanın sonuçlarına göre, 2017 yılı BTY dersi taslak öğretim programının 2012 yılı öğretim programına göre güçlü yönlerinin daha fazla olduğu ve öğretmenler tarafından daha etkili ve uygulanabilir bulunduğu söylenebilir. Bununla birlikte, öğretim programının uygulanmasına geçilmeden önce öğrencilere ders çalışma kitabının ivedilikle hazırlanması gerektiği belirlenmiştir.

Anahtar Sözcükler: *program değerlendirme, program geliştirme, bilişim teknolojileri ve yazılım dersi.*

Introduction

Due to changes and advances in science and technologies in the 21st century, information technologies (IT) became a vital building block for modern societies. Thus, developed and developing countries increasingly pay more attention to the instruction of fundamental IT concepts and the literacy skills in all educational levels from preschool education to post-graduate education. Parallel to this transformation, the policies on the integration of IT in the educational process were revised in 1994 in Turkey and the studies conducted on this context has been increasing ever since. It can be stated that the provision of computers and internet access in schools, the organization of in-service training programs to improve teachers' IT skills, and inclusion of IT courses in the curriculum in almost all education levels have particularly gained momentum since 1998.

The Ministry of National Education (MNE) and teacher training faculties simultaneously introduced certain innovations in order to train teachers equipped with digital competencies that could provide the knowledge that contemporary students require. MNE provided several in-service training activities for teachers to acquire IT literacy skills. Furthermore, Ministry of National Education signed an 80 million dollar agreement with the World Bank in 1998 that aimed to establish computer classes in primary schools in all provinces of Turkey. In this process, the faculties of education that are responsible for training teachers introduced compulsory IT courses such as Computer I-II, Instruction Technologies and Material Development in their curricula. Furthermore, Departments of Computer Education and Instructional Technologies were established in faculties of education to train computer course teachers to be employed in the Ministry of National Education (MNE) elementary schools in 1998 (YÖK, 1998). Thus, the instruction of computer courses commenced in all secondary education institutions in the 1987-1988 academic year and the course was included in the curriculum as an elective computer course for the students to acquire basic computer literacy skills in elementary schools in1998 (MEB İGM, 1998). Elective computer courses are given for one to two hours per week for 1-5 years from the 4th grade in elementary education and implemented with a spiral approach, a content development approach, that includes the topics of previous year and expands by aggregation (Er & Güven, 2008).

Curriculum development process continued to adopt contemporary expectations and scientific and technological advances, to remove the problems in the current curriculum, and due to the innovations and changes conducted by the Ministry of National Education in the education system. Since 2004, significant reforms were introduced to the Turkish Education System. Due to these educational reforms, the existing primary and secondary school curricula was restructures with the constructivist approach and based on the new and contemporary global trends in 2005 (Erdoğan, 2007). In 2006, the computer course curriculum was also renewed and over time the name of the course was changed to "Information Technologies". The new 1-3 grade primary education curriculum was implemented in 2006-2007 academic year and the new 4-8 grade primary education curriculum was implemented in the 2007-2008 academic year initially (Tanataş, 2010). The primary goal of this course was to ensure that each student is trained as a computer literate individual before graduating from the primary school. Introducing students to advancing IT during the instruction of the curriculum and help them improve their skills to utilize these technologies in compliance with ethical and social values, and their personal safety, health and attitudes was also identified as a secondary objective of the course (Gülcü, Aydın, & Aydın, 2013). In the 2012-2013 academic year, MNE introduced the elective Information Technologies and Software (BTY) course in the junior high school curriculum along with other important revisions conducted in the Turkish Education System. In this process, instruction of the elective Information Technologies courses was gradually terminated. Although there was a similarity between the name of the former and the courses, there were significant differences in the instruction, utilized instructional approach and content and activities of the ITS course. With a decision taken by the MNe in 2013, the ITS course became compulsory for the 5^{th} and 6^{th} grades in 2013-2014 academic year without any changes in the curriculum. The course remained as an elective course for the 7th and 8th grades (MEB, 2012). Finally, in January 13, 2017, MNE published the ITS course curriculum draft for the evaluation of the stakeholders. The draft was revised based on the recommendations of the public, institutions and organizations and presented to the public opinion on July 18, 2017. It was decided to gradually implement the curriculum approved by MNE starting with the 5^{th} grade in the 2017-2018 academic year. One of the key reasons for the development of the 2017 BTY course curriculum draft was to discuss the strengths and weaknesses of the 2012 curriculum to create a more functional and feasible curriculum.

Literature review demonstrated that several studies were conducted on the assessment of the 2012 ITS curriculum based on the views of teachers, students and parents (Akbıyık & Seferoğlu, 2012; Bahar, Akpınar, Karakoyun, & Koca, 2016; Erçetin & Durak, 2017; Karagözoğlu, 2015; Karakuş, Çimen Çoşğun, & Lal, 2015; Uzgur & Aykaç, 2016). However, there are only a few studies on the assessment of the 2017 curriculum draft (Bilişim Teknolojileri Eğitimcileri Derneği, 2017; Mercimek & Ilic, 2017). The fact that only a few studies were conducted on ITS course curricula with participants of different demographics characteristics, different instructional approaches and based on various variables prevented the formation of a comprehensive knowledge base, limiting the scope of the existing studies. Furthermore, there were no studies that compared the two above-mentioned curricula in the literature. In this perspective, the present study is significant since it is one of the initial studies conducted on the comparison of the 2012 and 2017 draft curricula. Furthermore, rapid developments and transformations in the field of information and communication technologies make it necessary to constantly assess the efficiency of a curriculum developed in this field in order to maintain the sustainability of the curriculum. It is considered that it is important to address the views of stakeholders such as academicians, teachers, students, and parents who participated in the development and implementation of the curriculum to overcome the problem areas in the curriculum with further development. Here, the greatest responsibility befalls to the Information Technologies and Software course teachers, who are the implementers of the curricula. It is considered that the problems related to the curriculum could be removed and the educational quality and productivity could be improved thanks to the views of teachers who have the opportunity to directly observe and collect data on the developments (Karal, Reisoğlu, & Günaydın, 2010). Based on the above-mentioned criteria, the main objective of the present study was to examine the 2017 ITS course draft curriculum in comparison with the 2012 ITS curriculum. For this purpose, the following research questions were determined:

1. What are the similarities and differences between the 2017 ITS draft curriculum and 2012 ITS curriculum based on
    1.1. the vision and main approach,
    1.2. general objectives and achievements,
    1.3. learning content,
    1.4. instruction-learning process,
    1.5. measurement-evaluation processes?

2. What are the views of information technologies course teachers on the strengths and weaknesses of the 2017 draft curriculum when compared to the 2012 curriculum based on
    2.1.the vision and main approach,
    2.2.general objectives and achievements,
    2.3.learning content,
    2.4.instruction-learning process,
    2.5.measurement-evaluation processes?

Methodology

Research Model

The present study was designed as a case study, a qualitative research method. Case study is defined as a unique study methodology that investigates a current phenomenon, event, individual or institution in depth and longitudinally in social sciences fields such as psychology, sociology and educational sciences (Parker, 2015; Yin, 2002). Thus, the concept referred to as the case can be a series of processes that scrutinize a particular individual, a student community, an accident, or the application of a curriculum (Glesne, 2011 cited by Parker, 2015, p. 119). The main objective of case studies, which are frequently used to answer "what" questions based on the "how" and "why" questions in the field of education, is to discover, describe in detail and interpret a phenomenon, an event, an individual or an institution in its natural environment (Hays, 2004; Yıldırım & Şimşek, 2008).

Study Participants

Study participants included 20 information technologies course teachers employed in a junior high school in Eskişehir province teaching 5th grade ITS course. The snowball sampling, a non-probabilistic (purposive) sampling method was used to obtain in-depth information about the discovery and explanation of existing phenomena and events related to the topic (Patton, 1990). In snowball sampling method, sampling is carried out in a process. The sampling

process begins with the access to an individual that could provide extensive information on the answers of research questions. After the data collection conducted with this participant, other participants recommended by this initial participant are accessed and each individual is asked to propose new participant candidates. The process ends when the names proposed by the participants focus on certain individuals. The focus group constitutes the study sample (Başaran, 2017). The snowball sampling method was used in the study to access the participants who instructed the ITS course for at least one full academic year with the 2012 curriculum and have information on the curriculum announced as the draft in 2017. The additional participants were access with the recommendation of the initial participants. In the context of the study, the researchers posed the following questions to the participants to determine the participants: "Who are the 5th grade teachers, who have instructed the ITS course under the 2012 curriculum, and have knowledge on the 2017 draft curriculum and you can recommend?" (Patton, 2002). The study participants included 12 male and 8 female teachers. Among these teacher, 15 had 0-10 years of tenure and 5 had 11-20 years of tenure.

Data Collection

The study data were collected with qualitative research methods of document review and semi-structured interviews conducted with teachers. The 2012 Information Technologies and Software Course (5th, 6th, 7th and 8th grades) curriculum and the 2017 Information Technologies and Software course (1st-4th grade, 5th, 6th, 7th and 8th grades) draft curriculum, which were used in the document review, were obtained from the official Ministry of National Education, Board of Education website. In addition to document review, a semi-structured interview form that included seven questions was used in the study to obtain teachers' views on the curricula. In the process of developing the interview form, a draft interview form was designed primarily by the researchers and it was reviewed by two field specialists, one from the field of curriculum development and one from the field of information technologies, to establish validity. Based on expert feedback, a question was removed from the draft interview form that included eight questions and the proposed reviews were conducted for clarity and comprehensibility of the form. The draft form was applied to three information technologies and software course teachers to determine the comprehensibility of the form. The teachers stated that the interview questions were clear and comprehensible. The final teacher interview form included two personal questions and five questions on the vision, achievements, content,

learning-instructional processes and evaluation dimensions of the 2012 information technologies course curriculum and 2017 information technologies and software course draft curriculum. The interviews conducted with the semi-structured interview form were recorded after the participant permissions were obtained. Interviews were conducted with the teachers at their school of employment and at their convenience. All interviews lasted about 610 minutes.

Data Analysis

Descriptive analysis was used in the analysis of qualitative data obtained with the document review and the semi-structured interviews. Descriptive analysis involves the analysis of qualitative data by summarizing and interpretation of the data obtained with various data collection instruments based on the themes determined with the literature review conducted prior to the study (Özdemir, 2010; Yildirim & Şimşek, 2008). The descriptive analysis steps include the formation of the descriptive analysis framework, data processing based on the thematic framework, the identification and interpretation of the findings (Yıldırım & Şimşek, 2008). In the study, the vision and basic approach, the general objective and achievements of the curricula, learning content, the instruction and learning processes and the measurement - evaluation process dimensions constituted the descriptive analysis framework. The compared curricula were classified based on themes in the determined framework. Each dimension constituted a theme. Curricula documents and semi-structured interviews conducted with the teachers were examined by the two authors. The study data were analyzed based on the themes determined with consensus of the authors. The analysis findings are presented in tables and figures are presented in frequencies and percentages based on the themes. Instead of the real names of the participants, assigned nicknames (such as ITT1, ITT2) were used and the data were supported with direct quotes from the interview transcripts.

Validity and Reliability

To determine the study validity, the audio records of the data obtained in semi-structured interviews were initially examined and transcribed. Full interview manuscripts were presented to the participant for consistency (Silverman, 2006). Researcher triangulation was also conducted to ensure reliability (Patton, 2002). LeCompte & Goetz (1982) indicated that it is

important to receive assistance from another researcher in confirming the study data and results in order to improve the reliability (Cited by Yildirim and Şimşek, 2008). Thus, documents and semi-structured interviews were coded separately by the authors, as well as an information technologies course teacher and a curriculum development specialist. The inter-judge reliability was calculated with the formula "Reliability = [Agreement/(Agreement + Disagreement)] x 100" (Miles & Huberman, 1994). It was determined that the agreement rate obtained for the curricula documents was 87.5% and the same figure for the interviews was 91%. The points of disagreement were resolved by conducting discussions until a consensus was reached. LeCompte and Goetz (1982) proposed that the collected data should first be presented directly with a descriptive approach in order to improve reliability in qualitative research, and the researcher should submit the data obtained through observations, interviews and document review to the reader without comments and present the comments at a later stage (Cited by Yildirim & Şimşek, 2008). The data obtained with the document review and semi-structured interviews are presented as direct quotations without any interpretation. Conclusions and interpretations on the findings are presented in the discussions section with a holistic approach. To improve the reliability and validity of the study, data diversity method, which is defined as using multiple data collection methods and presenting the collected data in a supportive and confirming manner, was also utilized. Data obtained with document review and interview data collection instruments were used in the study. In data analysis, the correlations and the consistency of the information obtained with these different data collection instruments were examined.

Findings

2012 ITS course curriculum and 2017 ITS course draft curriculum were examined comparatively based on the vision and main approach of the curricula, general objectives and achievements, learning content, instruction-learning and measurement-evaluation processes utilized in the curricula.

Comparison of the Curricula Based on the Vision and Main Approaches

Data obtained with the document review on the visions of the 2012 and 2017 curricula are presented in Table 1:

Table 1
Comparison of the Visions of the 2012 and 2017 ITS Course Curricula

The Vision of 2012 ITS Course Curriculum	The Vision of 2012 ITS Course Draft Curriculum
Success of the Fatih project Training individuals who can learn new technologies by themselves and cultivate a culture of accurate use of new technologies	To allow the equal development of students' emotional, cognitive and social abilities as much as possible

Document analysis findings demonstrated that both curricula lacked a direct vision. However, the explanations included in the curricula documents provided information about the vision of the programs. As seen in Table 1, the vision of the 2012 ITS course curriculum was to ensure the success of the Fatih project and training individuals who are able to learn new technologies by themselves and cultivate a culture of accurate use of new technologies. The curriculum emphasized the necessity of a training program to achieve success in Fatih project and to achieve the goal of information society. However, the 2012 ITS curriculum aimed to replace the instructional structure where only office automation was instructed with one that aims to train individuals with knowledge on individually and socially significant issues such as information literacy, ethical values in technology use and production, aesthetics, confidentiality, information security and cybercrime.

On the other hand, 2017 ITS draft curriculum focused on improving emotional, intellectual and social skills of the students as much as possible. Rather than focusing on educating students who are familiar with basic computer concepts and use office automation software, both curricula shared the vision of training good digital citizens who acquire advanced information technology skills to be beneficial for their country and themselves as a result of computer training. However, while the 2012 curriculum focused more on the success of the Fatih project and, in this context, on the intellectual skills of the students in information technologies, the new curriculum focused more on social, cultural and emotional skills in addition to intellectual skills to train global citizens. In addition to the comparison of the curricula based on their visions, it is also important to compare the basic approaches adopted in these curricula. In the

conducted document analysis, the educational philosophies, curriculum development models and the approaches in creating program content adopted in these curricula were also considered. In this context, the main approaches adopted by the two above-mentioned curricula are presented in Table 2.

Table 2
Comparison of the Main Approaches Adopted in 2012 and 2017 ITS Course Curricula

The Main Approach Adopted in 2012 ITS Curriculum	The Main Approach Adopted in 2017 ITS Draft Curriculum
It was based on constructivist learning approach. It adopted Tomei's technological taxonomy and Ainley's computer and information literacy stages. Standard based program was adopted.	It was based on constructivist learning approach. It was based on the Turkish competencies framework. Unit based approach was adopted. It focused on value-based education. The significance of counseling was established.

Constructivist learning approach was adopted in both curricula. While the development of the 2012 curriculum was based on a standards-based instructional approach, the unit-based approach was adopted in the 2017 draft curriculum. In 2012 curriculum, standards that reflected the information and communication technologies knowledge and skills were defined. In this context, a framework program was designed based on basic national competencies in the use of information and communication technologies, which was in turn based on the global technological advances. During the determination of these standards, the most valid global standards were analyzed, and curriculum learning standards were established based on the technological taxonomy determined by Tomei and the classification by Fraillon and Ainley (2011). The curriculum included three levels; basic, intermediate and advanced levels, and two sub-levels at each level. Basic I and Basic II levels included the comprehension of information technologies and access and assessment of information, respectively; Intermediate I and II levels included management and transformation of the knowledge, respectively; and Advanced I and II levels included generation of and sharing the information, respectively. It was stated in the curriculum that the teachers should determine the students' levels based on their competencies and conduct the instruction based on the achievements and learning content suitable for the student levels determined at the beginning of the academic year when implementing the curriculum. However, the curriculum did not include any information on the determination of students' readiness levels at the beginning of the academic year. The unit-based approach adopted in the 2017 draft curriculum included topics that complement each other in educational steps under the same units for 5^{th} and 6^{th} grades. One of the most significant

differences in 2017 draft curriculum when compared to the 2012 curriculum was the consideration of the Turkish Competencies Framework (TCF) within the context of lifelong learning. TCF is the national competencies framework that is consistent with the European competencies framework, covering all educational levels (MEB, 2017). Eight key competencies that each individual is expected to acquire in the lifelong learning process are associated with the learning skills that they are expected to acquire in the courses. These key competencies are communication in native language, communication in foreign languages, mathematical competence, core competencies in science / technology, digital competence, learning to learn, social and civic competence, initiative-taking and entrepreneurship perception, and cultural awareness and expressive competences.

When the curricula are compared based on the basic approaches, it can be stated that the 2017 draft curricula focused more on the concept of counseling. The program emphasized individual differences and provided the necessary flexibility for students with special requirements. The fact that values education was included in a separate section was another distinguishing aspect of the 2017 draft curriculum when compared to the 2012 curriculum. Values education included information technology ethics, privacy and security issues related to the course content.

The IT teachers were asked to state the strengths and weaknesses of the 2017 ITS course curriculum and compare the 2017 draft and 2012 ITS curricula based on the curricula visions and basic approaches. The views of the teachers are presented in Table 3:

Table 3
Teacher Views on the Strengths and Weaknesses of the Vision and Basic Approaches of 2012 and 2017 ITS Course Curricula

Views	Frequency (f)
Student-centered	20
More clear and comprehensible	16
More applicable	12
Not rote-based, focusing on learning to learn	12
Suitable for 21st century learners' requirements	8

When they were asked about the curriculum's vision, the majority of ITS teachers primarily stated the changes in the curriculum content. This suggested that a large majority of teachers did not have any information on the vision of the curriculum. As demonstrated in Table 3, only about half of the teachers was able to state the vision of the curriculum. While these teachers indicated that a contemporary vision was established in the 2017 ITS course curriculum and they considered this as adequate, one teacher added that the curriculum lacked information about basic knowledge and skills required to achieve the vision. The views of two teachers on the vision of the 2017 ITS curriculum were as follows:

> *"The 2012 curriculum was a little outdated. 2017 curriculum is a more current program. 2017 is more successful in software and coding and suits the needs of the times." (ITT14)*

> *"As a vision, an attempt was made to develop the curriculum to keep pace with technological developments based on the global circumstances, however application software Office programs could be emphasized further...." (ITT3)*

As seen in Table 3, all teachers expressed positive views on the basic approach utilized in the curriculum and indicated that that the new program was student-centered and reflected a structure that emphasized learning instead of rote-based instruction. When the teachers were asked to compare the 2017 draft to the 2012 ITS curriculum, three teachers stated that the curricula were similar based on their main approaches and the majority of teachers indicated that the basic approach of the new program was clearer and more comprehensible and feasible in the curriculum manual. Teachers' views in this topic were as follows:

> *"I think that the 2017 curriculum definitely has a student-centered approach. It seems like a learning by doing centered curriculum. "(ITT 12)*

> *"In the 2012 curriculum, everything was left open-ended and all could differ from one school to another. A curriculum or program that requires us to act in cohesion was not completely established. It was nice development in this perspective". (ITT14)*

Comparison of the Curricula Based on General Objective and Achievements

The general objectives and achievements are determined by taking into account the reasons for the development of the curricula, related visions and educational philosophies. The

comparative data on the general objective and targeted achievements of the two curricula are presented in Table 4.

Table 4

Comparison of the 2012 and 2017 ITS Course Curricula Based on General Objective and Achievements

General Objective and Achievements of 2012 ITS Curriculum	General Objective and Achievements of 2017 ITS Draft Curriculum
General Objective: Active and productive use of information and communication technologies in compliance with ethical values	General Objective: Training accomplished digital citizens with the skiils to use advanced information and communication technologies
The competencies expected of the students are detailed.	The achievements are associated with TCF competencies. The number of achievements are higher.
The achievements vary based on the computer literacy level of the student.	Association of the achievements with the values is stressed.

When the two curricula were compared based on general objectives and achievements, it was observed that the 2017 ITS draft curriculum contained more detailed general objectives. In the 2012 curriculum, the objective of the curriculum was stated in a single sentence that the aim was the active and productive use of information and communication technologies in accordance with ethical values. However, it was observed that the general objectives stated in the 2017 ITS draft curriculum were presented under the title of achievements in the 2012 curriculum. Thus, when the general objectives of both curricula are compared, it can be argued that the general objectives of the curricula were similar except the general objectives that emphasized the Internet, algorithms and coding in the 2017 ITS draft curriculum. The general objectives mentioned in both programs included acquisition of problem solving, reasoning and collaboration skills, basic knowledge and skills to use information technologies, skills required to develop a unique product, use at least one programming language and lifelong learning skills. Different from the 2012 curriculum, students are expected to develop an understanding in algorithm design, to seek learning opportunities on the Internet, and to develop innovative and free projects to solve problems encountered in daily life (problems encountered by elderly individuals and individuals with disabilities, etc.) in the 2017 draft curriculum.

When the curricula were compared based on targeted achievements, it was observed that the achievements were similar parallel to the similar general objectives, however the number of achievements related to programming were higher in the 2017 ITS draft curriculum. When the

topics were examined individually, the number of the required achievements in "IT technologies," "ethics and security", "communication, research and collaboration", "production" and "problem solving and programming" units were 14, 9, 12, 15 and 27, respectively. The number of achievements in the 2012 ITS curriculum varied based on the student level in six computer literacies included in the curriculum. There were 44 achievements in the comprehension of the information technologies level (Basic I), there were 33 achievements in the access and assessment of information level (Basic II), there were 25 achievements in the management of information level (Intermediate I), there were 26 achievements in the knowledge transfer level (Intermediate II), there were 27 achievements in the information production level (Advanced I), and there were 28 achievements in the information sharing level (Advanced II). Since the level of computer literacy that would be applied based on the level of the students' readiness in computer literacy, hence the targeted achievements varied in the 2012 ITS curriculum, the achievements required for the 5th grade level were not clearly stated. However, it can be argued that 5th grade achievements were more numerous in the new curriculum when it is considered that a maximum of two computer literacy levels and achievements could be achieved in an educational grade.

IT teachers were asked to state their views on the positive and negative aspects of the 2017 draft curriculum by comparing the 2017 and 2012 ITS curricula based on their general objectives and achievements. Teacher views are presented in Table 5.

Table 5
The Views of Teachers on the Positive and Negative Aspects of the General Objective and Achievements of the 2017 ITS Course Curriculum

Views	Frequency (f)
Positive Aspects of the General Objective and Achievements	
More clear and comprehensible	18
Adequate for the student level	15
Negative Aspects of the General Objective and Achievements	
Higher number of achievements	16
Insufficient number of class hours reserved for the achievements	15
Individual and regional differences were ignored	2

When teachers were asked to compare the 2017 ITS draft curriculum and the 2012 ITS curriculum, 18 teachers indicated that the achievements of the new curriculum were more precise. More than half of the teachers stated that the achievements were more adequate for the student level, however the number of achievements was higher when compared to the previous

curriculum. They considered that it would not be possible for the students to acquire all achievements during an academic year based on the number of targeted achievements. Fifteen teachers stated that little time was allocated for MS Office software in the new curriculum and it would not be possible to teach this group of software during the allocated time. Six teachers emphasized that the number of course hours should be increased, while two teachers considered that individual and regional differences were not taken into account in the determination of the achievements. Teachers' views on general objectives and achievements established by the new curriculum were as follows:

> *"It is suitable for the student level, but there are too many achievements for the course hours. In fact, the curriculum for a whole year for this age group is squeezed in a single semester. "(ITT12)*
>
> *"The number of achievements is very ideal. But I think that at least 4 hours is appropriate for 5th and 6th grades for the programs I mentioned above." (ITT10)*
> *"A common mistake was the attempt to standardize regional and social environment differences." (ITT2)*

Comparison of the Curricula Based on Learning Content

The topics included in 2017 ITS draft curriculum and 2012 ITS curriculum and the general characteristics of the curricula content are presented comparatively in Table 6:

Table 6
Comparison of the 2012 and 2017 ITS Course Curricula Content

2012 ITS Curriculum Content	2017 ITS Draft Curriculum Content
✓ Information literacy ✓ Ethical values in teachnology use and production ✓ Information security, privacy and cyber crimes ✓ Internet, communications ✓ Text-based content production, calculation, tabulation and multimedia applications ✓ Problem solving and programming ✓ Learning areas are defined. ✓ Learning topics were identified for each learning area. ✓ Allocated time-class hours were not defined for each learning topic.	✓ Information literacy ✓ Ethical values , digital citizenship ✓ Using serach methods, establishing communications ✓ Privacy, information security ✓ Design and presentation of products such as audio, video, animation and web site ✓ Problem solving and programming ✓ There are 5 consecutive units for 5th and 6th graders. ✓ Learning topics were identified for each unit. ✓ Time/class hours were determined for each learning topic.

As seen in Table 6, common learning topics included in both curricula were information literacy, information security, privacy, multimedia applications, problem solving and programming, Office software and ethics. Learning topics were presented as learning areas in the 2012 ITS curriculum and they were presented under units in the 2017 ITS draft curriculum. The 2012 BTY curriculum did not include a specific level and topics that should be instructed in a particular grade, decisions on the levels and topics are to be made by the teacher. Although there were no significant differences between the learning topics in both curricula, there were differences in the time allocated for learning topics and the sub-topics under the main topics. In 2012 ITS curriculum, a specific time was not allocated for each topic, it was left to the discretion of the teacher, However, in the 2017 ITS draft curriculum, the duration of the course hours allocated for each learning topic was identified. In the new curriculum, less time was allocated for Office software and multimedia applications; the whole second semester was allocated for problem solving and programming.

IT teachers were asked to compare the 2017 and 2012 ITS curricula based on the learning content and to express their views on the pros and cons of the 2017 ITS curriculum. The views of the teachers on the issue are presented in Table 7.

Table 7
Pros and Cons of 2017 ITS Course Curriculum Learning Content According to the Teachers

Views	Frequency (f)
Positive Aspects of the Learning Content	
Achievement of national unity in applications	18
More current learning topics	15
Increased emphasis on programming	15
More interesting learning topics	14
Inclusion of ethical and security issues	2
Negative Aspects of the Learning Content	
High theoretical (unpractical) content	15
Lower time allocated for Office software	15
Repetitions in topics	2
The same as the 2012 IT curriculum	2

As seen in Table 7, the most positive aspects of the 2017 ITS draft curriculum were its clarity in learning topics, unity of its implementation across the country will be ensured and the ability to instruct the topics simultaneously when compared to the 2012 ITS curriculum according to the teachers. Nearly all teachers stated that one of the significant changes implemented in the 2017 ITS draft curriculum was the increased focus on programming. Allocation of more time

for programming was considered by all teachers as an advantage of the curriculum. More than half of the teachers stated that the learning outcomes of the new curriculum were more interesting and more up-to-date when compared to the previous curriculum. Two teachers emphasized that providing technical information, as well as the increased focus on ethics and security were among the important and positive features of the new curriculum. One of the most criticized aspects of the new curriculum was the increase in the number of theoretical topics when compared to the previous curriculum. Several teachers stated that the reduction in the number of applied topics due to the lack of IT laboratories at most schools was not an adequate solution. Instead, they emphasized that it is important to establish IT laboratories at these schools as soon as possible, and the nature of the course requires an increase in applied topics. Majority of the teachers stated that the time allocated for Office software in the new curriculum was not sufficient and it was not possible to instruct Office software in the allocated time. Due to the fact that most topics were theoretical in the 5th grade fall semester curriculum and computer course is an applied topic, this was among the most criticized issues by the majority of the teachers. Two teachers stated that the topics were not repeated in the 2012 curriculum, however in the 2017 draft curriculum, the topics were repeated across grade levels. Teachers stated their views on the 2017 curriculum as follows as a result of their comparison of both curricula:

> *"The most basic, most logical aspect of the 2017 curriculum is that we will be able to act at a certain level within a common framework. This is the most important difference between the two curricula." (ITT4)*

> *"I think that in the 2017 curriculum, the section where the 6th grade students would use audio and video editing tools is suitable for the student interests. The content of the 2012 curriculum was not very clear." (ITT6)*

> *"... the first semester topics are quite verbal. It is possible to instruct almost all topics without turning the computer on, but here it would have been better if the children had the opportunity to turn on their computers and use them." (ITT18).*

> *"More class hours could have been allocated for Office software that the students would needed throughout their lives..." (ITT3).*

Comparison of the Curricula Based on Instruction-Learning Processes

The general characteristics of the instruction-learning processes in the curricula are presented comparatively in Table 8:

Table 8
Comparison of the Instruction-Learning Processes in 2012 and 2017 ITS Course Curricula

Instruction-Learning Process in 2012 ITS Curriculum	Instruction-Learning Process in 2017 ITS Draft Curriculum
Sample learning activities related to learning topics are included. Focused on group and project work. Information on how to organize the instruction-learning process and which instructional approaches, methods and techniques can be used was not provided.	Learning activities are provided for each learning topic. Focused on problem solving, project-based instruction and collaborative learning approaches. Use of computer, tablet or robot kits. Teacher handbook included detailed information on how to instruct each topic, available learning resources, instructional approaches, methods and techniques and learning material. Selection of instructional activities was left to the teacher's discretion due to technical infrastructure and knowledge base issues. Activities that do not require computer use were also included for schools without technical infrastructure.

The comparison of the 2012 ITS curriculum with the 2017 ITS draft curriculum based on instruction-learning processes revealed that the draft curriculum provided more detailed and descriptive information on the instruction -learning process. As seen in Table 8, 2012 ITS curriculum provided no information on how to organize the instruction-learning process and which instructional approaches, methods and techniques should be used. The new curriculum included a teacher's handbook and the handbook provided information on how to instruct each learning topic, available learning resources, which teaching approaches, methods and techniques and learning materials should be used. In both curricula, the significance of collaborative learning and problem solving approaches and the use of instructional methods and techniques based on these approaches were emphasized. 2012 ITS curriculum offered five or six learning activities, which can be used in learning topics. In the new program, there were learning activities that can be conducted in each learning topic and the use of these learning activities is left to the teacher's discretion based on the available technical and information infrastructure. It included activities that can be carried out without using a computer in schools without technical facilities. In the new curriculum, it was mentioned that different learning resources such as tablet computers and robot kits can be utilized.

IT teachers were asked to state their views on the positive and negative aspects of the 2017 curriculum by comparing the 2017 and 2012 ITS curricula based on instruction-learning processes. The views of the teachers are presented in Table 9.

Table 9

The views of the teachers on the positive and negative aspects of the instruction-learning process in the 2017 curriculum

Views	Frequency (f)
The Positive Aspects of the Instruction-Learning Process	
Presence of the teacher's handbook	20
The Negative Aspects of the Instruction-Learning Process	
Inability to instruct applied courses in schools without IT laboratories	18
Course materials are provided only as e-material	15
Lack of Internet access at schools with IT laboratory	12
It is the same as 2012 ITS curriculum	2

All teachers stated that the most positive aspect of the 2017 ITS curriculum the teacher's handbook when compared to the previous 2012 ITS curriculum. They considered the inclusion of 5th grade activities and the sharing the handbook on the internet as a significant development, however 15 teachers emphasized that the distribution of printed course material was also important. Teachers stated that they experienced problems with school administration due to the Xerox costs related to printing and distributing the e-resources. A negative aspect of the instruction-learning process in the new curriculum according to the teachers was the fact that the whole second semester in the 5th grade was devoted to programming and they stated that they worried about instructing the topic, which should be instructed completely in an applied manner even at schools without an IT laboratory. The implementation of the curriculum at schools with IT laboratories but without Internet access was another source of anxiety among the teachers. Teacher views on the positive and negative aspects of the 2017 draft curriculum when compared to the previous curriculum were as follows:

> *"I believe that the fact that the ministry shares the teacher's handbook and course material will have an effect on the acquisition of nationwide achievements that the course aims." (ITT9)*

> *"We have a lot to do on the Internet due to the characteristics of our course. We can find and share examples as required, but if we consider village schools or schools without IT classrooms, it will be easier for the activities determined in the handbook to reach all students. The activities that do not require computer use should be included naturally..."(ITT15)*

Comparison of the Curricula Based on Measurement-Evaluation Processes

The 2017 ITS draft and the 2012 ITS curricula were compared based on the measurement and evaluation processes. The general characteristics of the measurement-evaluation processes in the curricula are presented comparatively in Table 10:

Table 10
Comparison of the 2012 and 2017 ITS Curricula Based on Measurement-Evaluation Processes

Measurement-Evaluation Process in the 2012 ITS Curricula	Measurement-Evaluation Process in the 2017 ITS Draft Curricula
The significance of student participation in the evaluation process was explained. The requirement to conduct the evaluation of the process and the product simultaneously was established. Teacher, student and parent collaboration in evaluation was stressed. The use of product files, self-evaluation/peer-evaluation, rubric and performance evaluation measurement instruments was established. Use of Educational Information Network (EIN) Examples were provided for rubrics, grading scale and control list.	The significance of providing continuous feedback was stressed. Simultaneous use of recognition-oriented, monitoring-oriented and outcome-oriented evaluations was indicated. Recognition-oriented evaluations: readiness tests, observation, interview forms, skill tests, etc. Monitoring-oriented evaluation: monitoring unit tests, authentic tasks, application activities, rubrics, diagnostic branched tree, Word association, self and peer evaluation, group evaluation, projects, observation forms, etc. Outcome-oriented evaluation: final exams, observations, interview forms, applied exams, projects, etc. Recognition of individual differences

It was observed that the use of measurement and evaluation instruments that would contribute to the active participation of the learners in the process was suggested in both curricula when the 2012 ITS curriculum and the 2017 ITS draft curriculum were compared based on measurement and evaluation processes. Self/peer-evaluation, rubric and performance evaluation measurement instruments were the measurement and evaluation instruments specified in both curricula. However, the 2012 ITS curriculum focused on creation of product files, while the 2017 ITS draft curriculum emphasized applied exams. 2012 ITS curriculum emphasized the necessity of process-oriented and product-oriented evaluations to be conducted simultaneously, while the new curriculum emphasized the recognition-oriented, monitoring-oriented and outcome-oriented evaluation methods. It can be argued that the new curriculum stressed recognition-oriented evaluation more when compared to the previous curriculum. In the 2012 curriculum, it was emphasized that the products created by the students should be

shared on the social network called the Educational Information Network (EIN). It can be argued that encouraging the teachers and the students to utilize the EIN social education network was an accurate approach when it is considered that the vision of the 2012 ITS curriculum included the success of the Fatih project. Another difference in the 2017 ITS draft curriculum when compared to the previous curriculum based on the measurement-evaluation process was the increased emphasis on the recognition of individual differences. One of the main shortcomings of the 2017 ITS draft curriculum was the lack of examples related to the use of evaluation instruments. The 2012 ITS curriculum included sample measurement and evaluation tools, albeit only a few.

IT teachers were asked to compare the 2017 and 2012 ITS curricula and to state their views on the positive and negative aspects of the 2017 draft curriculum based on measurement-evaluation processes. Teacher views are presented in Table 11.

Table 11
Teacher Views on the Positive and Negative Aspects of the Measurement-Evaluation Process in 2017 ITS Curriculum

Views	Frequency (f)
Positive Aspects of the Measurement-Evaluation Process	
Active participation of the students	14
Evaluation methods for applications	12
Negative Aspects of the Measurement-Evaluation Process	
The same as the 2012 IT curriculum	15

As seen in Table 11, 14 teachers considered that the measurement and evaluation methods and techniques included in the 2017 ITS draft curriculum could result in increased active participation of the students. Twelve teachers considered the application evaluation methods in the new curriculum as a positive feature when compared to the previous curriculum in terms of measurement-evaluation process. Significant majority of the teachers stated that there was no difference between the new curriculum and the 2012 curriculum based on the dimension of the measurement-evaluation process and instruments. The fact that there was no difference between the previous curriculum and the previous one based on the measurement-evaluation process and instruments was the source of the most significant criticism among the teachers. Teacher views on the measurement and evaluation processes in both curricula were as follows:

"It is a more adequate measurement and evaluation process for applied exams and product evaluation" (ITT1)

"I think that the learners will be more active with the new curriculum and the evaluations will produce more realistic outcomes." (ITT5)

"I do not think there is a difference based on measurement and evaluation." (ITT7)

Discussion, Conclusion and Recommendations

In the present study, 2017 Information Technologies and Software course draft curriculum was compared with the previous program, the 2012 ITS curriculum, and the positive and negative aspects of the new program were determined. For this purpose, curricula were examined, and the views of ITS course teachers were obtained.

When the two curricula were comparatively analyzed, it was observed that they had both similarities and differences. The similarities between the curricula were the presence of the advantages of the 2012 curriculum in the instruction of the course and the acquisition of the specified achievements by the students in the 2017 ITS draft curriculum as well. These included the facts that both curricula were based on the constructivist approach, were student-centered, the learning topic content was almost the same, they both focused on collaboration and group work in the instruction-learning process, the lack of IT laboratories at schools or the lack of Internet access at schools and conducting process and product evaluations were conducted simultaneously in the measurement-evaluation process. Despite there were similarities between the curricula, it can be argued that the differences were more numerous. It can be stated that the main vision of the curricula differed based on the main approaches in determining the learning content, the number of achievements, the time allocated to learning topics, the teacher's handbook and the presence of a teacher's handbook that contained detailed information on the activities that the students should conduct. Some of these differences included work that was conducted to address the problems experienced by teachers during the implementation of the 2012 ITS curriculum, while others stemmed from the completely renewed sections in the 2017 ITS draft curriculum.

Based on the views of teachers, the amendments that aimed to address the problems experienced in the previous ITS curriculum were stated as the positive aspects of the 2017 ITS draft curriculum, however certain novelties in the new curriculum were expressed as negative properties due to their potential to cause new problems. It can be stated that the positive aspects of the 2017 ITS draft curriculum included its emphasis on values education, clear statement of targeted achievements, adoption of a unit-based approach, determination of the time allocated for each course topic, association of lifelong learning skills and curriculum achievements based on national competencies, and development of the teacher's handbook and identification of student activities. Teachers also believed that, unlike the 2012 BTY curriculum, determination of the content with unit-based approach in the new curriculum resulted in a continuum of course topics in different grades in the junior high school and prevented redundant repetition of topics over the years. It can be suggested that lack of topical integrity and leaving the initiative totally to the teacher led to a chaos in the instruction of the information technologies course at the national level. When it is considered that the students in a class could have different computer literacy levels, it can be suggested that problems could be experienced in determination of learning topics. In 2012 ITS curriculum, learning topics were presented based on the targeted knowledge, skills and competencies, however the instruction of these topics based on the grades and the technology literacy of the related class was left to the discretion of the teachers who are the implementers of the curriculum. Erçetin and Durak (2017) stated that the teachers experienced problems mostly due to the ambiguity in the course content during the implementation of the curriculum in a study conducted on the 2012 ITS curriculum. Similarly, Uzgur and Aykaç (2016) also found that the ambiguity in the curriculum content clearly affected the learning process negatively, which was a disadvantage for the teacher and significant learning differences occurred among the schools since the teachers determined the course content in a study they conducted on the 2012 ITS curriculum.

In the 2017 ITS draft curriculum, determination of the hours allocated for the units and course topics within the units was one of the positive aspects of the new curriculum. However, it was found that the class hours allocated for the instruction of Office software was considered as a negative aspect by the teachers and the teachers were concerned about completing the instruction of the course content within the allocated time. Certain teachers also indicated that a whole semester was allocated to programming. It can be suggested that this was due to the fact that within the context of previous curricula since 2005, the ITS curricula predominantly

included the instruction of Office software in primary and junior high schools. Tanataş (2010) also found that IT teachers mostly instructed the introduction to presentation and word processing software the most and programming and the logic of algorithms the least based on teacher views in the thesis study where 2005 primary school elective computer course was scrutinized. It can be argued that due to the fact that the 2012 ITS curriculum allowed the teachers to determine course content, most teachers preferred to instruct Office software in their classes based on the logic of the previous curriculum.

Among the important positive aspects of the 2017 ITS draft curriculum, determination of the learning topics, presentation of all activities and the presence of a teacher's handbook can be listed. Thus, it can be argued that the implementation of the program would provide an integrated education in all junior high schools and there will be no differences among the learning topics that the teachers will instruct. The fact that all activities were not listed in the 2012 ITS curriculum and that the teacher's handbook and the textbook did not exist was among the most criticized topics by the teachers. This study finding was consistent with the results of other studies that scrutinized the 2012 ITS curriculum based on teacher views (Erçetin and Durak, 2017; Uzgur and Aykaç, 2016). Studies in the literature indicated that teachers considered the lack of teachers' handbook problematic and found the learning activities offered in the 2012 ITS curriculum unsatisfactory (Erçetin and Durak, 2017). It can be stated that the teachers considered the lack of learning activities in previous ITS curricula as unsatisfactory as well (Tanataş, 2015). Thus, it can be suggested that one of the most powerful and popular aspects of the 2017 ITS draft curriculum was the presence of the teacher's handbook and listing of all learning activities. Nevertheless, it was observed that most of the activities presented in the new curriculum could also be conducted with worksheets at schools without a computer laboratory. Although this was due to the fact that there are several schools without computer laboratories, ITS course is an applied course and the availability of a computer laboratory is important to conduct the activities that require applied instruction and listed in the teachers' handbook. Theoretical instruction of the course might lead to unfulfillment of the requirements and expectations of the students, and disinterest and negative attitudes towards the course among the students (Bilişim Teknolojileri Eğiticileri Derneği, 2017). Furthermore, the teachers stated the slow Internet connections or the lack of Internet connections at schools with computer laboratories, and unproductive use of the laboratories due to crowded classrooms as other negative aspects of the curriculum. In a study conducted by the Association of

Information Technologies Educators (2017) on the 2017 draft curriculum, the majority of the interviewed teachers stated that the physical infrastructure of their schools was not suitable for the instruction of curriculum content and their classrooms were crowded. In studies on previous ITS curricula instructed in primary and junior high schools, IT teachers always stated the lack of an adequate settings to conduct the applications, slow or no Internet connection, crowded classrooms as problems experienced during the instruction of the course (Erçetin and Durak, 2017; Uzgur and Aykaç, 2016, Tanataş, 2010, Kurarer and Güven, 2008). Thus, it can be argued that it is very unlikely to utilize expensive technological devices such as tablet computers and robotic kits that were proposed in the new ITS draft curriculum with the facilities provided by MNE.

In conclusion, it can be stated that the 2017 ITS draft curriculum was more positive and stronger than the previous curriculum. Furthermore, it is considered that the number of achievements in the draft curriculum should be revised and reorganized so that these could be achieved in an academic year. Half of the academic year was reserved for the instruction of the algorithms unit in the curriculum. The schools without computer laboratories or with insufficient laboratories should be provided with the required facilities before the implementation of the curriculum to enable the effective and relevant instruction of the topics scheduled for the last six weeks of this unit that require the students to code software using a computer. The student textbook that conforms to the requirements of the draft curriculum should urgently be published. In order to determine the problematic aspects of the program and the relevance of teachers' concerns, the new curriculum should be assessed during implementation and at the end of its initial instruction. The present study results are based on the collected qualitative data. The ITS curriculum should be reassessed using quantitative or mixed methods to obtain more general findings on the curriculum, to obtain higher number of participant views and to improve data diversity. It is also considered that a similar research conducted by obtaining the views of other stakeholders of the curriculum such as students and parents in addition to the views of the teachers would further contribute to the literature.

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