

**REPUBLIC OF TURKEY
CUKUROVA UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
ENGLISH LANGUAGE TEACHING DEPARTMENT**

**TURKISH EFL PRE-SERVICE TEACHERS' ATTITUDES TOWARD AND
REFLECTIONS ON DIGITAL GAME ENHANCED PRACTICE**

Ali Ceyhun MÜFTÜOĞLU

MASTER OF ARTS

ADANA / 2018

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MASTER OF ARTS

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ÖZET

TÜRK İNGİLİZCE ÖĞRETMEN ADAYLARININ DİJİTAL OYUN DESTEKLİ UYGULAMAYA İLİŞKİN TUTUMLARI VE YANSIMALARI

Ali Ceyhun MÜFTÜOĞLU

Yüksek Lisans Tezi, İngiliz Dili Eğitimi Ana Bilim Dalı

Danışman: Doç. Dr. Hasan BEDİR

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Son yıllarda artan teknolojik gelişmelerle eğitim ortamlarına da girmeye başlayan sayısız teknolojik materyal bulunmaktadır. Bu materyallerden biri olan dijital oyunların birçok eğitim dalı gibi, dil öğreniminde de kullanımının geniş bir alana ve potansiyele sahip olduğu düşünülmektedir. Yapılan çalışmalar hizmet öncesi öğretmenlerin oyunların potansiyelleri hakkında genellikle olumlu tutumları olduğunu, olumsuz tutuma sahip olanların ise daha önce herhangi bir uygulama örneğine rastlamadığından bu konu hakkında fikir yürütemediklerini göstermiştir. Bu konuda Sykes ve Reinhardt (2012) ikinci dil öğrenme alanı ve oyun tasarım prensipleri arasında benzerlikler olduğunu ve bunların amaç, etkileşim, dönüt, bağlam ve motivasyon olarak beş farklı başlık olduğunu ileri sürmektedir.

Buradan yola çıkarak bu çalışma dijital oyunlara karşı tutumları doğrultusunda seçilen yüksek, orta ve düşük tutuma sahip hizmet öncesi ingilizce öğretmenlerine dijital oyun destekli yabancı dil öğretimi uygulamalarının tanıtılmasını ve uygulama sonrası tecrübeleri hakkında yansımalarının alınmasını amaçlanmaktadır. Ayrıca katılımcıların uygulanan dijital oyun destekli dil öğretimi süreci ve yapılan aktiviteler konusunda olumlu ve olumsuz anlayışlarının değerlendirilmesi amaçlanmıştır. Buna ek olarak, katılımcıların dijital oyun destekli yabancı dil öğretimi uygulamalarını sınıflarında kullanma konusundaki niyetlerinin değerlendirilmesi bu çalışmanın amaçlarını oluşturur.

Anahtar kelimeler: Türk öğretmen adayları, dijital oyun, tutum, ingilizce öğretimi

ABSTRACT**TURKISH EFL PRE-SERVICE TEACHERS' ATTITUDES TOWARD AND
REFLECTIONS ON DIGITAL GAME ENHANCED PRACTICE****Ali Ceyhun MÜFTÜOĞLU****Master Thesis, Department of English Language Teaching****Supervisor: Assoc. Prof. Dr. Hasan BEDİR****July 2018, 119 pages**

Educational technologies have started to be integrated in educational activities in an increasing rate with recent technological advancements. Digital games, being one of these materials, are thought to be effective in language learning and teaching field as much as they are in other educational fields. Previous research has shown that pre-service teachers generally have positive attitudes towards digital games, and the ones who have negative attitudes cannot think of any use since they have not encountered any specific example of application. In this respect, Sykes and Reinhardt (2012) claimed five possible key elements in line with game elements and second language learning, which are goals, interaction, feedback, context and motivation.

Starting from this point of view, this study aims; first, familiarizing Turkish Pre-service EFL Teachers who were selected based on their attitudes on digital games as high, medium and low attitude with digital game enhanced language learning activities and collect their reflections for the digital game enhanced language learning application they experienced. Also their insights for positive and negative aspects of these activities were also aimed to be studied. In addition, this study also aims investigating participants' intentions for using digital game enhanced language learning activities in their future teaching practices.

Keywords: Digital games, Turkish Pre-service teachers, teaching english

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LIST OF ABBREVIATIONS

- CAI:** Computer Assisted Instruction
- CALI:** Computer Assisted Language Instruction
- CON:** Confidence
- DGBL:** Digital Game Based Learning
- DGBLL:** Digital Game Based Language Learning
- ELT:** English Language Teaching
- EFL:** English as a Foreign Language
- LEI:** Leisure
- LIKE:** Liking
- LRN:** Learning
- L2:** Second Language (In the present study, it refers to English)
- P1H:** Participant 1 – High Attitude
- P2H:** Participant 2 – High Attitude
- P3M:** Participant 3 – Medium Attitude
- P4M:** Participant 4 – Medium Attitude
- P6L:** Participant 5 – Low Attitude
- P6L:** Participant 6 – Low Attitude
- RCGAS:** Revised Computer Game Attitude Scale
- SD:** Standard Deviation

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CHAPTER I

INTRODUCTION

1.1. Statement of Problem

Technological advancements of last thirty years have dramatically changed our lives in all aspects. New generations being born during this period have never known a world without computers and they shaped their world knowledge around this fact. Prensky (2001) calls this new generation as “digital natives” and mentions learners born before the invention of computer technologies as “digital immigrants”. Whether we believe this categorization or not, as researchers our role here is to observe the nature of these changes happening all around the world, understand the rationale behind them and try to find contemporary approaches, methods and techniques enabling our learners to gain necessary elements of languages and develop materials that are suitable with the nature of this change.

Digital games as leisure activities date back to the invention of computer, yet they have never been so popular as they are in recent years. Today, game market is strikingly growing with an expected \$108.9 billion game revenue of 2.2 billion gamers across the globe in 2017, which shows 7.8 percent higher growth rate compared to previous year's statistics. Digital games also make up 87% of this market according to Global Games Market Report (Newzoo, 2017). Another report conducted in Australia shows that 98% of homes with children have computer games, 68% of Australians play video games, 33 is the average age of video game players while 78% of players are aged 18 years or older and 39% of those aged 65 and over play video games (Brand & Todhunter, 2015). Other studies also show similar results in United States, United Kingdom, other European countries and China (Galarneau, 2014; Lofgren, 2016), (UKIE, 2017) on how digital game market is expanding and increasing number of individuals, including both males and females, parents, children, teenagers, adults, teachers and more, are joining everyday into this industry.

Digital game market in Turkey is massive and has a potential to outnumber all other countries mentioned above in the following years. Turkey has 29 million active gamers spending 70% of their gaming time (total game time spent) on PC, which is the third highest ranking in the world in terms of total game time spent following Poland and Russia (Aydemir, 2016). Statistical facts above are arguably enough to show that digital

games have become one of the most common leisure activities of individuals all over the world in recent years and the numbers do not only represent tendencies of a specific gender, age group, social status or country, contrary to the common belief.

In light of these statistics, digital games, being an activity that covers more and more space in our daily life have been intriguing researchers in recent years. With this aspiration they have wanted to find out the reasons why people play digital games and whether they can be used in education or not. With the same aim, Brand and Todhunter (2015) found that people play to pass time, have fun, relax, keep their mind active, for social interaction, learning and exercising. Nevertheless, learning and exercising were the least motivational factors for players with 3% of all other reasons. Despite that, academic, social, interactive and cognitive skill improvements have been seen in individuals playing digital games.

Some researchers have claimed that games have potential to improve active learning, problem solving and critical thinking (Gee, 2003); collaboration and interaction (Thorne, 2008; Thorne, Black & Sykes, 2009); motivation (Gee, 2003; Squire, 2006) and more. Smale (2011) refers to the following game features that facilitate learning in her article as:

Taking new identity, with an extended commitment of self, performing an action in order to get feedback, allowing students to learn from failure, scaffolding content into well-ordered problems, learning by doing, meeting expectations of digital natives who are used to receiving info quickly, graphics before text, prefer random access, networks and instant gratification; inherent assessment measures as students frequently cannot proceed to the next level unless a skill is learned (Smale, 2011).

No matter how complicated and compelling procedure it is, it was seen that digital games can be integrated into formal education atmosphere and used in many different ways when designed carefully and applied effectively. Gee (2008) argues that principles of games offer better opportunities for learning than traditional educational activities. The problem here is that teachers are not sure how they can implement digital games without having trouble and get positive feedback in terms of aims and learning outcomes. Watson, Yang and Ruggiero (2012) emphasized four factors that affect successful integration of digital games in education as effective integration, using technology, obtaining games

and existing educational system. In that case, Gros, (2010); Ketelhut and Schifter (2011) advised that practical evidence of possible uses of digital game integration into classroom is needed to be shown to teachers for leading successful implementations.

As is seen above previous studies showed that digital games cover a significant space in today's generation both as leisure activities and educational materials for enhancing learning in all levels. Moreover, game design principles and second language learning have common features in line with each other. Previous research also pointed out that teachers have positive attitudes towards using digital games, nevertheless, integration of digital games into educational situations are quite limited. Teachers who had negative attitudes stressed that they were not aware of digital games. Also, both the ones who had negative attitudes and others having positive attitudes but not using digital games in the classroom argued that they did not experience any digital game implementation, so they cannot think of any possible use. Assuming that attitudes and beliefs gained in pre-service teacher education is effective on future actions of teachers, finding out attitudes of current pre-service teachers, introducing them with real life examples of digital game enhanced activities so that they can build their schema for possible future game practices on site as teachers and investigating their intentions for using digital game enhanced activities in teaching practices is a gap to be filled in the literature both in terms of descriptive and empirical data.

1.2. Purpose of the Study

The aim of this study is; first, familiarizing Turkish Pre-service EFL Teachers who were selected based on their attitudes on digital games as high, medium and low attitude with digital game enhanced language learning activities and collect their reflections for the digital game enhanced language learning application they experienced. Also their insights for positive and negative aspects of these activities were also aimed to be collected. In addition, this study also aims investigating participants' intentions for using digital game enhanced language learning activities in their future teaching practices.

1.3. Research Questions

To accomplish these aims, this study aims to seek answers to following questions:

1. What are the attitudes of Turkish Pre-service EFL Teachers towards digital

games?

2. What are the reflections of Turkish Pre-service EFL Teachers who appear to have *high, medium* and *low attitudes* towards digital games?
3. What are the insights and intentions of Turkish Pre-service EFL Teachers on digital game enhanced activities?

1.4. Significance of the Study

Previous studies showed that game applications have potential for enhancing learning in all levels. Also, game design principles and second language learning have common features in line with each other. Although pre-service teachers generally have positive attitudes towards digital games, especially as educational tools even if they do not use them for leisure purposes, integration of digital games into educational situations are quite limited. In this respect, teachers who have negative attitudes towards digital games emphasize that they are not aware of digital games or have not experienced any digital game enhanced application before. Assuming that attitudes and beliefs gained in pre-service teacher education is effective on future actions of teachers, it is needed to find out attitudes of current pre-service teachers, introduce them with real life examples of digital game enhanced activities so that they can build their schema for possible future game implementations on site as teachers. Also, investigating their intentions for using digital game enhanced activities in teaching practices is a gap to be filled in the literature both in terms of descriptive and empirical data.

1.5. Limitations

Creating a natural classroom atmosphere in game studies requires existence of sufficient technological equipment. In this study, only a limited number of computers were available for researcher to reach and control the maintenance of these supplies during research procedure. Therefore, researcher conducted most game sessions individually where participants played the game and some sessions were conducted in pairs rather than whole class atmosphere. Only the sessions where students did not need computers were completed in whole class atmosphere, because there was not an existing computer laboratory in the department enabling each participant of the study with a computer.

1.6. Operational Definitions

Computer Assisted Instruction: Computer Assisted Instruction refers to using computers for learning.

Computer Assisted Language Instruction: Any process in which a learner uses a computer and, as a result, improves his or her language (Beatty, 2013)

Designed Narrative: Designed narrative in a digital game means the plot designed by the game designer. Especially story-based games follow the story line that developer designed and do not leave much control changing the end of story.

Digital Games: Definition of digital games is an umbrella term covering video, computer, and now mobile and social media games. (Gee, 2003; Gershenfeld, 2014; Prensky, 2001; Shaffer, Squire, Halverson & Gee, 2005).

Digital Game Based Learning: Digital Game Based Learning refers to using video, computer and mobile games for learning.

Digital Game Based Language Learning: Digital Game Based Learning refers to using video, computer and mobile games for language learning.

Digital Game Enhanced Learning: Digital Game Enhanced Learning refers to using digital games in educational activities that are not originally designed for educational purposes but for leisure purposes.

English as a Foreign Language (EFL): Use or study of English by speakers of speakers of other languages.

Personal Narrative: Personal narrative in a digital game refers to the unique gameplay each game players experience, which means even in games having strict story line and less control over the plot, players experience a unique performance. Every player playing the same game creates their own personal narrative.

Second Language (L2): Any language that is acquired after the native language.

Story Based Digital Role-Playing Game: A story-based digital role-playing game is a game designed around a storyline like a novel or a movie that has narrative. Players follow the plot while discovering the game world and characters involved in the story.

1.7. Chapter Summary

This chapter focused on statement of the research problem, purpose of the study and research questions that formed the background of this study. A brief background of

digital games as leisure activities and educational tools were given and significance of the present study was emphasized. At the end, limitations and operational definitions of the study were presented.



CHAPTER II

LITERATURE REVIEW

2.1. Introduction

In this chapter, review of literature related to this study is presented. Origins of technology integration into educational environments from first applications of Computer Assisted Instruction (CAI) to Digital Game Based Learning (DGBL) are explained. Additionally, reflections of this integration into language classroom with Computer Assisted Language Learning (CALL) and Digital Game Based Language Learning (DGBLL) are discussed. Along with this, findings concerning benefits and drawbacks of digital games in language learning atmosphere are provided. Moreover, parallels between digital games and language learning focusing on context and narrative in digital games and language learning are demonstrated. In addition, digital game attitudes of pre-service teachers and integration of digital games into classroom are provided here. The literature review also makes some assumptions underlying this study.

2.2. Computer Assisted Instruction (CAI)

Today living in a world with computers is so natural in our daily routines and professional environments that we might forget that integration of these technologies is quite recent in our lives and common use of them can be dated back to only a few decades ago. Although CAI has roots in 1925 in Pressey's multiple choice machine which was presenting instruction, testing the user, waiting for an answer, providing immediate feedback and recording each attempt as data, it was not until 1970s that the first use of CAI applications in educational context were observed. First attempts of CAI were later developed in 1950 by Crowder whose work added branching to feedback provided for corrective instruction or new information according to answers given. In 1954 at University of Pittsburgh Psychologist B. F. Skinner developed a teaching machine capable of reinforcing not only teaching (Mann, 2009a).

In 1970s many schools started to implement computers in classrooms in USA and used them for instruction, drill, practice, recordkeeping and other applications (Cotton, 1991). Major proportions of preservice technology programs in universities started to include or recommend technology education for prospective teachers (Kinnaman, 1990).

Nevertheless, this rapid integration raised some concerns in terms of effectiveness of computer assisted instruction by educators, legislators, parents, and researchers because integrating computers in education and making available for each student in schools required substantial amounts of monetary resources (Cotton, 1991). As a result, research needed to investigate effectiveness and challenges CAI in educational situations.

Mann (2009a) states main advantages of Computer Assisted Instruction as being modular which enables making adaptations in instruction and activities possible, self-administered, flexible for various feedback types based on needs such as immediate or delayed, enabling differentiated learning and individualized applications, keeping record of progress or failure automatically, motivating students by enabling more lesson control by increasing user interaction.

On the other hand, it is also stated that factors counted as advantages of CAI have potential to be a disadvantage, simultaneously. For example, being modular can also be boring, being self-administered might mean being anonymous and cannot be traced. From the negative side, computer assisted activities can foster convergent thinking rather than constructing answers by promoting divergent thinking. Furthermore, implementing this technological equipment makes assumptions for learners such as reading and spatial ability which means they cannot be accessible to young learners. Moreover, Computer Assisted Instruction requires long time and money to develop, when it is compared with the benefits gained and options of hiring an instructor. Behaviorism and cognitive science affected new perspectives of Computer Assisted Instruction. While CAI was used mostly in drills and practice in mathematics and language learning in early development years, more areas are being added to the scope of instruction.

Computers available today are more powerful and capable in terms of task handling; cheaper and more convenient compared to previous generations (Gündüz, 2005). In recent years, hardware and software companies and schools are working together to make the most of advantages of computer assisted implementation. Decrease in cost and empirical findings on advantages of CAI might bring maximum benefit in future applications.

2.3. Computer Assisted Language Instruction (CALI)

Computer Assisted Language Instruction or Computer Assisted Language Learning refers to the use of computer technologies in language learning and teaching

situations. Computer-Assisted Language Learning (CALL) was described by Levy as “the search for and study of applications of the computer in language teaching and learning” (Levy, 1997, p.1). Advancements in computer technologies in second half of 20th century and rise of Computer Assisted Instruction also influenced language learning applications. However, it was only after 1980s that CALI became feasible because before that date it was not possible to afford acquiring and spreading computers in large amounts to formal educational institutions. In fact, this was only valid for developed countries such as USA and United Kingdom. It was not until early 2000s that common use of computers in public schools in other parts of the world could be accomplished.

This growth in use of technology and internet also increased ways of communication and accessibility among people being in different parts of the world, which made reaching other cultures and languages and interacting with others relatively easier. As a result, language learning and teaching has begun changing, too. Today, technology is not a medium that is only available in formal context, but it is an undeniable part of our lives covering more and more space every single day. While some educators believe using technology is a solution to problems that are being faced in language education, others believe it might be just a waste of time. The most significant potential of using technology in language learning and teaching is the new opportunities they offer for learners and educators. In this respect, Doughty and Long (2008) argues that technology offers many potential benefits for language learners and teachers, while including challenges that emerge with these benefits. However, they add by saying that these challenges worth facing when opportunities provided are taken into consideration.

Early attempts of using computers in educational context were put forward on fields other than language studies. First use of CALI was conducted in 1980 by Collett who realized and adapted curriculum and activities from a colleague in physics, to French curriculum. Later, Richard Atkinson and Patrick Suppes started a CALI project in Stanford University cooperating with IBM corporation for implementing CAI in language learning and teaching activities (Atkinson, 1972). This study was important because in 1967, Atkinson and Suppes constituted the Computer Curriculum Corporation, which continued to provide instruction in English as a Second Language (Saettler, 2004).

As the time went by, both technological advancements and studies on language learning and teaching formed a different phase in Computer Assisted Language Learning. Three stages emerged which were called as Behavioristic CALL, Communicative CALL, and Integrative CALL and each had different backgrounds and pedagogical

infrastructures. (Barson & Debski, 1996; Warschauer, 1996; Warschauer & Healey, 1998). Each stage has some advantages and disadvantages as it happens in all developmental processes.

Over the years, researchers made studies on CALL activities and put forward theories and implications based on their findings. Warschauer and Healey (1998) states some benefits of CALL activities in language classroom such as: multimodal practice with feedback, individualization in a large class, pair or small group work on projects, the fun factor, variety in the resources available and learning styles used, exploratory learning with large amounts of language data, and real-life skill building in computer use. Cabrini Simões (2007) focused on the importance of internet use which could be available with CALI in language classroom. It was mentioned in his study that teachers and learner can reach to a large amount of materials to raise attention by using sounds, images, videos, colors and the like. This would help making learning more concrete and can be addressed to learners having different styles. Another point of view in opportunities of CALL was the culture element. Singhal (1997) argued that integrating CALL in language classroom is an effective way of creating opportunities for learners to reach culture of target language. The more they learn about the culture of target language the more they will become aware how cultural background affects an individual's perspectives and this is an important element in language learning. Lee made important studies on language learning and computer assisted activities. He pointed out that internet has potential to increase a language learner's motivation and create interaction (Lee, 2000), in a cheap, quick and reliable way (Cabrini Simões, 2007, pp.31-33).

On the negative side, Singhal, (1997) stated that reaching information may take more time when it is compared with traditional ways. In addition, he expands lack of teacher training in terms of integration technology into language classroom, conducting activities and making assessment makes it harder for CALI to be used effectively in language learning context. Corrêa (2001) believes lack of infrastructure is an important factor on inability to spread and effective use of CALI in language learning. Negative points can be expanded by financial barriers which may require great amount of expenses for educational institutions, technical problems that cannot be anticipated before it may spoil all benefits of using such activities and both teachers and learners need to be trained to use computer and language learning materials prepared for computer activities.

2.4. Digital Game Based Learning (DGBL)

Traditional ways of teaching and learning have been losing effect on educational environments in recent years. Reasons behind this is the fact that technological advancements are changing our life styles. New generation students are using computers, mobile phones, social media, video calls, games in their daily life and they also expect to use these technological platforms in their daily interactions (NCREL & Metiri, 2003). On the other hand, skills and knowledge gained by classical education methods are not seen sufficient for being successful in professional life. As a result, 21st century skills that are required for individuals to gain success in professional life is being demanded by employers in an increasing rate. Levy and Murnane (2005) states that increased technology use, extensive problem solving, and complex communication will be key factors in the next generations to have a job and be successful in professional career. Boyle, Connolly and Hainey (2011) indicates in their studies that effective learning in terms of modern theories require being active, experiential, situated, problem based, and providing immediate feedback for reaching ultimate effectivity and it seems like games offers such activities.

Definition of digital games is an umbrella term covering video, computer, and now mobile and social media games (Gee, 2003; Gershenfeld, 2014; Prensky, 2001; Shaffer, Squire, Halverson & Gee, 2005). Digital games are originally designed as leisure-time activities for many individuals, however they are being used as a part of educational activities in an increasing rate. They have been attracting especially young learners more than other popular media, including television, films and so on. for their extra-curricular or leisure time activities (Gee & Hayes, 2011).

Technological advancements created new opportunities of new resources for educators to improve their educational atmosphere and led the educators to diversify teaching/learning methodologies and the materials used. Among these new resources digital games are thought to be promising (Hung, 2016). Henceforth, using internet and digital games in education has attracted many researchers who wished to make learning easier, faster and meaningful.

Prensky (2013) argues that DGBL may become an important part of educational practices. He puts forward 3 reasons to support his idea as “DGBL meets the needs and learning styles of today’s and future generations of learners; DGBL is motivating because it’s fun; and DGBL is enormously versatile and adaptable to almost any subject,

information, or skill to be learned, and when used correctly, is extremely effective” (Pensky, 2013, part one, para. 6)

According to Reinders (2012) the reason why digital games have become widely accepted is that they create opportunities for learners to interact in the target language. Eskelinen (2012) differentiates CALL and DGBL by focusing on the fact that, CALL activities are assisted by the computer for learning, whereas in Digital Game-Based Learning the games are center of learning and teaching. Moreover, different studies examined learning, attitudes and obstacles of using games and findings demonstrated different results.

On the one hand, researchers supporting effectiveness of digital games believe deep learning may be achieved by playing games since they provide *learning by doing*. (Gee, 2003; Squire, 2003). In line with this, it was also pointed out in other studies that digital games stimulate *deep learning* and *creative thinking* (Eow, Ali, Mahmud & Baki, 2009; Papert, 1980) and build *collaboration*, *communication*, and *creativity* skills that will equip students with *lifelong skills* (Brown, 2006; Jenkins, Purushotma, Weigel, Clinton & Robison, 2009; Steinkuehler & Williams, 2006). In addition, digital games can also foster different learning styles such as *scaffolding* which is often ignored in traditional education systems. Gee claims that “since fruitful thinking involves building simulations in our heads that prepare us for action, thinking is itself somewhat like a video game, given that video games are external simulations” (Gee, 2005, p. 220). McClarty et al. (2012) claims that digital games are built on *sound learning principles*, provide more *engagement* for the learner, provide *personalized learning* opportunities, teach *21st century skills*, and provide an environment for *authentic and relevant assessment* (p. 6).

It was stated in another study that digital games have potential to increase students’ motivation more than other traditional classroom activities. (Collentine 2011, Lan 2014, Chik, 2014). And video games improve student motivation (Burguillo, 2010; Kebritchi, Hirumi and Bai, 2010; Malone, 1980). Motivation factor was also emphasized in studies of Ertzberger (2009) and Gale (2011) who agrees on the fact that digital games can be the right tool to engage and motivate students in classroom. Similarly, Prensky (2005) describes digital-game based learning as a new means to motivate students.

On the other hand, early perceptions and research focused on negative impacts of digital games, especially on violence and aggression (Connolly, Boyle, MacArthur, Hainey & Boyle, 2012). It was suggested in Anderson and Bushman’s influential meta-analyses study that playing violent video games may lead to violent behaviors and

aggression (Anderson, 2004; Anderson & Bushman, 2001). In other studies, negative effects of playing digital games were mentioned as difficulty in controlling the time spent playing games (Ogletree & Drake, 2007), addiction (Griffiths & Davies, 2002), social isolation and nauseogenic properties of games with head mounted displays (Merhi, Faugloire, Flanagan & Stoffregen, 2007). It was also argued in other studies that it is applicable only to young children; it is unrelated to learning; it is the opposite of work (Rieber, 1996); it is unproductive; and it requires too much time and effort (Prensky, 2001).

Focusing on the fun factor Okan (2003) also stressed seriousness of learning and stated that play is not serious or respectable; learning is a serious activity, so it does not need to be fun. Parallel with this argument Alexander, Eaton and Egan (2010) asserted that this kind of play is just an entertainment. Major skepticism for benefits of digital games comes from lack of enough empirical data supporting the argument playing digital games help learners gain skills or knowledge stated by learning outcomes of an educational curriculum. Hanus and Fox (2015) expresses their concern about the danger of disrupting the sequence of learning outcomes or possibly causing students not to learn anything. In this context, it was pointed out that actual effect of digital games on whether they are the best option for transferring knowledge or achieving learning outcomes should be pointed out in further studies (Alexander et al., 2010; Domínguez, Saenz-de-Navarrete, De-Marcos, Fernandez-Sanz, Pagés & Martínez-Herráiz, 2013).

2.5. Digital Game Based Language Learning (DGBLL)

Playing games and formal education context may not be thought related with most educational fields. However, language learning should be separated from these fields since it has a strong bound and background with notions of play and game. Traditional games are considered as being an important part of Second Language Acquisition (SLA) (Wright, Betteridge & Buckby, 1984; Ersoz, 2016). History of games and language learning dates back to paper, card and classroom games before digitalization (Baltra 1990, Gaudart 1999, Li & Topolewski 2002, Crookall 2007, Ranalli 2008). Generally, Computer-Assisted Language Instruction (CALI) or Computer-Assisted Language Learning (CALL) were the first introduction of technological materials in language learning. Nevertheless, there has been criticism for CALI or CALL activities because they focused mainly on linguistic knowledge such as learning vocabulary or memorizing

grammar rules and they provided learners with limited opportunities for using linguistic knowledge in real language.

In recent years we have seen the rise of digital games as mostly leisure activities. Even though, field is still not mature in terms of descriptive studies, empirical data and theoretical and pedagogical background, previous research has shown educational benefits of digital games in different subjects such as health, social issues, science, business, mathematics and statistics (Nte & Stephens, 2008; Wijers, Jonker & Kerstens, 2008), engineering and computing (Papastergiou, 2009), language (Miller and Hegelheimer, 2006; Yip and Kwan, 2006) and history (Akkerman, Admiraal & Huizenga, 2008). Nevertheless, it is needed to be emphasized that DGBL has been found more effective than traditional instruction when they are treated as a whole (Connolly, Boyle, MacArthur, Hainey, & Boyle, 2012; Liao, Chang, & Chang, 2010; Wouters & van Oostendorp, 2013); however, the problem is each field has conflicts in terms of findings. As a result, it was argued that individual content areas should be considered while assessing the benefits of technology for teaching and learning (Ferdig, 2006).

In last two decades individuals playing digital games especially interactive games such as online multiplayer games started to report improvement in their language abilities which in turn raised curiosity for researchers and practitioners on benefits of digital games in language learning and teaching. Results of some studies claiming parallelism between language learning and digital games created a common belief that playing digital games might be effective for learning foreign languages such as in listening skills (Bernert-Rehaber & Schlemminger, 2013; Levy & O'Brien, 2006; Roy & Schleminger, 2014), in vocabulary knowledge (Kocaman & Kizilkaya-Cumaoglu, 2014b), writing skills (Levy & O'Brien, 2006; Neville, Shelton & McInnis, Brian, 2009) in communication, grammatical accuracy and writing skills (Berns, Palomo-Duarte, Dodero & Valero-Franco, 2013) and in learners' general fluency, pronunciation and reading skills in the target language (Levy & O'Brien, 2006). Furthermore, it was argued that digital games are regarded as important within the field of Computer Assisted Language Learning (CALL) (Cornillie, Clarebout & Desmet, 2012; Reinhardt, Warner & Lange, 2014).

Studies on learning a foreign language with digital commercial games investigated the effects of player attributes, in-game and non-game variables and found positive results (Cornillie et al. 2012; Peterson, 2012; Turgut & İrgin, 2010). However, both formal and informal benefits of digital games have been claimed in different studies. Saarenkunnas (2006) studied on a 10 years old boy investigating informal language

learning in a digital game and she found out that collaboration and communication were great potentials for language learning and careful planning and integration could make formal language learning possible with digital games. In another study findings illustrated that there was a positive correlation between playing informal digital games and English grades of Finnish secondary school students (Uusikoski, 2011). On the other hand, Egenfeldt-Nielsen argues while integrating positive elements of informal learning in digital games we are having difficulty. (Egenfeldt-Nielsen, 2007). Miller and Hegelheimer (2006) who aimed curricular integration of digital games into language classroom found out that the SIMS game could be integrated into language learning in a formal context. However, their study was criticized for having small number of participants. Similarly, Ranalli (2008) reported that playing the Sims in pairs contributed to improving vocabulary acquisition among foreign language learners. Supporting positive results, Neville (2009) indicates that DGBLL can make a language lesson more effective by letting students to test their own mental hypotheses actively, while simultaneously exploring use of the language in a virtual reconstruction of an authentic socio-cultural context compared to a traditional content-oriented lesson. Likewise, Sylvén and Sundqvist (2012) emphasizes that there is a relationship between gaming and L2 learning seems indisputable. Looking at findings of another study conducted in Greece with 17 elementary students showed that pre-test and post-test result of participants showed improvement in learners' vocabulary, reading and language learning strategies.

Many studies have focused on possibility of using digital games in language learning context (Cornillie et al., 2012a; Rama, Black, van Es and Warschauer, 2012; Zheng, Newgarden and Young, 2012; Holden and Sykes, 2012; Reinders and Wattana, 2012), however their results are mostly based on subjective perspectives of participants. DGBLL studies still lack longitudinal, empirical studies examining the actual process of gameplay which is a concern for validity of arguments in relation between digital games and language learning. The potential of digital games is recognized by researchers however true analysis of this potential and parallelism cannot be identified since structural conditions still separates entertainment and education and associate only academic content with educational success (Ito, 2008, p. 114). In this context Chik believes, "L2 learning is not completely incidental, especially when gamers apply language learning strategies learned from school to L2 gaming" (2014, p. 96). Main question held by researchers here, whether language learning skills and strategies learned in language learning classrooms or skills or knowledge learned in digital games can be transferred to

real life context (Barnett & Ceci, 2002). In this context the researchers suggest that there should be more longitudinal studies on the theory and methodology and the effects of games for teaching and learning although recent studies suggest that computer games can be effective for teaching and learning.

2.6. Parallels between Digital Games and Language Learning

A few decades ago digital games were thought to be only leisure activities and could not be credited in line with educational benefits. Over time self-reports of gamers and observations of researchers have shown that digital games have potential to be beneficial for learning, even in a formal context. As a result of this progress researchers needed to define some key terms. They realized that it wasn't possible to make a generalization because games had different qualities in terms of design elements and educational benefits, which in turn led to good gaming and good learning.

Prensky (2001) suggest a widely-accepted list of qualities for good games as *fun, play, rules, goals, interactivity, outcomes and feedback, adaptability, win states, conflict and competition, problem solving, and representation and story* (Prensky, 2001). Looking at these elements it is possible to realize potentials and challenges for educational context. As it was stated in study of Scholz (2016) "Win states, for example, are difficult to conceptualize within education, as there is no specific point at which a student can claim they have done so well or have learnt enough as to have won." On the other hand, fun, play, interactivity, and adaptability are line with language learning and teaching concepts and potentially adaptable.

Furthermore, other researchers looked at benefits and parallels of games in terms of educational use and integration opportunities. Vandercruysse, Vandewaetere and Clarebout (2012) reviewed the literature and suggested a list of elements that good games include by referring to the potential benefits they serve (cited in Scholz, 2016). Related elements can be seen in Table 1 below:

Table 1

Important Game Elements and Their Presupposed Benefits

Game elements	Presupposed benefits
fun or enjoyability	<i>enjoyment, pleasure, motivation</i>
rules	<i>structure</i>
goals and objectives	<i>motivation, stimulation</i>
interaction/interactive	<i>being active, interacting with others</i>
outcomes and feedback	<i>learning, informing about progress</i>
problem solving/competition/challenge	<i>adrenaline, excitement, creativity</i>
representation/story/fantasy/context	<i>emotion (enthusiasm), stimulation</i>

Vandercruysse et al., (2012)

Categorization of Table 1 is similar to (Prensky, 2001) however *win states and adaptability* factors that have great importance in explaining game play experiences of gamers and can be seen in Prensky's categorization are excluded here. No matter how there are some excluded items, their categorization seems closer to explaining potential parallelism between digital games and language learning and teaching.

In this context, Gee (2008) also defines 5 characteristics for explaining good games and potentials for educational situations. His categorization can be listed as *structured by specific goals, open to interpretation, provide immediate feedback, ability to apply information learnt from feedback to new situations, possibility to learn from both interpretations and other individuals, whether peer or experts* (Gee, 2008). Gee's categorization is in line with definitions of Prensky (2001) and Vandercruysse et al. (2012). The difference is Gee's categorization seems more related to learning experiences of players than gameplay experiences that players can get while playing the game in terms of common points that can be attributed to language learning. It can be understood when analyzed in detail that Gee's (2008) list offers benefits for language learning context goals and feedback.

Although all the items listed in categorizations of Prensky (2001), Gee (2008) and Vandercruysse et al. (2012) cannot be attributed to education and language learning, they are all valuable in terms of explaining specifications of good games and educational benefits of using these games. Prensky (2001) himself states that not all games can be related with educational benefits and not all items can be found parallel with education in good games. The important thing here is to provide as many positive features as possible while choosing a game.

In addition to lists and definitions stated by different scholars mentioned above Sykes and Reinhardt (2012) claimed five possible key elements in line with game elements and second language learning, which are goals, interaction, feedback, context and motivation. Among all the other specifications, study of Sykes and Reinhardt (2012) was thought to be the most appropriate and applicable one within the scope of this study. Their explanation to their claim is that in a well-designed game; goals, interaction, feedback, context and motivation all work as a part of an integrated system and without a successful balance of all these parts the system malfunctions. “For example, the amount and delivery of feedback are essential for providing a player with a sense of choice. In addition, in-game tasks must be contextualized in designed narratives, and interactions with, through and about the game should foster personal narratives” (Sykes & Reinhardt, 2012).

It is possible to put forward that the same principles work for L2 teaching and learning activities, in that lesson tasks should be selected carefully by taking background knowledge of learners into consideration and should be contextualized so as to make new information meaningful. Moreover, feedback should be given in the right time, in the right way and for the right person in *pre*, *while* and *post activities* and these activities are all supposed to create a form of interaction whether it is *teacher-student* or *student-student* interaction. Hence, in light of these views, this study focuses on the parallelism between digital game elements and L2 teaching and learning activities in terms of context: narratives.

2.7. Context and Narrative in Language Learning and Digital Games

Context is an important part of language learning and teaching. Likewise, game design principles value context significantly. In this part, context in language learning and context in digital games are emphasized.

2.7.1 Context and Narrative in Language Learning

Context in L2 linguistics have different perspectives. Two main linguistic perspectives which are structural linguistics and functional linguistics have different explanations on context in language. While, structural linguists believe that a word or an utterance has meaning out of its context of use, functional linguists theorize that language has meaning only in the situation in which it occurs, the context of situation (Malinowski,

1923) or the environment of the text.

Looking at the context from the functional perspective in this study, it might be said that we contextualize the information, and narrative is the way how we do it. For example, storytelling is widely used in almost every second language classroom and in all different levels from children to adult learners. But, it is not a coincidence for storytelling to be so powerful in second language classrooms. According to Sykes and Reinhardt (2012) we teach by telling stories. We use narratives to transfer culture to other cultures or next generations. Fairy tales, myths and legends; media such as films, novels, drama and games all can be counted as a way of transfer. We also create situational and cultural context through narratives.

2.7.2 Context and Narrative in Digital Games

Narrative is also the basic design element of a role-playing game. It is possible to speak of two main categories of narrative in role playing games. In this study students will be introduced personal narratives and designed narratives through a story-based role-playing game. In a sandbox game, players are free to act as they wish in a designed world without following a story line. While game design elements and rules still work in such games, game enables players to create their own gameplay experience through exploration of the world around them, which is a perfect opportunity for conducting game journaling applications. On the other hand, story-based role-playing games follow a plot as it can be inferred from the term itself. This type of games offers less choice for the player during the gameplay. The world inside the game enables players to explore the scene to some extent, yet at the end, it narrows down the options to the ones that will make the narrative continue as it was written beforehand by the designer. In other words, it can be defined as a sort of movie that you can explore your environment and control the actor.

2.8. Attitudes of In-service and Pre-service Teachers towards Digital Games

Increasing popularity of digital games as leisure activities and reported potential educational benefits that can be found in digital games led scholars to focus on investigating opportunities for future applications. Literature has shown educational benefits of digital games in different subjects such as health, social issues, science, business, mathematics and statistics (Nte & Stephens, 2008; Wijers, Jonker & Kerstens,

2008), engineering and computing (Papastergiou, 2009), language (Miller & Hegelheimer, 2006; Yip & Kwan, 2006) and history (Akkerman, Admiraal & Huizenga, 2009). Studies investigating digital games in language learning focus mainly on two different categories as digital game enhanced or COT (Commercial Off the Shelf) applications which can be defined as using digital games that are not designed with educational purposes and digital game based or SG (Serious Game) applications which include games designed mainly for educational purposes.

Previous studies focused mainly on student achievements and their attitudes. Studies conducted on attitudes of students for SGs found positive attitudes (Doe, 2014; Jantke & Hume, 2015; Howland, Urano & Hoshino, 2013; Romero & Barma, 2015) while study of De Grove, Van Looy and Mechant (2011) revealed negative attitudes. It was also linked that SGs led to more positive attitudes and higher motivation than CALL software (Kocaman & Kizilkaya-Cumaoglu, 2014b). However, it is important not to forget the main actors of this play are teachers who are actively teaching in the field and prospective teachers who will begin their professional career in a couple of years. No matter how many studies researchers conduct and find empirical data on effectivity of using digital games in educational context, their actual integration into classrooms will not occur until teachers become aware of them and believe adopting will make life easier, benefit their students and facilitate their teaching. For this reason, investigating attitudes of professional and pre-service teachers has critical importance on cultivating maximum benefits of using digital games in educational situations.

Findings related to attitudes of teachers towards digital games have conflicting results because there are many different variables constituting beliefs such as “their life, their home and social experiences, their experiences of the educational system and their studies at the university, where they are being trained as teachers” (Gómez-Pablos, del Pozo & Muñoz-Repiso, 2017). This contradiction can be seen in many teacher attitude and belief studies. Millstone (2012) found that teachers have positive attitudes towards using digital games in the classroom and possible benefits can be stated as increasing collaboration and attention especially for low level students studied in United States. Wastiau, Kearney, and Van den Berghe (2009) found that 70% of teachers were using digital games in educational activities and 80% were interested in improving themselves (p.36-40). Another study on teacher attitudes showed that 65% of Finnish teachers told that they are using digital games in classroom (Klemetti, Taimisto & Karppinen 2009). On the other hand, results of survey conducted by Futurelab showed that 72% of teachers

said they never play video games (Sandford, Ulicsak, Facer & Rudd, 2006: 18). In terms of educational benefits of digital games two third of teachers expressed positive attitudes towards use of digital games in classroom, while a third pointed negative attitudes. There are also other studies investigating teacher attitudes (Bakar, Inal, & Cagiltay, 2006; Barbour & Evans, 2009; Kenny & McDaniel, 2011; Kennedy-Clark, 2011; Ketelhut & Schifter, 2011, Bedir & Muftuoglu, 2016).

Noraddin and Kian, (2014) found that majority of Malaysian university teachers have positive attitudes using digital games in their classroom. Furthermore, AEVI (The Spanish Association of Video Games) worked on teacher attitudes and digital games, as well. Murás and Hernánz (2011) conducted a study with 511 Spanish teachers for investigating their attitudes towards using digital games in classroom and they concluded that 78.7% of teachers had positive attitudes towards using digital games in classroom. In some studies, general view is that teachers do not have positive attitudes and not willing as much as learners to integrate digital games into classroom because of generation gap (Alyaz & Genc, 2016). It was also emphasized that even teachers having positive attitudes had low digital game literacy and pedagogy (Chandler, 2013; Karadag, 2015; Millstone, 2012; Ince & Demirbilek, 2013), particularly previous generation teachers (Blamire, 2010; Breuer, 2009; Sandford et al., 2006). On the other hand, majority of teachers report they do not use digital games in teaching practices however they agree on potential benefits of using digital games in the classroom (Bedir & Muftuoglu, 2016) because of pedagogical and technical constraints (Alyaz & Genc, 2016). Meletiou-Mavrotheris and Mavrotheris (2012) describes this phenomenon by emphasizing on teachers' incompetency at how to integrate educational games into education.

In addition to teachers on the field, another point that should be focused is teacher education and prospective teachers. Teacher education is important in terms of preparing student teachers with professional development activities and courses, make them aware of new opportunities and practices to use in classroom environment (Al-Issa, 2009). Furthermore Popescu, Arnab, Berta, Earp, De Freitas, Romero, Stanescu and Usart (2011) states that "it is expected that good teachers should be able to integrate games effectively so as to provide meaningful learning experiences in their classrooms". Studies focusing on pre-service teacher education found that previous knowledge an experiences effect attitudes and use of digital media and new technologies. (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur & Sendurur, 2012; Lambert, Gong, & Cuper, 2008; Tondeur, van Braak, Sang, Voogt, Fisser & Ottenbreit-Leftwich, 2012).

Supporting this Topçu, Küçük and Göktaş (2014) point out to the fact that there is a need to explore how aware student teachers are in terms of educational games emphasizing on lack of enough research on the field in Turkey. Preventing problems and obstacles that in-service teachers state despite being willing in terms of integrating digital games into classroom, preservice teacher education is important. Investigating teacher attitudes on digital games will enable teachers and practitioners solve problems in development, introduction and utilization of digital games in education (Noraddin & Kian, 2014). It can be achieved by training teachers and help them gain necessary skills before they start their professional career. For this reason, teacher educators should focus on equipping prospective teachers with awareness and possible uses of digital games in educational situations (Karadag, 2015).

Scrader, Zheng, and Young (2006) studied 203 pre-service teachers and they found pre-service teachers value digital games in the classroom, however they pointed out that some game genres might not be valuable learning materials. Similarly, Can and Cagiltay (2006) examined 116 pre-service teachers. Results showed that participants believed digital games are useful tools and they indicated their plans to use in their future teaching practices.

Ertzberger (2009) investigated attitudes of 390 pre-service teachers. They reported positive attitudes toward digital games, but they also stated that games should align with level of students and curricular frames. Hsu and Chiou (2011) conducted a study with 125 pre-service teachers investigating their attitudes towards digital games. Results demonstrated that most pre-service teachers had positive attitudes towards digital games. Furthermore, 68.8% participants believed it is possible to use digital games in classroom.

In another study, Pastore and Falvo (2010) studied 53 in-service teachers and 45 pre-service teachers. As a result of the study it was found that both in-service and pre-service teachers had positive attitudes towards digital games for enhance learning, motivate students, and incorporating visual representations into educational practices (cited in Gómez-Pablos, del Pozo & Muñoz-Repiso, 2017). Additionally, they emphasized that 60% of pre-service teachers and 55% of in-service teachers used or intend to use digital games in classroom and 71% of the pre-service teachers and 77% of the in-service teachers viewed integrating digital games as educational tools can be effective (Pastore & Falvo, 2010).

Hayes and Ohnberger (2013) studied with 223 pre-service teachers for

investigating their attitude towards digital games. It was seen that 93 participants were active gamers. Moreover, 51.6% of participants reported they played digital games before first grade. Wu (2015) worked with 116 pre-service teachers and in-service teachers. Most teachers reported positive attitudes towards digital games and their use of digital games were limited to mobile games. Another study conducted with 75 pre-service teachers (18 from early childhood program, 14 from special education, 15 from middle school, 24 from secondary education and 4 from other programs) was at the University of Cincinnati (Bensiger, 2012 cited in Gómez-Pablos, del Pozo & Muñoz-Repiso, 2017). While results show that pre-service teachers have positive attitudes towards educational potential of digital games in education, they believe there are barriers for effective integration of these tools. They also added that they would be interested in using digital games in classroom if they had opportunity.

Twenty-three physical education pre-service teachers in United States participated in the study of Jenny, Hushman and Hushman (2013) investigating their perceptions on motion-based video gaming in education. Findings show that participants reported positive attitudes towards motion-based video gaming in education. They confirmed that it is fun and enjoyable, increases student motivation and student physical activity but they did not believe it would be as much effective as actual sport activities.

Ruggiero (2013) surveyed 1704 teachers 656 of which formed by pre-service teachers indicated that 75% of pre-service would be willing to participate if they were given a chance to take courses introducing how to use digital games in the classroom.

Another study investigating attitudes of pre-service teachers in terms of potential uses was conducted by Ray, Powell and Jacobsen (2014). They worked with 41 pre-service teachers to understand their attitudes towards using digital games and their desire to what extend they wish to implement these tools into their educational activities. Results demonstrated that participants had positive attitudes. They believed that digital games might contribute to student-centered and meaningful learning, increase students' likings towards the learning process and address learners from different learning styles. On the other hand, as it was also emphasized in this study as it was done in previous studies that majority of participants (80%) believed teachers need to be trained for integrating digital games in educational practices (Ray et al., 2014).

Cózar-Gutiérrez and Sáez-López (2016) studied on 89 master's students in primary education course at the University of Castilla-La Mancha, Spain. They used MinecraftEdu to teach historical and artistic content by taking pedagogical factors into

account. At the end of the implementation 95% of the participants indicated positive attitudes towards using digital games in education and they stated that preservice teacher training is required in terms of using digital games.

In another study Gómez-Pablos, del Pozo and Muñoz-Repiso (2017) worked with 193 pre-service primary education teachers and results showed that pre-service teachers expressed positive attitudes towards video games. However, it is important to emphasize that they also found that the more time students spend playing digital games the more competent they tend to be. Moreover, male students have more positive attitudes towards using digital game activities (Gómez-Pablos et al., 2017).

2.9. Theoretical Background

History of using digital games with educational purposes can be separated into three generations. Although there is not a clear-cut distinction between these generations and some parts are still connected to each other, the difference emerges when main focus they give importance is analyzed. First generation games depend on behavioristic approaches. The number of repetitions is thought to be the main focus and achievement is characterized by simple behavioristic models of stimuli and response (Uusi-mäkelä, 2015). Edutainment activities are categorized under this generation. Learner or context is not important and differences in terms of experience between students cannot be foreseen. Figure 1 illustrates three generations of gaming in education and their relationship:

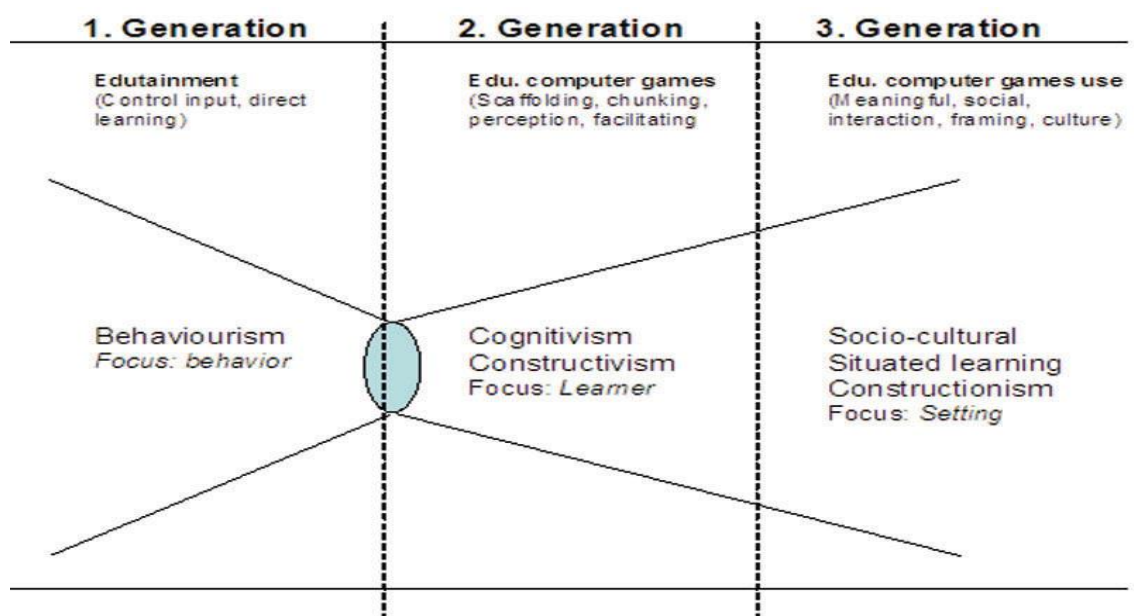


Figure 1. Three generations of learning games

Source: Egenfeld-Nielsen, 2007

Speaking of learners, they form the main focus of second generation. Changing perceptions towards first generation activities and failure of stimulus response approach makes the way for another focus which is emphasizing peculiarity of each learner. This generation activities such as scaffolding, chunking, perception and facilitating enables focusing on personal experiences. When it comes to third generation of games we can see the main focus is context rather than behavior or learner. It was explained that this generation approaches games as context instead of a content, interaction and participating in communities local or online comes forward. Egenfeld and Nielsen makes a distinction between second generation and third generation by emphasizing on constructionism.

The construction of knowledge, as meaningful through your orientation in a social context, becomes paramount in 3rd generation games. Instead of conceiving content, skills and attitudes as residing with the user, knowledge is transferred to culture, tools and communities (Egenfeld-Nielsen 2007, 275).

Taking third generation theories and approaches as main background of this study, it is possible to state that learning in digital games can also be explained by pedagogical learning theories such as situated learning and experiential learning. Situated learning having roots in Gibson's theory of affordances and Vygotsky's social learning, argues that learning as it normally occurs is a function of the activity, context and culture in which it occurs (Lave & Wenger, 1991). Experiential learning content need to "include experiential learning: learning from actual experiences; mobile learning: learning from observation, attempts, and implementation; reflective learning: reinforcing living abilities from a series of reflection; ability learning: stressing more on learning ability than knowledge acquisition in the entire learning process (Agarwal & Mittal, 2014). Situated learning in contrast to traditional learning theories takes function, context and culture into consideration which are critically important factors that most classroom activities and materials lack today. It has been applied in the context of technology-based learning activities for schools that focus on problem-solving skills (Hmelo, Williams, Vye, Goldman & Bransford, 1993).

Kolb (1984) argued that developing new concepts is mainly about gaining more and more new experiences. So, he developed his learning style model and experiential learning cycle (Kolb, 1984). Kolb's experiential learning consists of four stage learning cycle. The stages of which can be counted as: 1. Concrete Experience - (a new experience

of situation is encountered, or a reinterpretation of existing experience), 2. Reflective Observation of the new experience and particular importance whether there is any inconsistencies between experience and understanding), 3. Abstract Conceptualization (Reflection gives rise to a new idea, or a modification of an existing abstract concept), 4. Active Experimentation (the learner applies them to the world around them to see what results).

Russell (2006) developed a pedagogical frame that can be applied to the use of games after using a digital role-playing game in his history class based on “*A Pedagogy of Multiliteracies: Designs for Social Futures*” report. His model was similar to Kolb’s Learning Styles Model however it was only designed for role playing games. The model which he suggests as a fourfold model:

First, situated learning in a virtual environment: through role play, students develop an embodied empathy for their virtual persona, gaining a deep and tacit understanding of a web of social relationships. Second overt instruction and reflective discussion: in addition to the game, the teacher leads discussion/activities that encourage analytic reflection in the student. Third, practical media production: assigned production tasks that require the re-application of knowledge, in a particular point of view. And lastly, critical framing: role playing games allow for flipping perspective on its side, having the potential for bottom up history not normally presented in traditional sources such as textbooks and lectures (Russell, 2006).

Francis argues that games might provide the situated practice missing from most educational approaches. From this point of view, we might conclude that if we want to integrate games into instructional use, we need to find a way to do it without spoiling their nature which enables learning. Accomplishing this depends mostly on how we understand or approach to language. Seeing language as being ultimately about communicating with others and creating social interactions leads us to the principles of constructivist theory and specifically social constructivism. The primary message of constructivism is that active learning enables students to construct their own knowledge and make their own meaning of what is being thought. Marlowe and Page summarize the foundation of a constructivist approach as being about constructing knowledge, not receiving it; about thinking and analyzing, not accumulating memorizing; about

understanding and applying, not repeating back; being active, not passive. (Marlowe & Page, 2005). Constructivism suggests applying learning by doing, learning through experiences which is also emphasized in experiential learning and cooperative learning such as pair work, group work or any other social forms of learning, creative and active participation in classroom activities, learning by preparing various projects and the like.

Social constructivism is rooted from Vygotsky's psychosocial theory. It can be concluded that teacher's role here is not being the one who transfer knowledge, rather help construct it in students' mind. That's why cooperation of peers is important here. Again, as a result, cooperative activities such as pair work, group work or any other social forms of learning have great importance in this approach. A language classroom atmosphere prepared by taking constructivist approach as base might include activities having elements such as designing and pursuing research and projects, role playing, situational and contextual, discussions and debates, interactive, collaborative, meaning making, real life examples, portfolio evaluation, active student participation, fantasy, creative, reflective, reflect the complexity of the world, autonomous, readers response, perception aesthetics. Additionally, students can construct knowledge by writing poems, short plays, song lyrics, journals, diaries, memories, travelogues, interviews, new endings for stories or songs; creating and designing posters, cartoons, timelines, models, charts etc. In this study narrative activities will be used as a way of constructing knowledge of students participating in the study.

The learning cycle of constructivism, according to Lawson (1989) suggests three step learning models for applying constructivist activities. They theorized three stages which aim to improve students' reasoning skills: exploration, term/concept introduction, and concept application. In the first stage students are encouraged to explore a phenomenon and identify the pattern. In the second stage patterns explored in the first stage are reinforced, modified or changed by examining the rules. And in the third stage concept application makes sure that students have the ability to apply concepts learned and use them in new situations. This model used to be applied frequently in science education which requires real life experiences more often than theoretical information. Three staged game application sessions of this study have roots based on the theories mentioned above, despite being not exactly the same in nature and structure. Explore, examine and extend activities that will be used in this study will enable participants to first explore concepts and then apply during gameplay sessions and aim to apply concepts learned in earlier stages to extended new situations.

2.10. Chapter Summary

In this chapter, related literature of this study was presented. First integration of computer in education with CAI and in language learning and teaching context CALI were explained. Later, GBL and GBLI which were relatively new fields in terms of research and data collected were introduced. Additionally, context in digital games and language learning and their parallels were explained. Following that attitudes of in-service and pre-service teachers were demonstrated referring to the previous studies. Lastly, theoretical background for procedure and activities designed were mentioned.



CHAPTER III

METHODOLOGY

3.1. Introduction

The main aim of this chapter is to present the design implemented in this research by referring to the rationale behind data collection and analysis procedures. In this context, participant selection of the study and the chosen sampling method, research context, data collection and data analysis tools were explained respectively.

3.2. Research Design

The present study was designed based on explanatory sequential mixed method approach. Mixed method studies have several strengths when compared to using qualitative or quantitative approaches. Qualitative studies are generally used for collecting open ended responses which are not pre-determined, while quantitative studies are used for close questions that direct participants to select one of the options given such as in questionnaires or psychological instruments (Creswell, 2014). “Quantitative studies emphasize the measurement and analysis of causal relationships between variables, not processes.” (Denzin & Lincoln, 1994). Mixed-method research can help clarify and explain or to explore relationships existing between variables and to confirm or cross-validate relationships discovered between variables (Fraenkel, Wallen & Hyun, 1993). It was also emphasized that mixed method studies are used for broad and deep understanding and interpretation of collected data (Johnson, Onwuegbuzie & Turner, 2007).

Explanatory sequential mixed method approach involves two-phased research process. In the first phase researcher collects quantitative data, analyze the data and plan the following qualitative process based on the analysis of results (Creswell, 2014). In the explanatory design quantitative and qualitative data are collected and evaluated separately. Quantitative data shows way for qualitative process where depth analysis of variables would be possible (Fraenkel, Wallen & Hyun, 1993). Figure 2 below shows explanatory design which was adapted from (Creswell, Shope, Plano Clark & Green, 2006):

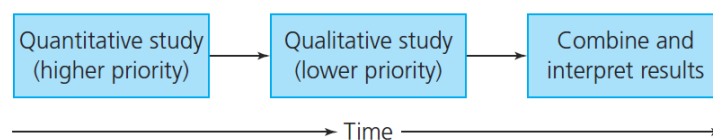


Figure 2. Explanatory design

Adapted from (Creswell, Shope, Plano Clark & Green, 2006)

The present study aimed to investigate attitudes of Turkish Pre-service EFL Teachers on digital games in the first phase through a five-point Likert scale and then deeply investigate reflections of selected participants who were Turkish Pre-service EFL teachers, on their experiences of digital game enhanced activities through designed narratives within a story-based role-playing game in foreign language learning context by semi structured interviews. With these purposes series of sessions introducing game enhanced foreign language learning and teaching to Turkish Pre-service EFL Teachers in a state university were applied and reflections of participants on their; explore, examine and extend activities during game sessions were noted and evaluated under three criteria as *high*, *medium* and *low attitude* participants.

The role of researcher in quantitative and qualitative studies is different from one another. In quantitative studies researcher is not a part of the study, in theory, because the data collected through questionnaires, scales, inventories which do not require researcher to actively intervene in the collection process. However, this is not the case in qualitative studies as the researcher is considered as an instrument of data collection (Denzin & Lincoln, 1994). Since this study also aims to clear the path for familiarizing Turkish Pre-service EFL Teachers and introducing digital game enhanced activities, researcher will be involved in study while collecting qualitative data through semi structured interviews and analysis procedure.

3.3. Participants and Sampling

Participants of first phase of the study were selected from third year EFL students who were actively participating in Educational Technologies and Material Development course at 2017-2018 Spring semester and volunteered to participate in the study and completed scales given. As a result, 88 participants volunteered to be a part of the study. Participants were distributed in terms of gender as 29 male which formed 33% of all the

participants and 59 female which formed 67% of all the participants completing game attitude scale. On the other hand, participants' ages ranged between 19 to 32, however 23.9 was the average age of all the participants took part in the study. For the second phase where game sessions were applied, and qualitative data collection conducted, participants were selected by stratified sampling method upon completing Revised Computer Game Attitude Scale (Liu, C.-C. et al. Eds., 2014). Using simple random sampling could have resulted in choosing only students who had positive *high attitudes* towards digital games and this would mislead the findings of the study. Thus, the findings of the study were analyzed within three different groups including students having *high*, *medium* and *low attitudes* towards digital games. After the analysis of the results three participants from each group were selected based on stratified sampling method, however one of the low attitude participants could not complete the procedure due to personal problems and replacement could not be possible, as study progressed for a few weeks. For this reason, data collected from 2 participants (1 high attitude and 1 medium attitude) were not included in the analysis to be able to reach reliable findings. Therefore, 2 *high attitude*, 2 *medium attitude* and 2 *low attitude* students, 6 in total, formed the sample of second phase in the study.

While *explore* and *examine* sessions of the study were held individually, which were flexible in time and were decided according to suitable time periods of students and researcher, *extend activities* included pair, group and whole class works, which were stable and determined beforehand.

3.4. Research Context

This study was conducted in spring term of 2017-2018 academic year with 6 third year students in ELT department of a state university in Turkey. All the participants were actively participating in Educational Technologies and Material Development course; however, sessions were not carried out in a regular classroom context. The game play process lasted 6 weeks in total, but each student had different number of sessions in order to complete the game. Every student participated in 1 Explore session at the beginning of the study and 2 *extend sessions* at the end, while Examine sessions during which participants played the game and completed necessary forms, they were free to complete the game according to their self-pace. The fact that the number of sessions differed for each participant to complete the game were not taken as a variable in this study because

all participants completed the game and they were asked for their overall reflections of the process, activities and stages, which was not related with the number of sessions they completed.

3.5. Data Collection Tools

This study investigated attitudes of third year Turkish Pre-service EFL teachers on digital games in the first phase through a five-point Likert scale and then deeply investigate reflections of selected participants who were Turkish Pre-service EFL teachers, on their experiences of digital game enhanced activities through designed narratives within a story-based role-playing game in foreign language learning context by semi structured interviews. With these purposes series of sessions introducing game enhanced foreign language learning and teaching to Turkish Pre-service EFL Teachers in a state university were applied and reflections of participants on their; explore, examine and extend activities during game sessions were noted and evaluated under three criteria as high, medium and low attitude participants.

Revised Computer Game Attitude Scale was given to all volunteer third-year pre-service teachers at the ELT department to collect data on their attitudes towards playing games as leisure activities and educational values of digital games. Then, they were interviewed at the end of the research process for their reflections on the game they played, overall process, explore, examine, extend stages; materials used in these sessions and insights and intentions for future teaching practices in terms of using digital game enhanced activities.

3.5.1. Revised Computer Game Attitude Scale

The original Computer Game Attitude Scale (Chappell and Taylor, 1997) has been proven to have strong validity and reliability. Nevertheless, it had twenty items and two main sub-factors and only investigate *comfort and liking*. Realizing that Liu, Lee and Chen (2013) started to develop another scale based on the original scale designed by Chappell and Taylor (1997) and they called it New Computer Game Attitude Scale (Liu, et al., 2013). NCGAS had 60 items at first however 22 items left following validity and reliability test under three subscales and five factors, as *cognition* which includes confidence and learning; *affection* which includes liking; *behavior* which includes participation and leisure.

The research team studied for further investigation of validity and reliability of NCGAS to make it understandable even by 6 years old children based on the comments and suggestions made by reviewers. The last version of the scale was called Revised Computer Game Attitude Scale (RCGAS) having 17 five-point Likert scale (5 for "Strongly Agree" to 1 for "Strongly Disagree") and being categorized under four factors as Confidence (users' confidence in playing the computer game), Learning (users' perceptions of positive impact when computer games are used in learning), Liking (users' perceived enjoyment for playing computer games) and Leisure (users' thoughts on taking playing computer games as leisure activities).

As a result, investigating attitudes of third year Turkish Pre-service EFL Teachers on digital games was conducted by Revised computer Game Attitude Scale designed by (Liu, et al. Eds., 2014) in this study (See Appendix 1).

3.5.2. Semi-Structured Interview

Semi structured interviews are considered as a qualitative data collection tools. A semi structured interview is conducted in a formal context between interviewer and respondent. In a semi structured interview researcher prepares an interview guide with set of topics to cover and series of questions to ask. This guidance sets the scope of the interview however interviewer might let conversation flow to another question that were not prepared beforehand as soon as they are still related to the scope (Bernard, 1988). In this study a semi structured interview prepared by the researcher was used instead of a structured interview because it was considered that being flexible could give more profound data in terms of reflections of prospective teachers (See Appendix 2).

3.6. Procedure

This study was conducted in spring term of 2017-2018 academic year. At the beginning of the study third year Turkish Pre-service EFL teachers in ELT department were given Revised Computer Game Attitude Scale (Liu, et al., 2014). The results of the scale were analyzed under three groups as *high*, *medium* and *low* in terms of attitudes of participants towards digital games, which were going to be used for selection of participants for game enhanced sessions via stratified sampling. Selected participants were asked whether they wanted to participate in the study or not. One of selected participants from *low group* did not accept to be involved in the study, so another

participant selected beforehand as a cover from the *low group* were requested to join in the study. Therefore, 3 *high attitude*, 3 *medium attitude* and 3 *low attitude* participants, 9 in total, were selected for the participating in the study. Nevertheless, one of the *low attitude* participants could not complete the procedure due to personal problems and replacement could not be possible, as study progressed for a few weeks. For this reason, data collected from 2 participants (1 *high attitude* and 1 *medium attitude*) were not included in the analysis to be able to reach reliable findings. Therefore, 2 *high attitude*, 2 *medium attitude* and 2 *low attitude* participants, 6 in total, formed the sample of second phase in the study.

The researcher himself played and reviewed the game in order to be prepared and prevent any problem that could emerge later. Then the researcher set up an introductory meeting for the participants to inform them about the procedure. A social media group was created in a messaging platform with the aim of bringing all the participants together in a place where they could discuss and follow necessary updates. The researcher also made a schedule for weekly gameplay sessions for each participant and informed them about their gameplay time and date. Also, whole class activities were planned accordingly.

At the beginning of the study all participants joined in the *explore session* individually. They explored principles of the game selected and tried to improve their game literacy specifically for the game they played. In this session they watched trailer and review videos of the game, read comments and articles and guessed what might be the story and goal of the game. Later they played the game and explored controls, game world and interface of the game. This session lasted an hour to complete and at the end they filled Learning the Tutorial form.

Next, they started *Examine sessions* which differed in number because each participant completed the game at their own pace. This means some participants completed the game at four sessions, while others needed six sessions to complete. The number of sessions to complete the game for each participant was not a variable in this study because all participants completed the game and they reflected on the overall process. In *Examine sessions*, different from *Explore sessions*, participants needed to play the game critically because they were supposed to fill the materials given. Sometimes they paused the game and completed the necessary part in the activity and then continued. *Solving the Puzzle*, *Character Description*, *Setting Description* and *Plot Description* activities were used in *Examine sessions*. During the session they noted each new

character they controlled or met by describing their appearance, characteristic and role in the game. Also, they reflected on the character by mentioning how this character made them feel. *Setting Description form* was similar to *Character Description form*. Again, whenever they encountered a new place in the game world they noted and described this place. With *Plot Description form* participants were asked to remember details from the narrative of the gameplay such as the order of actions happened, and characters involved in the actions. They also mentioned their predictions for the following parts of the story.

The last stage of this study including game related activities was *Extend Sessions*. Participants prepared a follow up project in pairs, which led students to be creative and think critically.

In the game, characters do not speak but use other ways of communication elements to transfer messages and feelings they would like to express. They imply what they mean by sounds they make or gesticulations and mimics. In this activity participants were asked to write dialogues for a specific part of the game that was selected by the researcher and recorded their voice on the video to create a movie. They needed to guess what the characters might have wanted to say or felt by looking at the contextual cues. It also included use of language and practice of language skills. After all pairs completed creating their movies, all the participants came together in a whole class meeting, watched their movies and reflected on the dialogues they created in the movie.

At the end of three stages mentioned above all participants were interviewed for their reflections on the game they played; *explore, examine, extend sessions* and *materials* used in these sessions. Also, their overall evaluation was asked covering all general thoughts on the application and future plans of participants in terms of using digital game enhanced language learning and teaching applications in their professional teaching experiences.

Following the data collection process, the researcher analyzed collected data and started writing process.

3.6.1. Steps Followed while Designing Story Based Digital Game Enhanced Activities

Second phase of this study included an application of digital game enhanced language learning procedure through a story based digital role-playing game and activities designed around this game. With the aim of reaching valid and reliable conclusions design of the application was based on a theoretical background and each step taken were noted.

The procedure was adapted from Felicia (2009) and Sykes and Reinhardt (2012). Design of the procedure with steps taken can be seen in Table 2 below:

Table 2

Steps Followed while Designing Story Based Digital Game Enhanced Activities

Step 1	Evaluating available sources and applicability
Step 2	Setting goals / Deciding on Learning outcomes
Step 3	Searching for potential games to use
Step 4	Selecting appropriate game
Step 5	Preparing activities
Step 6	Setting up the atmosphere

As can be seen from Table 2 above, six steps were followed while designing digital game enhanced language learning application in this study. It was noted that the first step to be given thought was *evaluating available sources and questioning applicability*. Secondly, *setting goals / deciding on learning outcomes* was mentioned as another important step that should be considered. Following steps were remarked as *searching for potential games to use, selecting the appropriate game, preparing activities* and *setting up the atmosphere* before beginning digital game enhanced sessions.

Answering “why” question was important and accomplishing this was only possible by setting goals and deciding on learning outcomes. Otherwise, there would not be a criterion to move forward in planning the procedure. Also, it wouldn’t be possible to narrow down choices. Due to parallelism found between context and narrative in digital games and language learning (Sykes & Reinhardt, 2012) story based digital game genre was decided to be used in this study (Felicia, 2009). In addition to these goals, it was also thought as main learning outcomes that practicing language skills in an integrated way. As for subsidiary outcomes they were aimed to practice problem solving, decision making, collaboration and cooperation skills.

Looking for potential games was integrated with deciding on goals and learning outcomes and game selection processes. Role Playing Games (RPGs) were the most appropriate game genre to focus on context and narrative based on Taxonomy of Digital Games (Felicia, 2009). A digital role-playing game is a type of game where players see and interact with the game world simulated through eyes of a character and take actions as if they were in place of the character they control. There are different kinds of digital role-playing games that form this genre. Digital Role-Playing Games can be categorized

under two main titles. The first category is about the number of players. While some role-playing games are played individually, others are played with two or more players.

Single player games do not require internet connection and players only interact with the characters designed by the developer. On the other hand, multiplayer games can be played within a local network with players in the same room or with players around the world via internet connection. These games are called MMPORGs (Massive Multiplayer Online Role-Playing Games) and frequently studied by researchers in terms of language interaction that players perform while playing the game online.

The other category that can be mentioned for digital role-playing games is the plot and narrative used in the game. Narrative is a key design element of digital games that makes them meaningful. Single or multiplayer, all role-playing games include personal and designed narratives. Designed narratives are seen in story based digital role-playing games. While players can explore the game world to some extent, they end up taking actions given by the game developer. These games follow a storyline just like a movie or a novel, however the experience of each different player playing the game differ based on how they follow the storyline which is called personal narrative.

On the other hand, some digital role-playing games allow players to create their own experiences within the scope of general plot of the game. These games are freer than story-based role-playing games. Players do not need to complete specific tasks to pass another level and complete the story, rather they can complete tasks in an order they would like to follow or when they explore them incidentally. The game ends when the characters die, or the player does not want to play anymore. As a result of the search for potential games to use, 5 games were identified to be possibly used in the application. Names of the possible games can be seen in Table 3:

Table 3

Games Selected for Possible Use

Genre	Games	Platform	Cost	Player Config.	Type
Story Based RPG	Firewatch	PC & Console	Purchased	Single Player	Traditional
	The Last of Us	Console	Purchased	Single Player	Traditional
	Kona	PC & Console	Purchased	Single Player	Traditional
	Last Day of June	PC & Console	Purchased	Single Player	Traditional
	Adrift	PC & Console	Purchased	Single Player	Traditional

(Sykes&Reinhardt, 2012 p. 143-151 Guide to Game Types and Genres)

After searching for possible games to use, evaluating these games and deciding on a game to use in the study was needed. For this reason, games presented in Table 3 were evaluated under three criteria as *technical considerations*: user interface, saving and loading the game, audio, customization; *contextual considerations*: age group, language, time, taking account of people with disabilities, network games and *pedagogical considerations*: learning curve, educational content, clear progression, feedback, opportunities for collaboration and group work, assessment and follow up (Felicia, 2009).

Taking technical considerations into account user interface of all the games mentioned in Table 3 were clear to understand, all games enabled players to save their game and load when they play again. One thing to consider here was that all the games had cut scenes and checkpoints which mean the game would not save the progression if you log out before reaching to a certain level. This was an important consideration for designing series of sessions in the classroom. Therefore, time allowed for students to play the game in each session should be enough for each player to complete at least one checkpoint. Another factor in technical consideration part was audio features of the games. Each game had sound effects and they were easily adaptable. However, characters in all five games were not customizable.

Contextual considerations were other criteria for evaluating selected games. Participants of this study were university students who were at least 19 years old. So, activities and skills required in all games were suitable for their age group. The level of the language again was not thought to be a problem for participants both because they were university students and they were studying in English language teaching department. Nevertheless, use of bad language in the conversations characters performed while playing the game were seen in *Firewatch* and *Last of Us*. Besides, *Last of Us* game had violence elements and *Kona* had supernatural creatures which might not be welcomed by some participants. Even if age of participants joining in this study were above 18, these games were eliminated not to cause any discomfort and clarify variables.

Estimating time required for completing a whole game is not exactly possible, due to individual differences. However, game developers may estimate time required for completing games they designed. This is comparatively easy in story based digital games, because player control over the choices and narrative is not as free as control in other games. Approximate game play time for all the games were between 3 to 4 hours of gameplay for the games selected for possible use in this study. However, *Adrift* takes place in a space station where there is not any gravity and designers of the game wanted

to make sure gameplay reflects real like experiences which made *Adrift* the hardest game among all selected games in term of learning game controls. As a result, gameplay time for participants who were inexperienced in playing digital games could take longer than estimated. Therefore, it was thought that *Adrift* could cause delay during game sessions and it was not considered for the study.

Another issue was taking account of people with disabilities. It was important to give some thought on this issue in case there might be students with visual, auditory or physical disabilities. Games mentioned above were adaptable for people with auditory disabilities at some degree in that they all allow using subtitles for conversations and signs or messages given on the screen for feedback or guidance. They had also adaptable controls which could be useful for people with physical disabilities, but they were not designed for these people and these adaptations might not be enough for all disabilities. On the other hand, these games were not thought to be suitable for visually impaired students because these kinds of disabilities require specific design features. Lastly, Network was not a criterion for evaluation in this study because all games could be played offline.

Pedagogical considerations were also evaluated for each game mentioned in Table 9. First, Learning Curve of the games were evaluated. Learning curve means allowing players to make mistakes at the beginning. When this was taken into consideration it was seen that all games allowed players to start over when they fail or cannot progress further. Nevertheless, only game having a tutorial part was *Adrift*. Second element was Educational Content, meaning what extend a game is related with topics, concepts taught. Also, it means evaluating game objectives in terms of clarity to avoid feeling stuck because of vague instructions. Educational content in this study was based on context and narrative activities that allow practicing language skills with wrap-around activities designed to be completed in pre, while and post-game sessions. It was seen that all the games had context and narrative in gameplay. However, there is one thing to emphasize, all games again had potential to cause feeling of stuck at some point because game developers wanted players to explore the game world to progress and create a balance between flow and agency.

To sum, games selected for possible use in the process were evaluated in terms of technical, contextual and pedagogical considerations. It was seen that *Firewatch* and *Last of Us* had bad language use in game conversations. Also, *Last of us* and *Kona* included violence and horror elements. *Adrift* was a suitable game in terms of goals and outcomes,

and did not have any the problems *Firewatch*, *Last of Us* and *Kona* had. However, game control of *Adrift* was not easy for beginners and could cause delay in sessions. In conclusion, *Last Day June* was selected as the game to be used in the study and activity preparation was started.

The game used in this study was a story based digital role-playing game developing around a designed narrative. *Last Day of June* tells the story of a loving couple, June and Carl, in which June dies because of a car accident and Carl cannot walk anymore. We go back in time with Carl and play different characters such as the little boy, blonde lady, hunter and the old man. These characters somehow effect the day June dies, so our task is to change the actions of these characters ending up with June's death. However, each time something else comes up like a butterfly effect and June dies again. At the end of the game Carl accepts that the only way to save June is to sacrifice himself and saves June while he passes away.

While playing the game players open the days of the characters in an order and cannot change this because the story should progress as planned. Each character has cards which indicate the number of options we have for this character. Nevertheless, solving the puzzle is left to the player and they can decide on which character and action to choose by going back in time after playing the day of a new character one time. Here players experience a combination of designed narrative and personal narratives.

As it was mentioned above, characters in *Last Day of June* do not use words for communication, instead they use tone of voice rising or falling intonation, gesticulations and mimics. With this in mind, *Designing Narrative* materials which were *Character Description*, *Setting Description*, *Plot Description* and *Extend Project* (Sykes and Reinhardt, 2012. 84-87) were decided to be used in the process.

Last step taken before conducting story based digital game enhanced language learning and teaching example was setting up the atmosphere. This step included deciding on a room or classroom where the sessions would take place, setting up computer or console that will be used, installing the game, and checking if everything works or not. Then preparing a schedule in coordination with participant demands and researcher availability.

3.7. Data Analysis Tools

As it was stated before the present study is an explanatory sequential mixed

method study, therefore analysis of tools that were used required both quantitative and qualitative tools. Quantitative data analysis of *Revised Computer Game Attitude Scale* was analyzed based on background of descriptive statistics via Statistical Package for Social Sciences (SPSS, Version 23.0). On the other hand, qualitative data were analyzed via content analysis technique. Semi structured interview for reflections of participants on *explore, examine and extend sessions*; materials used in these sessions; overall evaluation of participants about the study were analyzed through content analysis.

3.8. Chapter Summary

In this chapter, research design of this study was explained in detail by referring to the rationale behind data collection and analysis procedures. In this context, participant selection of the study and the chosen sampling method, research context, data collection and data analysis tools were explained respectively.



CHAPTER IV

FINDINGS

4.1. Introduction

This chapter presents findings of this study through data collection tools mentioned in the previous chapter. Firstly, data collected from *Revised Computer Game Attitude Scale* to find out attitudes of Turkish Pre-service EFL teachers towards digital games are demonstrated. Following this, reflections of Turkish Pre-service EFL teachers on application of a story based digital role-playing game in language learning and teaching context are demonstrated through analysis of semi structured interviews conducted with participants.

4.2. Attitudes of Pre-service EFL Teachers on Digital Games

Attitudes of Turkish Pre-service EFL Teachers are investigated in this study through *Revised Computer Game Attitude Scale* and an open-ended question to collect qualitative data for deeper understanding of participants' attitudes. First, attitudes of whole sample based on the scale given and then selected participants for game sessions are demonstrated.

4.2.1. Attitudes of Total Sample

Attitudes of total sample is given in this section based on the analysis of quantitative and qualitative data collected. This part focuses on findings of *Revised Computer Game Attitude Scale*.

4.2.1.1. Findings of Revised Computer Game Attitude Scale

Computer Game Attitude Scale have been applied to 88 Turkish Pre-service EFL Teachers to collect data on their attitudes towards digital games. The scale consists of 17 items and is categorized under 4 factors as *Confidence* (users' confidence in playing the computer game), *Learning* (users' perceptions of positive impact when computer games are used in learning), *Liking* (users' perceived enjoyment for playing computer games) and *Leisure* (users' thoughts on taking playing computer games as leisure activities). Following data collection process answers of the participants were analyzed under three

categories based on their mean scores as Low scores (1 - 2.6), Medium scores (2.61 - 3.40) High scores (3.41 - 5). The reason behind this categorization was to find out distribution of participant tendencies in order to use them in selection of participants to take part in game activities based on stratified sampling method. Descriptive statistics in terms of mean and standard deviation scores of items in each factor related to attitudes of Turkish Pre-service EFL Teachers on Digital Games are illustrated in Table 4 below:

Table 4

Attitudes of Turkish Pre-service EFL Teachers on Digital Games

Factor	Mean	SD
Confidence (CON)	3.54	1.12
Learning (LRN)	3.58	0.87
Liking (LIKE)	3.36	1.15
Leisure (LEI)	2.96	1.27
Total (T)	3.34	1.03

SD= Standard Deviation

Low= 1 - 2.60, Medium= 2.61 - 3.40, High= 3.41 – 5

Table 4 demonstrates mean and standard deviation attitude scores of 88 Turkish Pre-service EFL Teachers towards digital games. Descriptive statistics explaining total and subfactor scores of participants are illustrated in Table 4 above. According to Table 4 “Total” mean score of all the participants was 3.34 (stdT=1.03). It can be concluded that average attitude of all the participants were in *medium* range. Moreover, standard deviation value of total mean score showed that population of the scale consisted of participants having different attitudes towards digital games and was distributed heterogeneously. Further analysis of sub-factors in the scale also demonstrated that mean scores of Confidence and Learning factors were in *high* range with slight changes in value. On the other hand, Liking and Leisure factors were between *medium* range scores. Under these circumstances it can also be inferred from Table 4 that not only total mean scores but also answers given to subfactors of the scale were distributed heterogeneously as it can be interpreted from standard deviation values of each subfactor respectively (stdCON=1.12, stdLRN=0.87, stdLIKE=1.15, stdLEI=1.27).

Results also showed that Learning was the highest factor of all the others with 3.58 mean and lowest standard deviation (stdLRN=0.87). However, Leisure factor resulted in being the lowest of all the other factors with 2.96 mean (stdLEI=1.27). The reason behind this result could be the answers given by *medium* attitude participants.

Their mean scores were 3.38, which is in medium range for Learning factor items in the scale as it was expected. However, their mean scores for Leisure factor items were 2.48 which is evaluated within *low* average range. As a result, overall average of Leisure factor mean score was calculated as the lowest factor. Table 5 shows how participants' answers were distributed in the first four item of the scale which were categorized under Confidence factor of the scale:

Table 5

Attitudes of Participants on Confidence Factor Items of Computer Game Attitude Scale

Factor	Item	Mean	SD
Confidence (CON)	1. I am good at playing computer games.	3.52	1.30
	2. Playing computer games is easy for me.	3.63	1.16
	3. I understand and play computer games well.	3.61	1.14
	4. I am skilled at playing computer games.	3.40	1.21

As it is seen in Table 5, general tendency of the participants is in medium score range for Confidence factor items. Table 5 also demonstrates that Item 2 "Playing computer games is easy for me" has the highest mean ($X_2=3.63$) when compared to other items. On the other hand, Item 4 "I am skilled at playing computer games." has the lowest mean ($X_4=3.40$). Nevertheless, it cannot be argued that there is a contradiction between the answers given by participants in Confidence factor items because mean and standard deviation scores of these items are close to each other by 0.20 scores approximately. Table 6 shows how participants' answers have been distributed in Learning factor items of the scale:

Table 6

Attitudes of Participants on Learning Factor Items of Computer Game Attitude Scale

Factor	Item	Mean	SD
Learning (LRN)	5. I like taking courses that use computers.	3.09	1.28
	6. Using computer games in school is a good way to learn.	3.80	0.99
	7. Playing computer games improves my eye and hand coordination.	3.75	1.14
	8. Playing computer games enhances my imagination.	3.69	1.15

Learning factor mean was calculated as 3.58 in Table 6 where it can be seen within medium range attitude score for participants of this scale. Hereby, Table 4 shows attitudes of participants for items included in Learning factor of the scale. It is obvious from Table 4 that participants thought using computer games as a good way of learning in school ($X_6=3.80$, $std_6=0.99$). Even though Item 6 has the highest mean, Table 6 also shows that participants believe playing computer games improves their eye and hand coordination ($X_7=3.75$, $std_7=1.14$). On the other hand, it can be concluded from Table 6 that participants didn't prefer to take courses that use computers as much as other three items. Given these points, findings of Learning factor items in Table 6 show contradiction within the relationship of items represent. In other words, the fact that participants preferred Item 5 the least, which means they didn't like to take courses that use computers as much, is in contrast with the highest mean of Item 6 and Item 7 where they noted that they believe using computer games as a good way of learning in school and playing computer games improves their eye and hand coordination. In relation to that, Table 7 shows attitudes of Turkish Pre-Service EFL Teachers by taking items in Liking factor of scale into consideration:

Table 7

Attitudes of Participants on Liking Factor Items of Computer Game Attitude Scale

Factor	Item	Mean	SD
Liking (LIKE)	9. I like it when people talk about computer games.	2.96	1.40
	10. I feel comfortable while playing computer games.	3.55	1.23
	11. I am very interested in solving quests / questions / missions in computer games.	3.54	1.22
	12. I always try to solve the current quest/question/mission in the computer game.	3.40	1.30

Participant preferences indicated that average mean of Liking factor ($X_{LIKE}=3.36$, $std=1.15$) was analyzed as one of the lowest factors of the scale subsequent to Leisure factor ($X_{LEI}=2.96$, $std=1.27$). Table 7 shows that Item 10 and Item 11 have the highest mean ($X_{10}=3.55$, $X_{11}=3.54$) and the lowest standard deviation ($std_{10}=1.23$, $std_{11}=1.22$). Item 9, on the other hand, has the lowest mean ($X_9=2.96$) of all the other items included in Liking factor and the highest standard deviation ($std_9=1.40$). Accordingly, it should be said that participants feel comfortable while playing computer games and interested in solving problem solving activities in digital games, whereas they

did not like it when people talk about computer games. Table 8 demonstrates participant choices in Leisure factor items of the scale:

Table 8

Attitudes of Participants on Leisure Factor Items of Computer Game Attitude Scale

Factor	Item	Mean	SD
Leisure (LEI)	13. Playing computer games makes me happy.	3.56	1.26
	14. Playing computer games is part of my life.	2.61	1.46
	15. When I have free time, I play computer games.	2.97	1.47
	16. I talk about computer games with my friends.	2.76	1.46
	17. I am not alone in a computer game as I can make friends there.	2.92	1.39

Leisure factor was illustrated as the least preferred factor of Computer Game Attitude Scale with 2.96 mean and 1.27 standard deviation (see Table 1). Here in Table 8 each item included in Leisure section is analyzed based on mean scores and standard deviation. Results demonstrate that Item 13 has the highest mean and the lowest standard deviation, whereas Item 14 has the lowest mean score and one of the highest standard deviations. In the following section descriptive statistics concerning participants selected for implementation process using stratified sampling method are explained.

4.2.2. Attitudes of Participants Selected for Game Sessions

Attitudes of total sample was given in the previous section based on the analysis of quantitative and qualitative data collected. This part focuses on findings of Revised Computer Game Attitude Scale for selected participants through stratified sampling for game sessions.

4.2.2.1 Findings of Revised Computer Game Attitude Scale

Revised Computer Game Attitude Scale were applied to 88 Turkish Pre-service EFL Teachers to collect data on their attitudes towards digital games. After data collection process was completed, answers of the participants were evaluated under three categories based on their mean scores. Distribution of participants was formed as 2 participants from *High* score category, 2 participants from *Medium* score category and 2 participants from *Low* score category which makes 6 participants in total. Table 9 demonstrates descriptive

statistics concerning participants selected using stratified sampling method for digital game sessions of the study.

Table 9

Attitudes of Participants Selected for Game Sessions

Factor/Participant	P1H	P2H	P3M	P4M	P5L	P6L
Confidence	4.75	5	3.25	3.25	1.75	2.25
Learning	5	4.75	3	3.5	2.5	3
Liking	5	5	4	3.5	1.5	1.75
Leisure	4.4	4.8	3.2	3	1.4	1.8
Total	4.76	4.88	3.35	3.29	1.76	2.17

As is seen, Table 9 shows how attitudes of selected participants towards digital games are distributed in terms of *Confidence*, *Learning*, *Liking*, *Leisure* factors and total mean scores. Significantly, results of *high* attitude participants P1H, P2H show high mean scores in all factors and total scores as can be expected. Likewise, mean scores P4M were in medium range; and P5L scored in low range in all factors and total mean scores. The only participants having different scores in one or more factors of the scale than the total average range that they were evaluated in, were P3M and P6L. Mean of P3M was in medium range in all factors but only in Liking factor P3M scored in *high* range. Similarly, P6L scored in *medium* range for Learning factor while other factors were in *low* range as it can be expected. In the following chapter analysis of data collected from semi structured interviews related to attitudes of selected participants are presented.

4.2.2.2. Findings of Qualitative Data

Distribution of 6 participants of this study were formed as 2 participants from *High* score category, 2 participants from *Medium* score category and 2 participants from Low score category. Participants for study were selected based on the analysis of their answers on Computer Game Attitude Scale. Hereby, it is important to realize that this scale provided only quantitative data in terms of attitudes of participants taking part in the procedure. Quantitative data collected from a five-point Likert questionnaire can indicate to what extend participants have positive or negative attitudes towards digital games, but it cannot give profound and detailed data to deeply understand and answer how and why questions. With this in mind, selected participants were asked whether they were aware of digital games before they took the RCGAS at the beginning of game

application process when they attended first meeting introducing the study.

High attitude participants (P1H, P2H) stated that they were aware of digital games before taking the scale as can be expected. They also mentioned that computer and digital games are part of their life, they play digital games since their childhood for leisure purposes. Additionally, the participants appeared to be aware of the fact that there were different factors effecting use of digital games in addition to leisure purposes. Regarding this, P2H's remarks were as seen in Excerpt 1:

Excerpt 1:

I have knowledge about games. I have been playing digital games since my childhood and I know the logic and mechanics behind them. Also, I know what to do in most digital games. I also know some games add somethings to people while some are solely used for leisure purposes. It was digital games what improved my English skills until now.

Second group selected for game sessions was medium attitude participants (P3M, P4M). These participants were also appeared to be aware of digital games before taking the scale and somehow familiar with digital games. They believe games are fun and can be interesting to play, however, they do not mention digital games as a part of their life. P3M expressed her opinion on the issue in Excerpt 2:

Excerpt 2:

Generally, games draw my attention. Even if I am not quite skillful at playing, I would like to play if I like the context in the game. My brothers have effect on my interest in digital games. I used to see them play and I would play, too. I believe digital games can be used for vocabulary teaching.

On the other hand, P4M states that she used to play digital games however she has not played for a long time. And she explains the reasons why she stopped playing digital games in Excerpt 3 below:

Excerpt 3:

I haven't been playing digital games for a long time. I used to play some simple mobile games when I was in secondary school. I stopped playing digital games

because I used to engage too much in the gameplay. I would spend too much time playing and this caused me to have headache. I was getting bored after a while.

The last group participants selected for implementation had low attitudes towards digital games. (P5L, P6L). Participants in this group said they did not play digital games at all while they also mentioned they were aware of digital games and their effects on leisure and learning purposes. Comments of P6L on this issue can be seen in Excerpt 4:

Excerpt 4:

I am not interested in or related to digital games as I mentioned in the questionnaire, too. I have never engaged in and played a game for a long time. However, I know that kids learn pieces of vocabulary from game context when they play games in English.

In the meantime, P5L looks at the situation from a different point of view. She mentions that she has a strong motive in her for playing digital games. However, she deliberately keeps herself away from getting into playing digital games. She supported her opinions by saying in Excerpt 5:

Excerpt 5:

I never played digital games because I thought they would make me addicted to them. Intentionally I didn't. I am keen on reading comic books and I can spend a whole day while reading them. I believe same thing would happen with digital games. So, I am curious, but I stay away.

In this section attitudes of 88 Turkish Pre-service EFL Teachers on digital games were analyzed through findings of RCGAS. In addition, attitudes of 6 participants selected for game enhanced activities were examined through findings of Revised Computer Game Attitude Scale and interviews conducted with the participants with the aim of understanding factors affecting their attitudes in detail and collect profound data on the issue.

4.3. Findings of Semi Structured Interviews Related to Reflections of Participants on Digital Game Enhanced Practices

Participants selected for digital game enhanced language learning and teaching sessions were interviewed at the end of the procedure to find out their reflections for the game they played, overall process they experienced; explore, examine and extend sessions and the materials used in these stages. Findings related to reflections of participants were analyzed under three groups for high, medium and low attitude participants and separated as Positive and negative reflections for the game they played, overall process, explore, examine and extend sessions. Following section indicates reflections of participants for the game they played in digital game enhanced language learning and teaching process.

4.3.1 Findings of Semi Structured Interviews Related to Reflections of Participants on the Game Used in Sessions

In the semi structured interview participants were asked about their reflections towards the story based digital game (Last Day of June) they played during game enhanced language learning and teaching process they experienced. Data analysis was conducted separately for high, medium and low group participants in terms of positive and negative reflections. Results related to semi structured interviews on positive and negative reflections of high, medium and low participants towards the game can be seen in Figure 3 below:

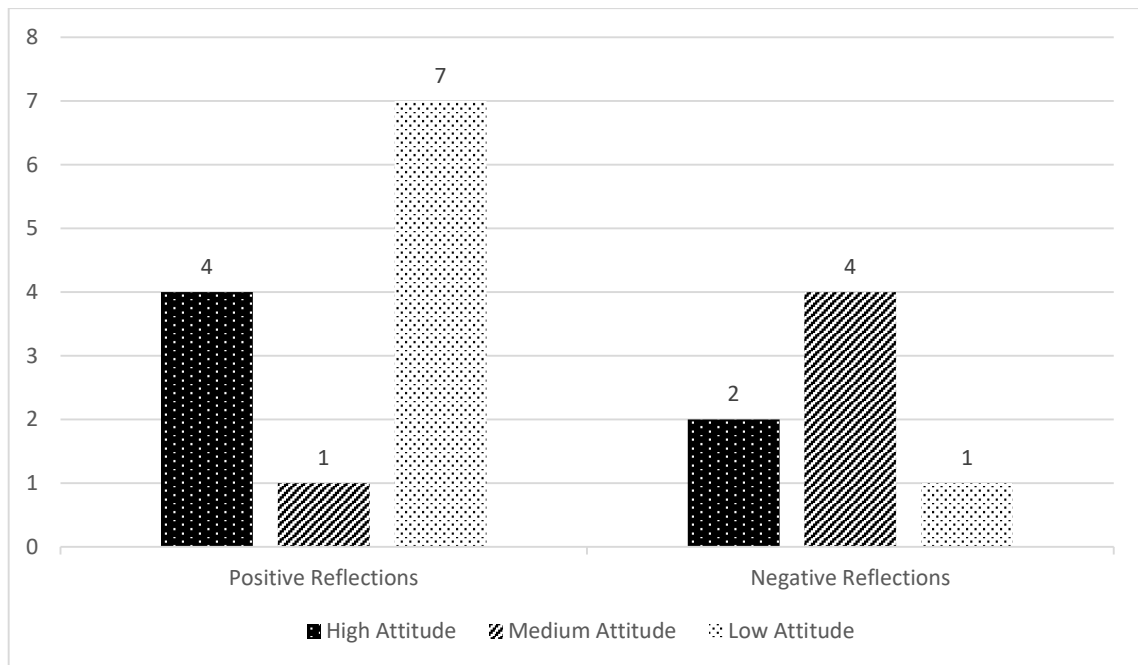


Figure 3. Reflections of participants on last day of June game

Figure 3 shows reflections of participants that they stated in semi structured interviews conducted at the end of the process. Results show that 19 answers were collected from 6 participants. Positive reflections formed 63.15% (n=12) of all the answers given. *High attitude* group mentioned 4 reflections which comprised 33.3% of all the positive answers. Following that *medium attitude* group stated 1 answer which formed 8.33% of all the positive answers and last group who had *low attitude* mentioned 7 reflections forming 58.33% of all positive answers. On the other hand, negative reflections constituted 36.84% (n=7) of all the answers.

In terms of negative reflections *medium attitude* participants were the highest group with 4 negative reflections and their answers formed 57.14% of negative views. The number of negative reflections given by *high attitude* group was 2 and they formed 28.57% of all negative reflections. *Low attitude* group mentioned only 1 negative reflection. Table 10 shows detailed analysis of reflections participants stated for Last Day of June game used in of game enhanced application:

Table 10

Positive Reflections for Last Day of June Game

Categories (n*=6)	f**	%	Participant
Fosters critical thinking and problem solving	3	25	P1H, P3M, P5L
Perfect graphic design	2	16.6	P2H, P5L
Perfect music	2	16.6	P2H, P5L
Emotional	1	8.3	P5L
Good for spatial intelligence	1	8.3	P5L
Narrative	1	8.3	P6L
Makes curious	1	8.3	P6L
Simple game controls	1	8.3	P2H
Total	12	100	

*n=number

**frequency

Table 10 shows positive reflections that participants stated in semi structured interviews which was conducted after game enhanced process. Results show that 12 positive answers were collected from 6 participants. Positive reflections focused mainly on game specifications and educational potentials of the game they played. The highest positive reflection mentioned by 3 participants was that the game *fosters critical thinking and problem solving*, and it comprised 25% of positive views. Other significant positive answers were *perfect graphic design* and *perfect music*, each one stated by 2 participants and formed 16.6% of all the positive answers. While there were other positive comments stated by participants for game such as *emotional*, *good for spatial intelligence*, *narrative*, *makes curious*, *simple game controls*, they were only mentioned by one participant and each one comprised 8.3% of all the views. The other category used for the analysis of interviews towards reflections of participants for the game play in sessions was negative reflections. Table 11 illustrates negative reflections of participants towards the game:

Table 11

Negative Reflections for Last Day of June Game

Categories (n*=6)	f**	%	Participant
Lack of guidance for proceeding in the game	2	28.57	P3M, P4M
Lack of language	2	28.57	P3M, P5L
Pace is too slow	1	14.28	P3M
It was too simple	1	14.28	P2H
Player control over story line was too weak	1	14.28	P2H
Total	7	100	

*n=number

**frequency

Table 11 shows negative reflections that participants stated in semi structured interviews conducted after game enhanced process. Findings show that 7 negative answers were collected from 6 participants. Negative reflections focused mainly on the game play experience of participants. The most significant negative reflections mentioned by participants were that *lack of guidance for proceeding in the game* and *lack of language which were* stated by 2 participants and they comprised 28.57% of all the negative views. Other reflections stated by only one participants and formed 14.28% of all negative answers.

Following this part analysis of reflections of participants for overall process of digital game enhanced application they experienced are demonstrated.

4.3.2. Reflections of Participants on Digital Game Enhanced Process

In the semi structured interview participants were also asked about their reflections towards story based digital game enhanced language learning and teaching process they experienced. Data analysis was conducted separately for high, medium and low group participants in terms of positive and negative reflections. Results related to second semi structured interviews on positive and negative reflections of high, medium and low participants towards digital game enhanced process can be seen in Figure 4 below:

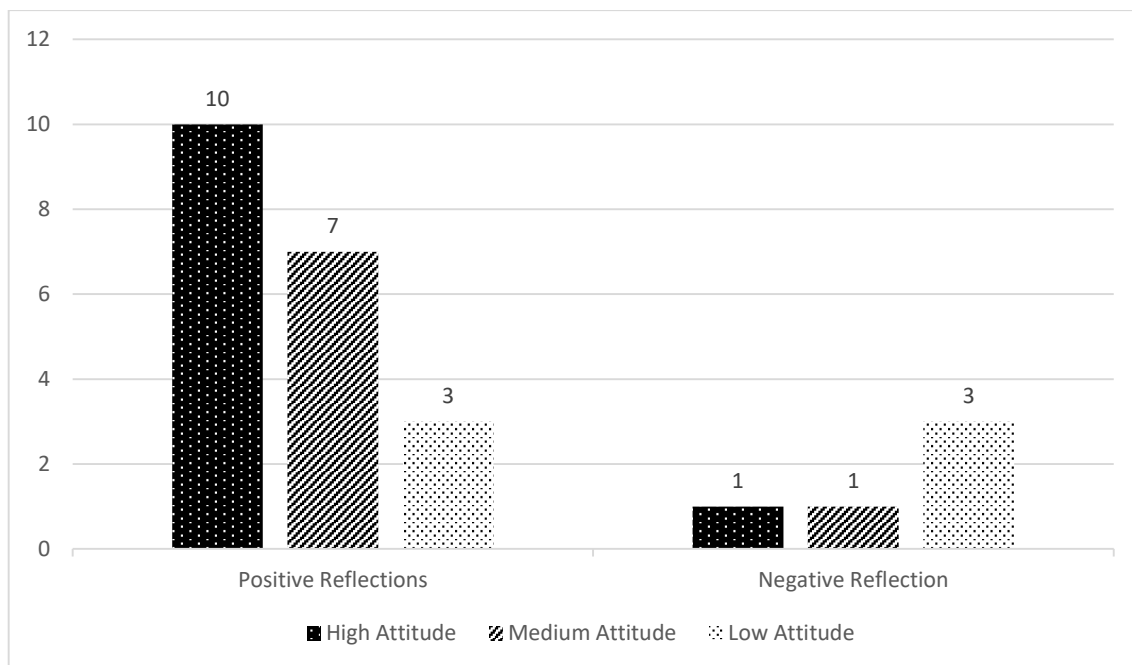


Figure 4. Reflections of participants on digital game enhanced process

Figure 4 shows reflections of participants that they stated in semi structured interviews conducted at the end of the process. Results show that 25 answers were collected from 6 participants. Positive reflections formed 80% (n=20) of all the answers given. *High attitude* group mentioned 10 reflections which comprised 50% of all the positive answers. Following that *medium attitude* group stated 7 answers which formed 35% of all the positive answers and last group who had *low attitude* mentioned 3 reflections forming 15% of all positive answers. On the other hand, negative reflections constituted 20% (n=5) of all the answers. In terms of negative reflections *high attitude* group and *medium attitude* groups, each stated only 1 reflection. The number of negative reflections given by low attitude group was 3 and they formed 60% of all negative reflections. Table 12 shows detailed analysis of reflections participants stated for overall process of game enhanced application:

Table 12

Positive Reflections for the Process

Categories (n*=6)	f**	%	Participant
I liked story and narrative.	5	25	P1H, P2H, P4M, P5L, P6L
It was fun	3	15	P1H, P2H, P5L
Learning how to use games in language learning	2	10	P1H, P3M
Experiencing to observe the procedure	2	10	P1H, P4M
Expressing opinion and guessing	1	5	P3M
Raising attention and concentration	1	5	P3M
Exploring benefits of digital games	1	5	P3M
Needs analysis	1	5	P1H
Hand-eye coordination	1	5	P1H
Writing practice	1	5	P3M
Immersive experience	1	5	P1H
Game was simple	1	5	P1H
Total	20	100	

*n=number

**frequency

Table 12 shows Positive reflections that participants stated in semi structured interviews conducted after game enhanced process. Results show that 20 Positive answers were collected from 6 participants. Positive reflections focused mainly on game specifications and language learning potentials in the game they played. The highest Positive reflection mentioned by 5 participants was that they liked story and narrative in the game and it comprises 25% of all the views. Following that second most common positive reflection was that the whole procedure was fun which was uttered by 3 participants and this comprises 15% of all the comments. Additionally, 2 participants stated that game enhanced process was useful in terms of learning how to use games in language learning with 10%. While there were other Positive comments stated by participants as whole procedure was positive in terms of expressing opinions and guessing, raising attention and concentration, students' needs analysis, good for hand-eye coordination, writing practice, immersive experience and game was simple, they were only mentioned by one participant and each one comprised 5% of all the views.

The other category used for the analysis of interviews towards overall reflections on process was the negative reflections. Table 13 illustrates negative reflections of participants towards process:

Table 13

Negative Reflections for the Process

Categories (n*=6)	f**	%	Participant
Game was complicated at the beginning	3	60	P4M, P5L, P6L
It was weird that characters did not speak	1	20	P6L
Not creative, you just do what the game want you to do	1	20	P2H
Total	5	100	

*n=number

**frequency

Table 13 shows negative reflections that participants stated in semi structured interviews conducted after game enhanced process. Findings show that 5 negative answers were collected from 6 participants. Negative reflections focused mainly on the specifications of digital game that they played during implementation. The highest negative reflection of three negative reflections mentioned by participants was that game was complicated at the beginning, stated by 3 participants and it comprised 60% of all the negative views. Following that 1 participant said that characters did not speak in the game and it was weird and 1 participant thought the game was not creative they did only things game wanted them to do and it comprised 20% of all negative reflections.

Following this part analyzing answers for overall reflections of participants towards digital game enhanced process they experienced, participants were asked more detailed questions for three stages of process as explore, examine and extend sessions. In the following part findings related to explore session reflections of participants are stated.

4.3.3. Reflections of Participants on Explore Session of Digital Game Enhanced Sessions

Participants of this study took part in a digital game enhanced language learning and teaching process consisted of three stages as explore, examine and extend. At the end of the procedure they were interviewed to get their reflections about the process they experienced. First, they were requested to comment on overall process of the sessions and then detailed question about stages of application were directed to them. Findings related to overall reflections of participants can be seen in the previous section. In this part reflections of 6 participants about explore session of the application are demonstrated under two titles as positive and negative reflections and categorized as high, medium and low attitude participants in Figure 5 below:

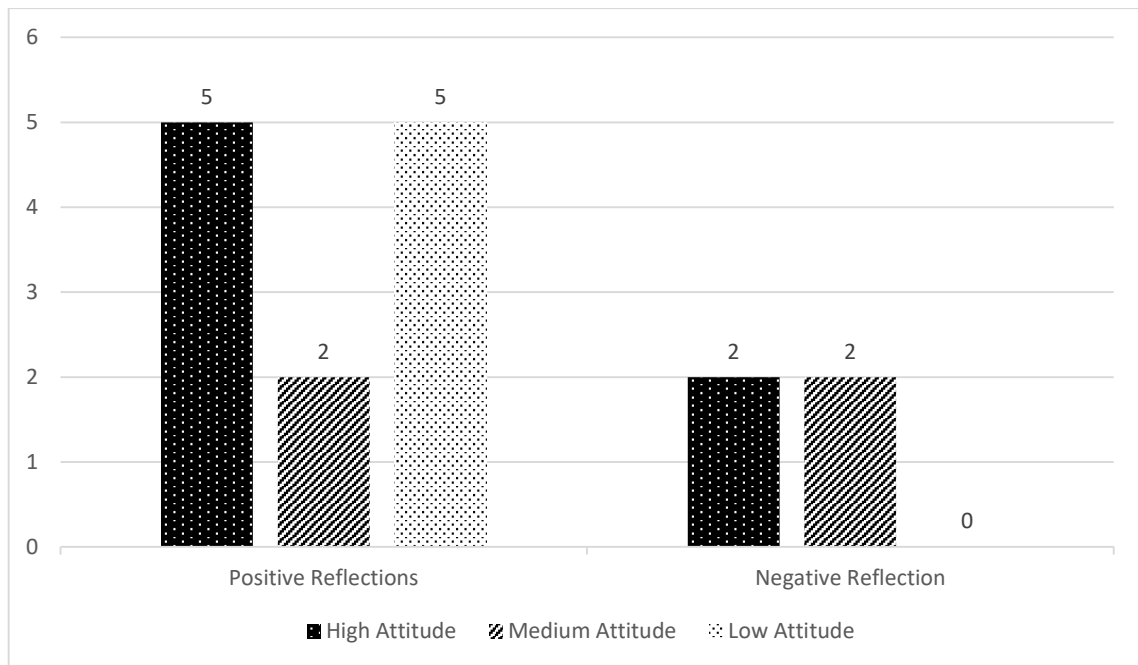


Figure 5. Reflections of participants on explore session of digital game enhanced process

Figure 5 shows reflections of participants that they stated in semi structured interviews conducted at the end of the process. Results show that 16 answers were collected from 6 participants. Positive reflections formed 75% (n=12) of all the answers given. *High attitude* group mentioned 5 reflections which comprised 41.6% of all the positive answers. Following that *medium attitude* group stated 2 answers which formed 16.6% of all the positive answers and last group who had *low attitude* mentioned 5 reflections forming 41.6% of all positive answers. On the other hand, negative reflections constituted 25% (n=4) of all the answers. In terms of negative reflections *high attitude* group and *medium attitude* groups stated 2 reflections and each group formed 50% of all negative answers while none of the low attitude group stated negative reflections. Table 14 shows detailed analysis findings of semi structured interviews related to Positive reflections of participants:

Table 14

Positive Reflections for Explore Session

Categories (n*=6)	f**	%	Participant
Having a general idea and immersion	4	33.3	P1H, P2H, P5L, P6L
Familiarizing with the game world and characters	3	25	P2H, P3M, P6L
Practicing using controllers	3	25	P4M, P5L, P6L
Avoiding prejudice	1	8.3	P1H
Experiencing the same process with playing games as leisure	1	8.3	P1H
Total	12	100	

*n=number

**frequency

Table 14 shows Positive reflections of participants towards explore sessions of application. Analysis of data shows that 12 Positive reflections were collected from Turkish Pre-service EFL teachers participated in the sessions. General tendency among participants in terms of positive reflections for explore sessions was the idea that explore session was useful for gaining a general opinion and introducing the procedure. The highest item mentioned by participants with 4 answers, which comprises 33.3% of all views, was that session was good for general idea and immersion. Familiarizing with the game world and characters followed the first item by 3 participants and it comprises 25% of all comments. Besides, 3 participants argued that session was also good for preparing students physically in terms of practicing using controllers, in addition to mental preparations mentioned in first and second items and they comprised 25% percent of all the positive reflections given by participants. Furthermore, avoiding prejudice, having same process with playing games as leisure activities were stated by participants of the study. At the same time some participants had negative reflections for the explore session and their comments can be seen in Table 15 below:

Table 15

Negative Reflections for Explore Sessions

Categories (n*=6)	f**	%	Participant
It was a waste of time	1	25	P3M
I did not know how to fill the forms	1	25	P4M
There was not any instruction to follow	1	25	P1H
I did not know what to concentrate	1	25	P1H
Total	4	100	

*n=number

**frequency

Table 15 illustrates negative opinions stated by participants based on semi structured interviews conducted at the end of the study. Findings show that there was not a common negative reflection focused by participants, but 4 different negative reflections emerged as a result of the evaluation made for given answers. It was mentioned by P3M that this session might be a waste of time. Another participant, P4M, said they did not know how to fill the forms and this caused a problem at the beginning of the implementation. In addition, P1H mentioned that there was not any instruction to follow and they did not know what to concentrate.

Reflections of participants towards explore session of digital game enhanced application they experienced were asked in this section. In the following part findings related to examine sessions in terms of reflections of participants are stated.

4.3.4. Reflections of Participants on Examine Sessions of Digital Game Enhanced Application

Examine sessions were the sessions where participants played the game that was used in process and completed activities given by the researcher while playing or at the end of the session. In this part reflections of 6 participants about examine sessions of the application are demonstrated under two titles as positive and negative reflections and categorized as high, medium and low attitude participants in Figure 6 below:

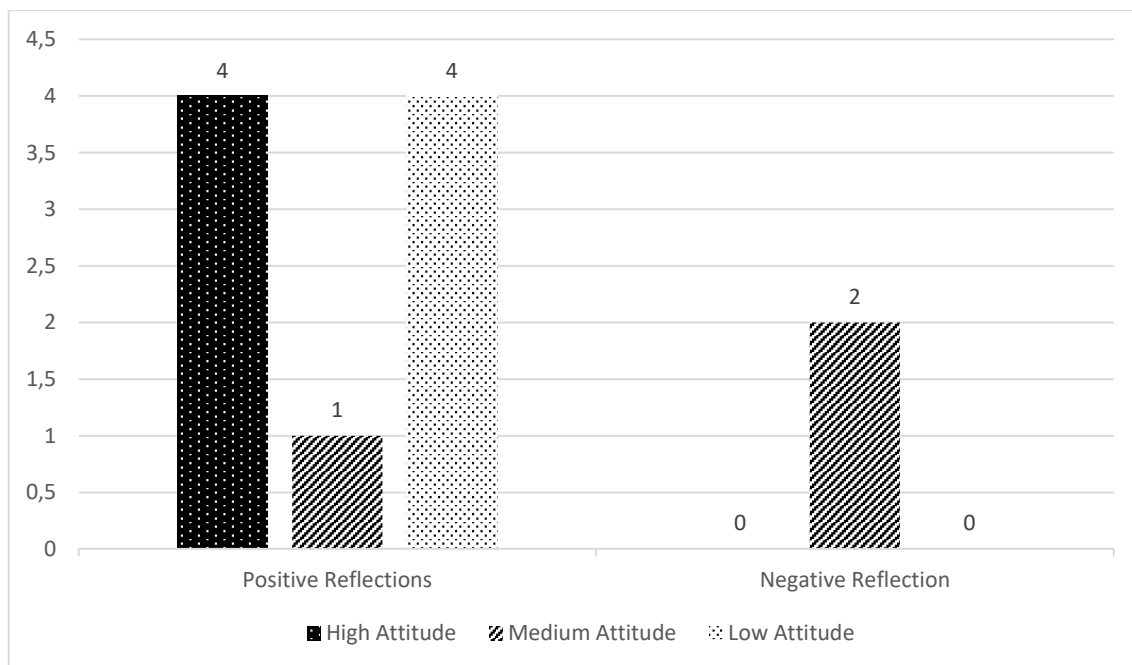


Figure 6. Reflections of participants on examine sessions of digital game enhanced application

Figure 6 shows reflections of participants that they stated in semi structured interviews conducted at the end of the process. Results show that 11 answers were collected from 6 participants. Positive reflections formed 81.8% (n=9) of all the answers given. *High attitude* group mentioned 4 reflections which comprised 44.4% of all the positive answers. Following that *medium attitude* group stated 1 answer which formed 11.1% of all the positive answers and last group who had *low attitude* mentioned 4 reflections forming 44.4% of all positive answers. On the other hand, negative reflections constituted 18.8% (n=2) of all the answers. In terms of negative reflections *medium attitude* group stated 2 reflections and each group formed 100% of all negative answers while none of the *high attitude* group and *low attitude* group stated negative reflections. Table 16 illustrates findings of semi structured interviews related to Positive reflections of participants for examine sessions:

Table 16

Positive Reflections for Examine Sessions

Categories (n*=6)	f**	%	Participant
Filling forms and note taking while playing was helpful	3	33.3	P1H, P5L, P6L
Good for remembering details	3	33.3	P1H, P5L, P6L
Playing with a purpose	1	11.1	P3M
Producing theories for further stages	1	11.1	P1H
Effective for getting clues	1	11.1	P1H
Total	9	100	

*n=number

**frequency

Table 16 shows Positive reflections given by participants in terms of examine sessions on semi structured interviews conducted at the end of the process. Findings show that 9 positive answers were given by 6 participants who joined digital game sessions. The highest Positive reflection participants mentioned was that filling out forms and note taking while playing was helpful, which was stated by 3 participants and it comprised 33.3% of all the views. Participants also thought examine sessions were good for remembering details. The number of participants stating that was 3 and they formed 33.3% of all the positive reflections. In addition to first and second most common positive reflections which formed 66.6% of all positive reflections, there were other positive reflections as playing with a purpose, producing theories for further stages, effective for getting clues. These reflections were stated by only one participant each and they comprised 11.1% when all the positive reflections about examine sessions are taken into consideration. On the other hand, negative reflections of participants can be seen in Table 17 below:

Table 17

Negative Reflections for Examine Sessions

Categories (n*=6)	f**	%	Participant
Too many things happened in a session which was complicated for me	1	50	P3M
I was immersed too much into the game that I forgot to fill in the forms	1	50	P4M
Total	2	100	

*n=number

**frequency

Table 17 shows negative reflections of participants related to examine sessions of application collected and analyzed from semi structured interviews. Findings showed that there were only 2 negative reflections stated by participants. Participant P3M stated that there were too many different things happening in a session and it was complicated for them. On the other hand, P4M looked at the situation from a different point of view that she felt too immersed into the game and forgot to complete the forms given.

This part focused on findings of semi structured interviews related to positive and negative reflections of participants on examine sessions of application. Following section demonstrates reflections of participants on extend sessions.

4.3.5. Reflections of Participants on Extend Sessions of Digital Game Enhanced Application

Reflections of participants on explore and examine sessions under positive and negative themes were evaluated in previous sections. This chapter focuses on findings of semi structured interviews related to reflections of participants on extend sessions of the application. Analysis of data showed two titles as positive and negative reflections and categorized as high, medium and low attitude participants. Related finding can be seen in Figure 7 below:

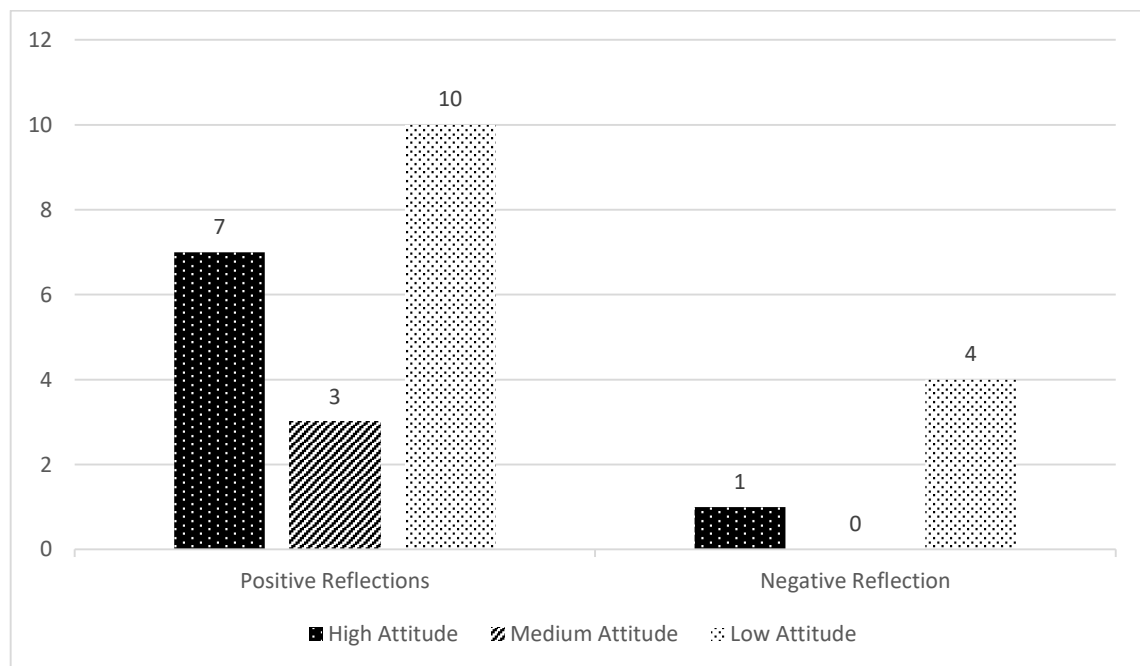


Figure 7. Reflections of participants on extend sessions of digital game enhanced application

Figure 7 shows reflections of participants that they stated in semi structured interviews conducted at the end of the process. Results show that 25 answers were collected from 6 participants. Positive reflections formed 80% (n=20) of all the answers given. *High attitude* group mentioned 7 reflections which comprised 35% of all the positive answers. Following that *medium attitude* group stated 3 answers which formed 15% of all the positive answers and last group who had *low attitude* mentioned 10 reflections forming 50% of all positive answers. On the other hand, negative reflections constituted 20% (n=5) of all the answers. In terms of negative reflections *low attitude* group stated 4 reflections which formed 80% of all negative answers while 1 participant pointed out negative reflection in *high attitude* group and none of the *low attitude* group stated negative reflections. Table 18 illustrates findings of semi structured interviews related to positive reflections of participants for extend sessions:

Table 18

Positive Reflections for Extend Sessions

Categories (n*=6)	f**	%	Participant
Productive skills practice	3	15	P1H, P6L, P8L
Self-correction	3	15	P1H, P5L, P6L
Cooperation	3	15	P1H, P5L, P6L
Creativity	2	10	P1H, P6L
Fun	2	10	P1H, P3M
Pronunciation and intonation practice	1	5	P5L
Detecting shy students	1	5	P6L
Creating meaningful communication from context	1	5	P3M
Producing different points of view	1	5	P3M
Practicing pragmatic competence	1	5	P1H
Peer correction	1	5	P6L
Critical thinking	1	5	P1H
Total	20	100	

*n=number

**frequency

Table 18 shows positive reflections mentioned by participants who were interviewed at the end of the study. Findings show that 20 positive answers were given by 6 participants related to extend sessions of the study. The highest positive answers given by participants were practicing productive skills, self-correction and cooperation. Each answer mentioned by 3 participants and each answer formed 15% of all the positive

answers. Following that creativity uttered by 2 participants constituting 10% of all the views. Fun factor was another positive reflection and it was stated by 2 participants and they comprise 10% of all positive reflections. Additionally, pronunciation and intonation practice, detecting shy students, creating meaningful communication from context, producing different points of view, practicing pragmatic competence, peer correction, critical thinking were other positive answers, each stated only by one participant during the interview conducted. At the same time there were negative reflections emphasized by participants. Results are illustrated in Table 19 below:

Table 19

Negative Reflections for Extend Sessions

Categories (n*=6)	f**	%	Participant
Voice record made me nervous	2	40	P5L, P6L
I didn't see any point in recording dialogs.	1	20	P5L
Pair work made me nervous	1	20	P5L
Students might feel anxious	1	20	P1H
Total	5	100	

*n=number

**frequency

Negative reflections of participants related to extend sessions of application can be seen in Table 19 above. Findings show that 6 participants stated 5 negative answers during the interview conducted. Negative reflections mainly focused on feeling nervous and possibility of making students feel anxious. The highest negative answer mentioned by participants was the fact that recording their voice for the dialogs they have written made them nervous. In relation with these answers P5L thought pair work made her nervous and added by saying there was no point in doing this activity. Besides, P1H said students might feel anxious because some students are shy and they don't like doing such activities.

In this section findings related to reflections of participants on extend sessions of application were demonstrated based on data collected from semi structured interviews conducted at end of the process. Next section focuses on the reflections of participants towards materials used in explore, examine and extend sessions of study.

4.3.6. Reflections of Participants on Explore Activities of Digital Game Enhanced Implementation

Participants who were involved in the second phase of this study were interviewed to investigate their reflections for materials used in explore session of digital game enhanced application. Related findings can be found in the next part below.

4.3.6.1 Learning the Tutorial

Participants reflected on three stages of the game enhanced procedure and materials used in these stages through semi structured interviews conducted at the end of the study. Analysis of data related to reflection of stages were analyzed in previous sections. This section focuses on the findings related to reflections of participants for materials used in these stages. First material used in explore session was Learning the Tutorial form. Related finding can be seen in Figure 8 below:

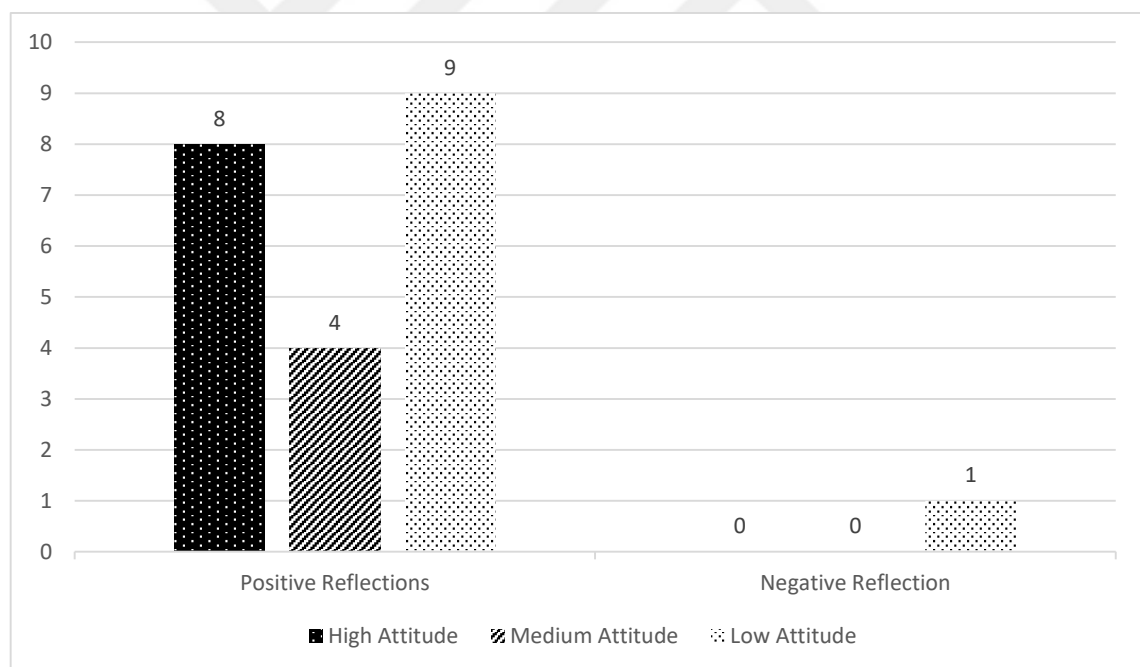


Figure 8. Reflections of participants on learning the tutorial form of digital game enhanced application

Figure 8 shows reflections of participants that they stated in semi structured interviews conducted at the end of the process. Results show that 22 answers were collected from 6 participants. Positive reflections formed 95.4% (n=21) of all the answers given. *High attitude* group mentioned 8 reflections which comprised 39% of all the

positive answers. Following that *medium attitude* group stated 4 answers which formed 19% of all the positive answers and last group who had *low attitude* mentioned 9 reflections forming 42.85% of all positive answers. On the other hand, negative reflections constituted 4.6% (n=1) of all the answers. In terms of negative reflections *low attitude* group stated 1 reflection which formed 100% of all negative answers while none of the *high attitude* and *medium attitude* group stated negative reflections. Table 20 below shows Positive reflections of participants for learning the tutorial form:

Table 20

Positive Reflections for Learning the Tutorial Form

Categories (n*=6)	f**	%	Participant
Analyzing how to continue	3	14.28	P1H, P4M, P6L
Getting students' opinions about game	3	14.28	P1H, P5L, P6L
Finding out students having difficulty	3	14.28	P1H, P4M, P6L
Collecting feedback from students	2	9.5	P4M, P6L
Having preliminary idea	2	9.5	P1H, P5L
Seeing what students understood	1	4.7	P5L
Being parallel with goals	1	4.7	P1H
Expressing first impression	1	4.7	P1H
Keeping record to look back and analyze at the end	1	4.7	P2H
Understanding students' level of grammar	1	4.7	P5L
Understanding students' level of vocabulary	1	4.7	P5L
Raising awareness	1	4.7	P2H
Seeing motivation levels	1	4.7	P4M
Total	21	100	

*n=number

**frequency

Positive reflections of participants related to Learning the Tutorial form used in explore session of study can be seen in Table 20 above. Findings show that 6 participants stated 21 positive answers during the interview conducted. The highest positive reflections given by participants for Learning the Tutorial form was *analysis for how to continue, getting students' opinions about game and finding out students having difficulty* with 3 answers for each answer and they each formed 14.28% of all the positive views. There were 2 other positive comments pointed out by 2 participants and they were *collecting feedback from students* and *having preliminary idea*. These two answers comprised 9.5% of all positive views. *Parallel with goals, expressing first impression,*

keeping record to look back and analysis at the end, understanding students' level of grammar, understanding students' level of vocabulary, raising awareness, seeing motivation levels were other positive comments each stated by only one participant. On the negative side there was only one negative reflection stated by participants and it can be seen in Table 21 below:

Table 21

Negative Reflection for Learning the Tutorial Form

Categories (n*=6)	f**	%	Participant
More detailed questions are needed	1	100	P6L
Total	1	100	

*n=number

**frequency

Table 21 shows the only one negative reflection out of 6 participants of the study was stated by P6L. Looking at the answers given by participants showed that P6L said *more detailed questions are needed* in Learning the tutorial form whereas she didn't specify what exactly the questions should be. Next section illustrates findings related to reflections of participants on examine session activities used in the process.

4.3.7. Reflections of Participants on Examine Activities of Digital Game Enhanced Implementation

Participants who were involved in the second phase of this study were interviewed to get their reflections for materials used in examine sessions of digital game enhanced application. Related findings can be found in the next part below.

4.3.7.1. Solving the Puzzle

There were four different activities given to participants during examine sessions of gameplay sessions which were solving the puzzle form, character description form, setting description form and plot description form. Participants' reflections were asked at the end of the whole process by a semi structured interview and analysis of related findings were pointed out in this section. Results of the interviews were analyzed under two categories as positive reflections and negative reflections and separately illustrated as high, medium and low attitude participants. First material used in examine sessions

was Solving the Puzzle form. Related finding can be seen in Figure 9 below:

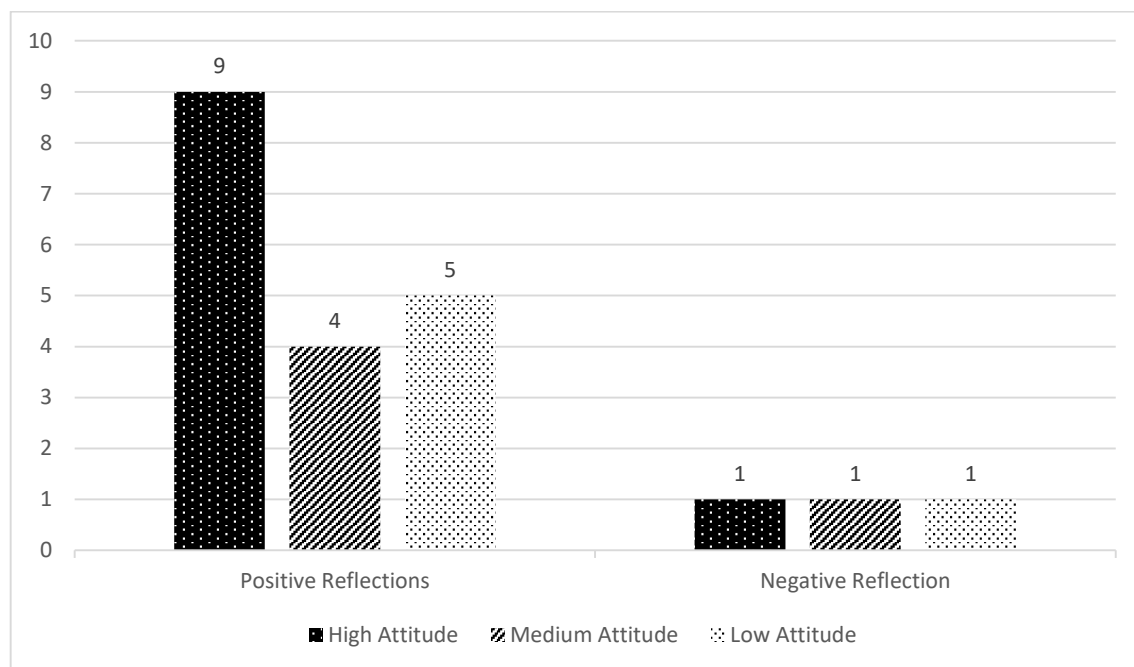


Figure 9. Reflections of participants on solving the puzzle form of digital game enhanced application

Figure 9 shows reflections of participants they stated in semi structured interviews conducted at the end of the process. Results show that 21 answers were collected from 6 participants. Positive reflections formed 85.71% (n=18) of all the answers given. *High attitude* group mentioned 9 reflections which comprised 50% of all the positive answers. Following that *medium attitude* group stated 4 answers which formed 22.2% of all the positive answers and last group who had *low attitude* mentioned 5 reflections forming 27.7% of all positive answers. On the other hand, negative reflections constituted 14.29% (n=3) of all the answers. In terms of negative reflections *high attitude*, *medium attitude* and *low attitude* group stated 1 reflection and each answer formed 33.3% of all negative answers. Table 22 below demonstrates Positive reflections of participants towards Solving the Puzzle material used in examine sessions:

Table 22

Positive Reflections for Solving the Puzzle Form

Categories (n*=6)	f**	%	Participant
Remembering where player left game in the previous session	2	11.1	P4M, P5L
Proceeding in the game	2	11.1	P1H, P4M
Observing the procedure	2	11.1	P1H, P2H
Creating meaningful connections among characters	1	5.5	P3M
Activating in long term memory	1	5.5	P5L
Activating brain to focus on context because there is no language	1	5.5	P5L
Improving writing skill	1	5.5	P1H
Encouraging students to use dictionary	1	5.5	P5L
Creativity	1	5.5	P2H
Writing based on contextual clues improves language skills	1	5.5	P2H
Finding out students' perceptions towards procedure.	1	5.5	P2H
Observing student motivation	1	5.5	P2H
Finding out students' time perception based on the tenses they used	1	5.5	P4M
Using in follow up activity	1	5.5	P4M
Solving the story of the game	1	5.5	P1H
Total	18	100	

*n=number

**frequency

Table 22 illustrates positive reflections of participants towards Solving the Puzzle form used in examine sessions of this study. Findings show that 18 positive reflections were stated by 6 participants when they were asked about their reflections during interviews. There were 3 significant positive answers, each stated by 2 participants and comprised 11.1% of all positive views. These answers were stated as *useful for remembering where they left the game in the previous session, helped proceeding in the game, helping teacher observe the procedure*. Other positive reflections were stated by only 1 participant and each comprised 5.5% of all positive answers. Table 23 below demonstrates negative reflections of participants towards Solving the Puzzle form:

Table 23

Negative Reflections for Solving the Puzzle Form

Categories (n*=6)	f**	%	Participant
Without background knowledge context may not help learning new things	1	33.3	P1H
Negative effects on students who does not like note taking	1	33.3	P4M
Students may write things different than what they actually mean because of limited language	1	33.3	P5L
Total	3	100	

*n=number

**frequency

Table 23 explains negative reflections of participants towards Solving the Puzzle form used in examine sessions. There were 3 negative answers given by 6 participants while interviews were being conducted. First negative reflection was about the disadvantage of not having background knowledge while playing the game to learn new things. Furthermore, it was also stressed that there might be negative effects on students who does not like note taking. In addition, one participant thought that students may write things different than what they actually mean because of their limited language abilities.

Next section shows findings related to reflections of participants on character and setting description forms used in examine session activities used in gameplay procedure.

4.3.7.2. Character & Setting Description

Participants were given Character description and Setting description forms to take note of new characters and settings they encountered while they were playing the game in examine sessions. At the end of the procedure their reflections about these forms were asked and related comments were noted during semi structured interviews conducted at the end of the study. Reflections mainly focused on positive and negative sides of forms used in examine sessions. Related finding can be seen in Figure 10 below:

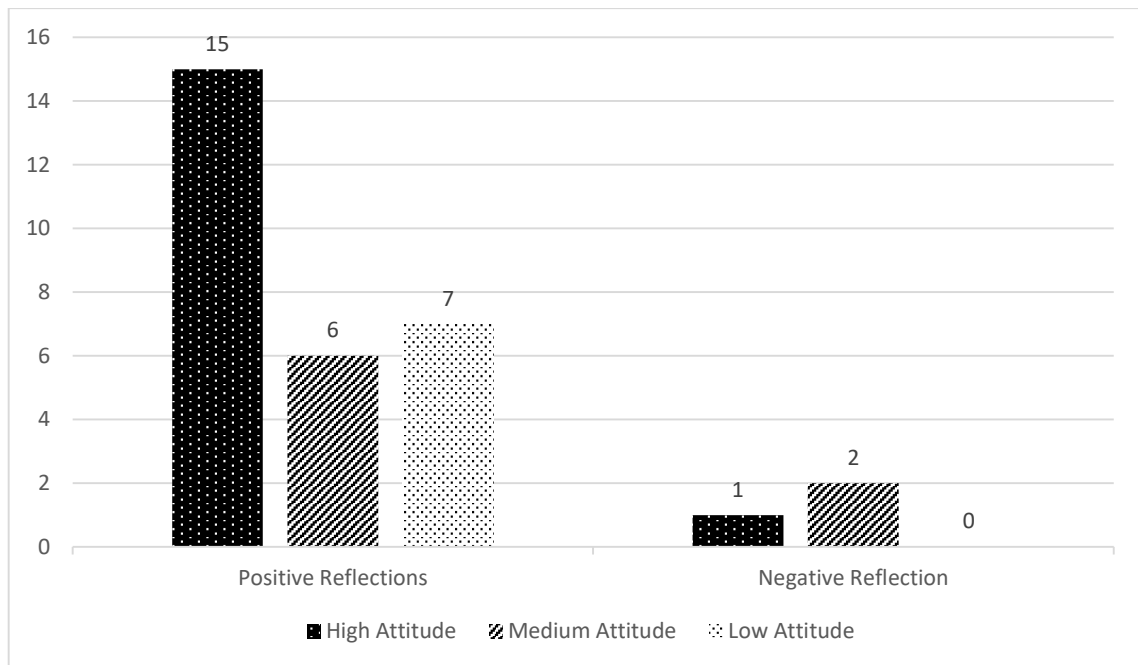


Figure 10. Reflections of participants on character & setting description forms of digital game enhanced application

Figure 10 shows reflections of participants they stated in semi structured interviews conducted at the end of the process. Results show that 31 answers were collected from 6 participants. Positive reflections formed 90.3% (n=28) of all the answers given. *High attitude* group mentioned 15 reflections which comprised 53.57% of all the positive answers. Following that *medium attitude* group stated 6 answers which formed 21.42% of all the positive answers and last group who had *low attitude* mentioned 7 reflections forming 25% of all positive answers. On the other hand, negative reflections constituted 9.6% (n=3) of all the answers. In terms of negative reflections *high attitude* participants mentioned 1 negative reflection which formed 33.3% of all negative answers. Also, *medium attitude* participants stated 2 negative answers and their answers constituted 66.6% of all negative answers. On the other hand, either of the participants *low attitude* group did not state any negative reflection. Table 24 shows how positive reflections of participants are distributed:

Table 24

Positive Reflections for Character & Setting Description Forms

Categories (n*=6)	f**	%	Participant
Putting schema and concepts into words from contextual clues, and word choice	4	14.28	P2H, P3M, P5L, P6L
Evaluating and reflecting on information	3	10.71	P1H, P2H, P6L
Remembering details	3	10.71	P1H, P2H, P4M
Writing practice	2	7.14	P1H, P2H
Finding out student language levels	2	7.14	P3M, P6L
Improving creativity	2	7.14	P5L, P6L
Practicing language for low level students	2	7.14	P2H, P6L
Learning Vocabulary and practice	2	7.14	P1H, P2H
Using adjectives	1	3.57	P1H
Measuring attention skills	1	3.57	P2H
Improving observation skills	1	3.57	P1H
Practicing language to explain characters and setting	1	3.57	P4M
Giving a purpose for playing	1	3.57	P3M
Seeing that everything (characters, neighborhood) has effect on each other	1	3.57	P3M
Seeing how our perception on characters change in time	1	3.57	P1H
Making learning permanent	1	3.57	P1H
Total	28	100	

*n=number

**frequency

Table 24 demonstrates positive reflections of participants towards Character and Setting Description forms. Results points out that 28 positive answers were collected from 6 participants. The highest positive reflection was stated by participants was *putting schema and concepts into words from contextual clues, and word choice* which was mentioned by 4 participants and it formed 14.28% of all views. Following that, *ability to evaluate and reflect on information* and *remembering details* were other significant reflections stated by participants each and they formed 10.71% of all positive views. Reflections emphasized by 2 participants each emerged as *writing practice*, *finding out student language levels*, *improves creativity*, *language practice for low level students*, *vocabulary learning and practice*. Their effect on proportion of positive reflections was found as 7.14%, as it can be seen above. In terms of other reflections, each were stated by only 1 participant.

On the other hand, participants stated some negative opinions towards character

and setting description forms. Table 25 below indicates these negative comments by participants:

Table 25

Negative Reflections for Character & Setting Description Forms

Categories (n*=6)	f**	%	Participant
Spoils flow of the gameplay	1	33.3	P4M
Needs time to think	1	33.3	P4M
Not appropriate for low level students because they are not expected to produce writing	1	33.3	P2H
Total	3	100	

*n=number

**frequency

Table 25 shows negative reflections of participants on character and setting description forms used in examine sessions. Results indicated that there were 3 negative answers stated by participants against character and setting description forms. First negative answer was the idea that the form *spoils flow of the gameplay* stated by P4M. Moreover, it was also stated by P4M that these forms should have been given at the end of sessions because they *need time to think* while taking notes, which was related with the first negative answer she pointed out. Additionally, P2H expressed that these forms cannot be used for low level students because *they are not expected to produce writing*.

Last form used in examine sessions was Plot Description form. Reflections of participants on this form are illustrated in next section.

4.3.7.3. Plot Description Form

Participants completed Plot Descriptions forms at the end of each examine session in addition to character description and plot description forms. Analysis of reflections collected from semi structured interviews conducted at the end of the study showed that answers were mainly separated under positive and negative reflection titles. Related finding can be seen in Figure 11 below:

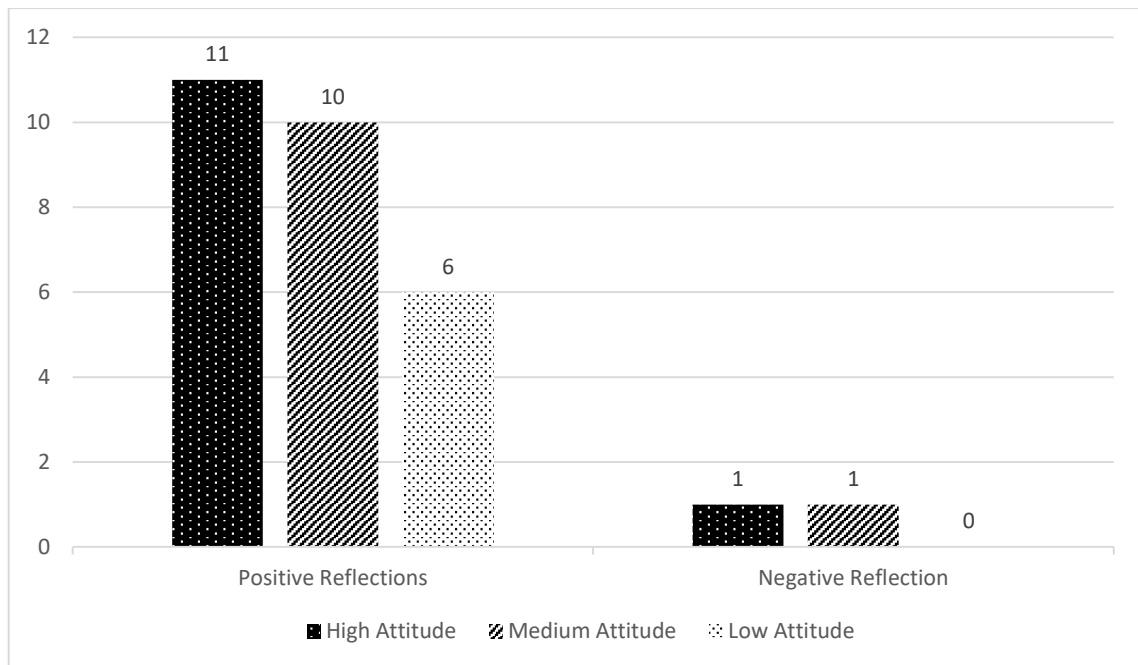


Figure 11. Reflections of participants on plot description form of digital game enhanced application

Figure 11 shows reflections of participants that they stated in semi structured interviews conducted at the end of the process. Results show that 29 answers were collected from 6 participants. Positive reflections formed 93.1% (n=27) of all the answers given. *High attitude* group mentioned 11 reflections which comprised 40.74% of all the positive answers. Following that *medium attitude* group stated 10 answers which formed 37% of all the positive answers and last group who had *low attitude* mentioned 6 reflections forming 22.2% of all positive answers. On the other hand, negative reflections constituted 6.89% (n=2) of all the answers. In terms of negative reflections *high attitude* and *medium attitude* participants mentioned 2 negative reflections which formed 50% of all negative answers. Also, *medium attitude* participants stated 2 negative answers and their answers constituted 66.6% of all negative answers. On the other hand, in terms of negative reflections the fact that *the form needs adaptation because questions were not clear* stated by 2 participants as 1 participant from *high attitude* and 1 participant from *medium attitude* group. Table 26 below demonstrates positive reflections of participants on Plot Description form of examine sessions.

Table 26

Positive Reflections for Plot Description Form

Categories (n*=6)	f**	%	Participant
Evaluating actions happened	3	11.1	P2H, P3M, P4M
Filling out forms while playing helped remembering	3	11.1	P3M, P4M, P5L
Realizing expectations	3	11.1	P1H, P2H, P5L
Guessing and creativity	2	11.7	P1H, P5L
Improving reasoning skills	2	7.4	P3M, P5L
Making learning meaningful	2	7.4	P3M, P5L
Putting thoughts into word	2	7.4	P1H, P2H
Realizing and reflect on process of gameplay	2	7.4	P2H, P4M
Requiring adaptation (questions weren't clear/ same information)	1	3.7	P1H
Making summary	1	3.7	P2H
Writing practice	1	3.7	P1H
Making connections and explain them	1	3.7	P3M
Filling out forms while playing may needs extra time	1	3.7	P3M
Seeing whether students understood or not	1	3.7	P5L
Using as a homework	1	3.7	P1H
Realizing self-language level	1	3.7	P4M
Total	27	100	

*n=number

**frequency

Table 26 illustrates positive reflections of participants taking part in digital game enhanced application. Results show that there were 27 positive answers given by 6 participants of this study. First three answers in Table 27 were the highest positive reflections stated by participants in the interviews. *Evaluating actions happened during sessions, filling out forms while playing helped remembering* and *realizing expectations* were formed as the most significant positive reflections and they were stated by 3 participants and each reflection constituted 11.1% of all positive views. Additionally, *guessing and creativity, improving reasoning skills, making learning meaningful, putting thoughts into word* and *realizing and reflecting on process of gameplay* were other positive reflections and each of them stated by 2 participants, which formed 7.4% of all positive views. In terms of other reflections, each were stated by only 1 participant. On the negative side some participants had negative reflections on Plot Description form. Negative reflections can be seen in Table 27 below:

Table 27

Negative Reflections for Plot Description Form

Categories (n*=6)	f**	%	Participant
Needs adaptation (questions weren't clear/ same information)	2	100	P1H, P3M
Total	2	100	

*n=number

**frequency

Table 27 shows negative reflections stated by participants during semi structured interviews. Findings showed that there 2 negative answers given by 6 participants of the study. The only negative reflection was the opinion that *questions in the form weren't clear and asked for same information*, that's why the form needed adaptation. This answer was stated by P41H and P3M.

In this section positive and negative reflections of participants for materials used in examine sessions of digital game enhanced process of this study were analyzed. Next section focuses on reflections of participants for extend session activities.

4.3.8. Reflections of Participants on Extend Activities of Digital Game Enhanced Implementation

Gameplay process of this study included three steps as explore, examine and extend sessions. At the end of study participants were interviewed to get their reflections for stages and activities used in these stages of application. Positive and negative reflections related to explore and examine sessions and activities were shown in previous sections. In this section, findings related to reflections of participants for extend activities are analyzed under two titles as positive and negative reflections. Related finding can be seen in Figure 12 below:

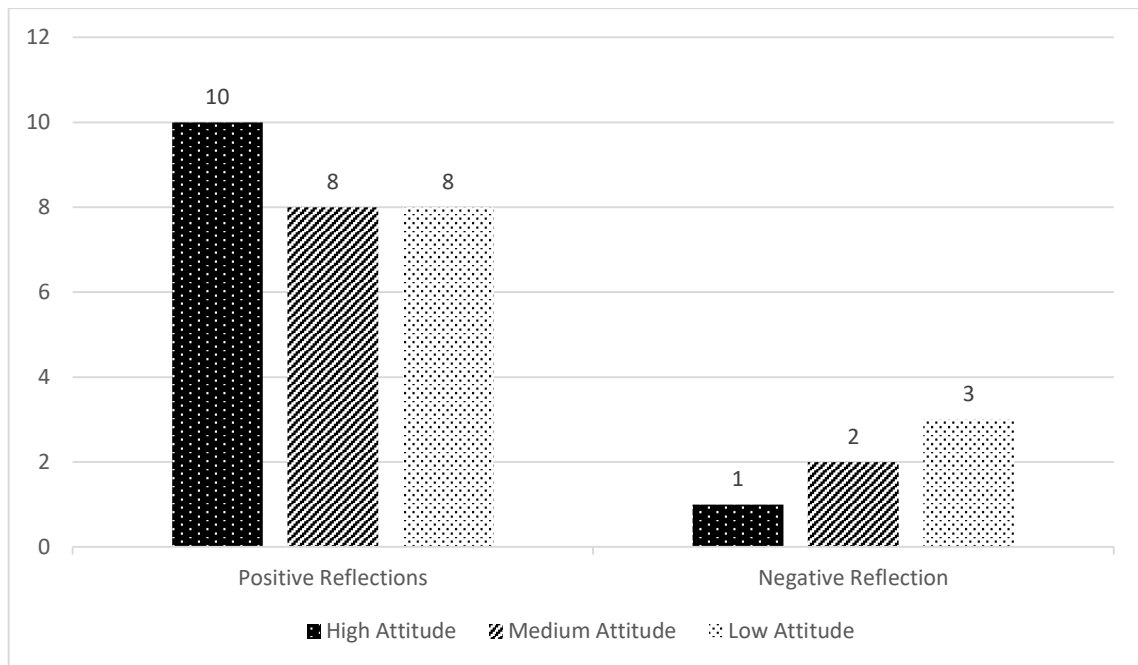


Figure 12. Reflections of participants on extend activity of digital game enhanced application

Figure 12 shows reflections of participants that they stated in semi structured interviews conducted at the end of the process. Results show that 33 answers were collected from 6 participants. Positive reflections formed 81.81% (n=27) of all the answers given. *High attitude* group uttered 10 reflections which comprised 37% of all the positive answers. Following that *medium attitude* group stated 8 answers which formed 29.62% of all the positive answers and last group who had *low attitude* mentioned 8 reflections forming 29.62% of all positive answers. On the other hand, negative reflections constituted 18.18% (n=6) of all the answers. In terms of negative reflections *low attitude* participants uttered 3 answers which formed 50% of all the negative answers. Meanwhile, *medium attitude* participants stated 2 negative reflections and their answers constituted *high attitude* participant and *medium attitude* participants mentioned 2 negative reflections which formed 50% of all negative answers. In addition, *medium attitude* participants stated 2 negative answers and their answers constituted 33.3% of all negative answers. On the other hand, *high attitude* participants uttered only 1 negative answer and their proportion in negative answers was 16.6%. Table 28 below shows positive answers of participants for extend activity:

Table 28

Positive Reflections for Extend Activity

Categories (n*=6)	f**	%	Participant
Making new ideas, production	6	22.2	P1H, P2H, P3M, P4M, P5L, P6L
Combining and compromising different experiences with pair work	5	18.51	P2H, P3M, P4M, P5L, P6L
Practicing in terms of productive language skills	4	14.81	P2H, P3M, P5L, P6L
Realizing pitch and intonation errors	3	11.1	P2H, P3M, P5L
Making meaningful connections with previous activities	3	11.1	P3M, P4M, P5L
Creating a friendly environment in classroom	1	3.7	P1H
Realizing grammar errors	1	3.7	P2H
Drawing attention	1	3.7	P1H
Guessing conversations	1	3.7	P2H
Understanding pragmatic signs	1	3.7	P2H
Using contextual clues for writing	1	3.7	P4M
Total	27	100	

*n=number

**frequency

Table 28 shows positive reflections of participants for extend activities. Results showed that there were 27 positive reflections mentioned by 6 participants of the study. The highest positive reflection asserted by participants was *making new ideas and production*. The number of participants stating that was 6 and it constituted 22.2% of all the positive views. Second common answer given by participants was *combining and compromising different experiences with pair work* which was commented by 5 participants and it formed 18.51% of all views. Table 29 also shows that 4 participants believed this form was useful for *practicing productive skills* with 14.81% rate. *Realizing pitch and intonation errors, making meaningful connections with previous activities* were other significant reflections emerged in the analysis, each item uttered by 3 participants and each one formed 11.1% of positive answers. In terms of other reflections, each were stated by only 1 participant. On the other hand, participants also expressed negative opinions for extend activities. Table 29 shows negative answers given by participants for extend activities.

Table 29

Negative Reflections for Extend Activity

Categories (n*=6)	f**	%	Participant
Voice record made me nervous	3	50	P3M, P5L, P6L
Voice record might make shy students nervous	1	16.6	P2H
Pair work could be problem with children	1	16.6	P3M
Pair work made me nervous	1	16.6	P5L
Total	6	100	

*n=number

**frequency

Table 29 shows negative reflections of participants for extend activities. Results showed that there were 6 negative reflections emphasized by 6 participants of this study. The highest negative reflection was about the fact that *voice record made me nervous*. The number of participants stating that was 3 and it comprised 50% of all views. Also, P2H emphasized that *voice record might make shy students nervous*. His comment formed 16.6% of all views. Lastly, P3M and P5L focused on the problems of pair work. Next section provides findings related to plans of participants for future teaching practices in terms of using digital game enhanced activities.

4.4. Findings Related to General Reflection Tendencies of Participants

Following RCGAS was conducted with third year pre-service teachers and analysis of data was completed, second phase of the study started. Participant selection was conducted through stratified sampling method and 6 participants were selected for taking part in digital game enhanced language learning activities through a story-based role-playing game. Through the procedure participants played the game and completed necessary activities. At the end of the process they were interviewed for collecting their reflections for story based digital game enhanced language learning and teaching process they experienced. They were requested to reflect on the game they played, overall process, three stages of the application and activities used in sessions. Data analysis was conducted separately for high, medium and low group participants in terms of positive and negative reflections. Related findings can be seen in previous parts of this chapter.

In this part general tendencies of participants who were involved in second phase of this study where gameplay sessions and activities designed beforehand by the researcher were evaluated. As it was stated before participants' reflections were analyzed

under two categories as positive and negative reflections. To see the big picture total number of utterances were calculated and related results can be seen in Figure 13 below:

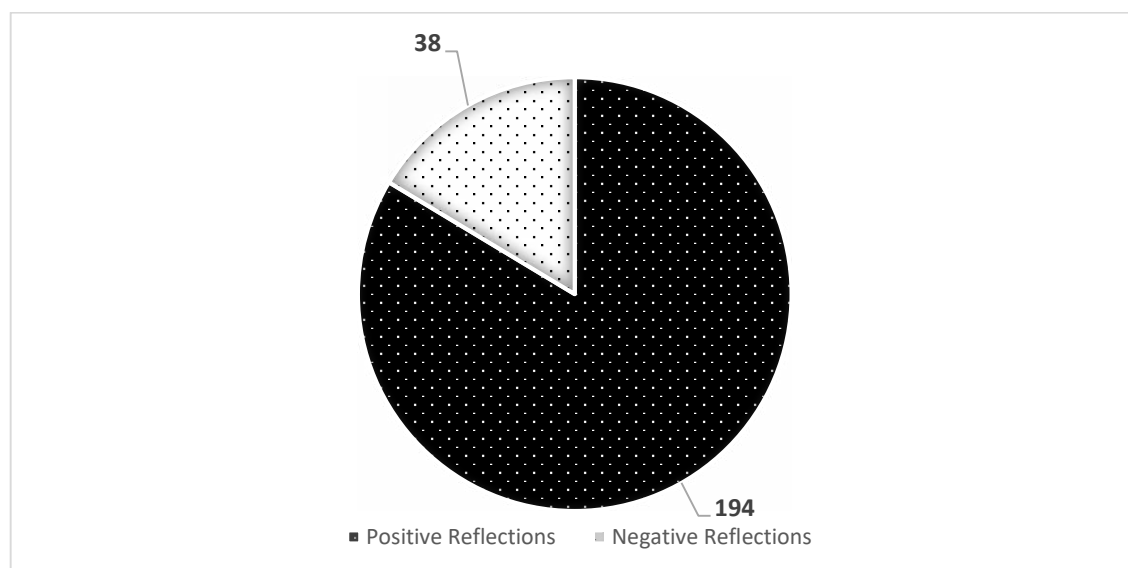


Figure 13. Distribution of total number of reflections collected from participants

Figure 13 shows total number of reflections mentioned by the participants in semi-structured interviews and distribution of these statements under positive and negative reflections. As is seen in 13 there were 232 reflections in total that participants uttered for the game they played, overall process, explore, examine and extend sessions and materials and activities used in explore, examine and extend sessions. Majority of these reflections were positive with frequency of 194 answers which formed 83.62% of all the reflections given. On the other hand, frequency of negative reflections stated by participants was 38 which formed 16.37% of all the reflections. In addition to investigating total number of positive and negative reflections, further analysis of initial attitude groups which were high, medium and low attitude groups were also analyzed to find out relationship between attitudes of participants and reflections they expressed at the end of the digital game enhanced application. Related findings can be seen in Figure 14 below:

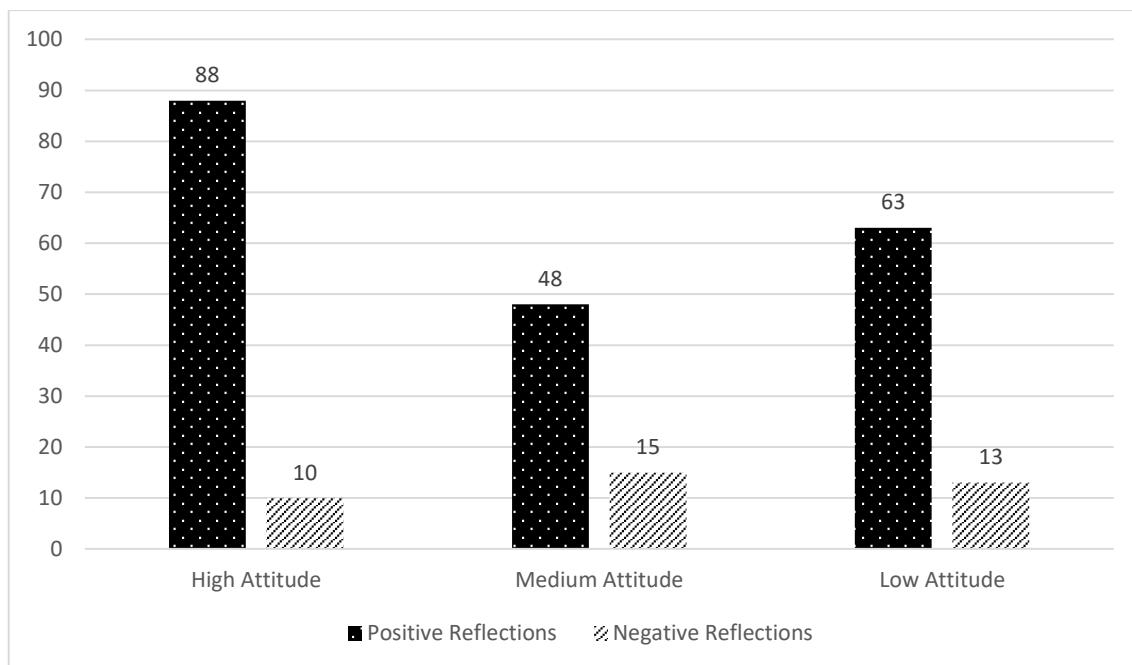


Figure 14. Distribution of reflections for attitude groups of participants

Figure 14 shows distribution reflections stated by participants who were involved in gameplay sessions and completed game enhanced language learning activities in this study for 3 attitude groups of this study as high, medium and low attitude groups under positive and negative reflection category. Figure 14 illustrates that *high attitude* group has the highest frequency in terms of positive reflections by 88 answers which formed 45.36% of all the positive reflections. Following that, it was found that reflections of *low attitude* group were formed as the second group with 63 positive reflections constituting 32.47% of all the positive answers. Last group represented in Figure 14 was medium attitude group and their positive reflection frequency was found as 48 and this formed 24.74% of all the positive answers given. In terms of negative reflections medium attitude group was found to be the highest group with 15 negative answers which formed 39.47% of all the negative answers. Following that low attitude group stated 13 negative answers and their views comprised 34.21% of all the comments. Lastly, high attitude group uttered 10 negative reflections which formed 26.31% of all the negative reflections. Analysis of attitude groups has shown general tendencies of initial attitude groups for positive and negative reflections, yet further analysis of individual reflections of each participant and their tendencies for positive and negative reflections was needed to reveal what extend individual utterances effected tendencies of initial attitude groups. Related findings can be seen in Figure 15 below:

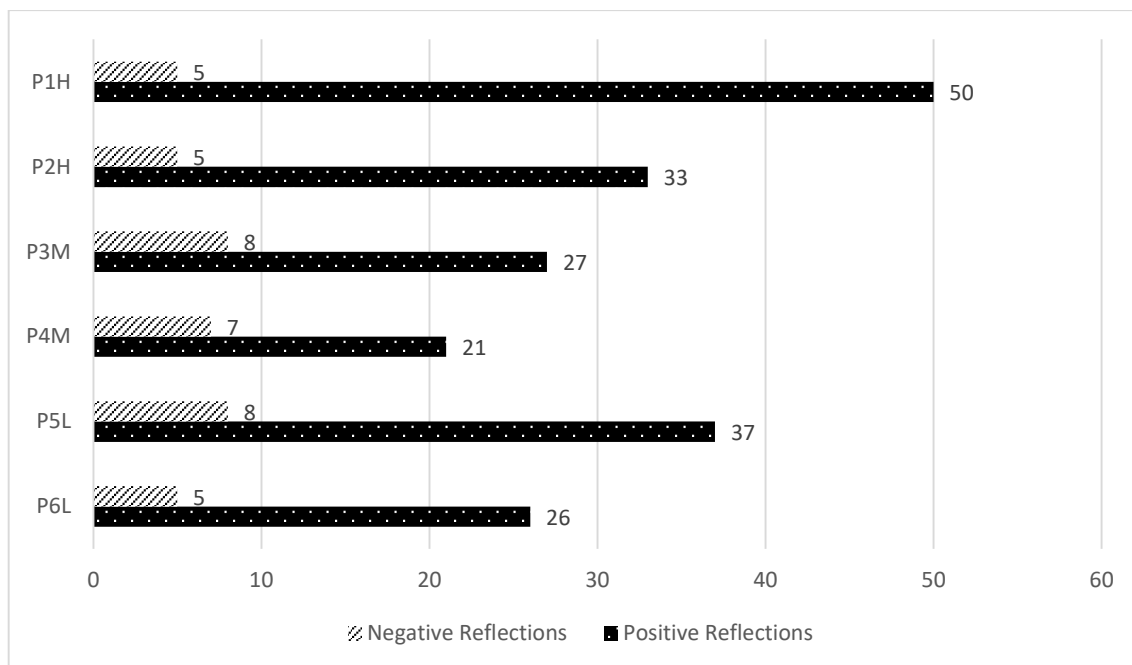


Figure 15. Distribution of reflections for each participant

Figure 15 shows individual reflections of each participant who were involved in second phase of this study. Results show that P1H has the highest positive reflection frequency with 50 answers and this forms 25.77% of all the positive answers. Second highest participant in terms of positive reflections was P5L who reflections were counted as 37 forming 19.07% of all positive answers. Meanwhile P4M stated 21 positive reflections and this formed 10.82% of all the positive answers, which made P4M having the lowest positive reflections among all participants. On the negative side, P3M and P5L stated same number of negative reflections as 8 answers and each one covered 21% of all the negative reflections.

4.5. Findings of Semi Structured Interviews Related to Intentions of Participants on Using Digital Game Enhanced Activities

Reflections of participants for three stages of this study and activities used in explore, examine and extend sessions were analyzed in previous sections. Findings related to reflections of participants for digital game enhanced language learning and teaching activities were provided. This section focuses on findings of semi structured interviews related to intentions of participants for using digital games and digital game enhanced activities in their language classrooms. Figure 16 shows distribution of participants in terms of their intentions for using digital game enhanced activities in their

future practices:

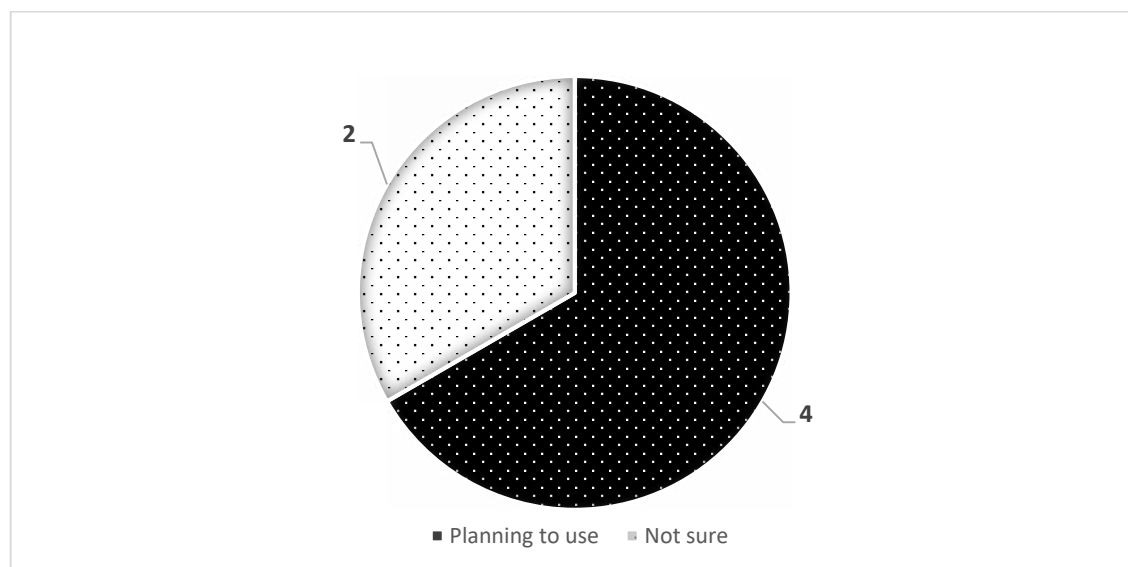


Figure 16. Participants' intentions for using digital game enhanced activities

Figure 16 shows findings related to intentions of participants who took part in game play sessions of this study. Findings show that 4 participants (P1H, P2H, P3M, P5L,) forming 67% of all answers out of 6 participants stated that they intend to use digital games and digital game enhanced activities in their language learning activities, whereas 2 participants (P4M, P6L) forming 33% of all answers out of 6 participants were not sure whether use or not. None of the participants stated they are not planning to use digital game enhanced activities in their future practices. It is understood that both high *attitude* participants mentioned that they think they would use digital game enhanced activities. Also, 1 medium attitude participant and 1 low attitude participant stayed positive for using digital games. On the other hand, 1 participant from *medium attitude* group and 1 participant from *low attitude* group stated their concerns for using digital game enhanced activities. P1H says he intends to use digital games in his classroom and emphasizes on the importance of context and language learning in Excerpt 6:

Excerpt 6:

I would like to use digital games because I think they would raise motivation of students. I believe teaching English using context is quite effective. For example, there was a simulation where you learn how change flat tires. Now I can remember every word I have seen there.

Meanwhile, P6L is willing to use digital game enhanced activities in her lessons however she stays cautious and focuses on the risks that should be given thought before deciding on using digital games in classroom:

Excerpt 7:

It is not an easy decision to make. There are many different variables. Selected game might give different results than expected, students might not learn anything etc. If I believe it is going to be useful I would use them in my classroom.

On the other hand, P4M who were not sure using game enhanced activities emphasized on being incompetent for planning digital game enhanced language learning activities. Reflections of P4M can be seen in Excerpt 8 below:

Excerpt 8:

I am not an expert using games, may be after gaining some more experience I would try using. I think it would draw especially attention of young learners.

4.6. Chapter Summary

In this chapter analysis of data collected through Revised Computer Game Attitude Scale for finding out attitudes of Turkish Pre-service EFL teachers and selected participants of digital game enhanced application and findings of semi structured interviews to unveil reflections of participants experiencing a digital game enhanced process on the game they played, overall procedure and three stages and activities used in explore, examine and extend of stages of the study were demonstrated. Also, distribution of positive and negative reflections in total number of reflections, initial attitude groups and individual tendencies were analyzed. Furthermore, intentions of participants to use digital game enhanced activities in their future lessons were demonstrated.

CHAPTER V

DISCUSSION

5.1. Introduction

This chapter presents the discussion of findings related to this study. Findings categorized under three research questions of this study and analysis of findings are discussed in relation with research questions and literature.

5.2. The Discussion of the Findings with Reference to Research Questions

Research question 1: *What are the attitudes of Turkish Pre-service EFL Teachers towards digital games?*

Revised Computer Game Attitude Scale has been applied to 88 Turkish Pre-service EFL Teachers to collect data on their attitudes towards digital games. The scale consisted of 17 items and is categorized under 4 factors as *Confidence* (users' confidence in playing the computer game), *Learning* (users' perceptions of positive impact when computer games are used in learning), *Liking* (users' perceived enjoyment for playing computer games) and *Leisure* (users' thoughts on taking playing computer games as leisure activities). Following data collection process, answers of the participants were analyzed under three categories based on their mean scores as Low scores (1 - 2.6), Medium scores (2.61 - 3.40) and High scores (3.41 - 5). Analysis of findings showed that total mean of 88 participants of this study in terms of attitudes for digital games were 3.34 (std=1.03), which indicates that average attitude of all the participants of this study were in *medium range*, however this result is above mid-point and slightly lower than *high attitude* limit.

We can conclude that analysis yielded parallel findings with literature when results of previous studies in terms of total attitudes of pre-service teachers are examined. Schrader, Zheng and Young (2006) who studied 203 pre-service teachers found that participants had positive attitudes towards digital games. In line with that, findings of Ertzberger (2009) who investigated attitudes of 390 pre-service teachers showed that participants tended to be more positive for digital games. Similar results were also seen in Hsu and Chiou (2011) who studied with 125 pre-service teachers; Pastore and Falvo

(2010) who studied 45 pre-service teachers; Hayes and Ohrnberger (2013) who studied with 223 pre-service teachers; Wu (2015) worked with 116 pre-service teachers and in-service teachers; Bensiger (2011) who worked with 75 pre-service teachers; Jenny, Hushman, and Hushman (2013) who investigated 23 physical education pre-service teachers in United States; Ruggiero (2013) who investigated 656 pre-service teachers and Ray, Powell, and Jacobsen (2014) who studied 41 pre-service teachers; Gómez-Pablos, del Pozo and Muñoz-Repiso, (2017) who worked with 193 pre-service primary education teachers. In Turkish context Can and Cagiltay (2006) examined 116 pre-service teachers and their results also showed positive results in terms of attitudes of pre-service teachers which is in line with research background.

However, it should be taken into consideration that data collection tools are different than RCGAS in these studies and most of them generally focus on attitudes in terms of educational potentials of digital games. As RCGAS, used in this study, has four sub-factors as *Confidence* (users' confidence in playing the computer game), *Learning* (users' perceptions of positive impact when computer games are used in learning), *Liking* (users' perceived enjoyment for playing computer games) and *Leisure* (users' thoughts on taking playing computer games as leisure activities) detailed analysis and comparison of each factor would give more reliable conclusions.

Further analysis of sub-factors in the scale demonstrated that attitudes towards *Confidence* and *Learning* factors were high. On the other hand, *Liking* and *Leisure* factors were between medium range scores. Results also showed that *Learning* was the highest factor of all the others with 3.58 mean and lowest standard deviation (stdLRN=0.87). *Leisure* factor resulted in being the lowest of all the other factors with 2.96 mean (stdLEI=1.27).

The fact that *Learning factor*, which is users' perceptions of positive impact when computer games are used in learning, has the highest value, means participants had positive attitudes towards using digital games as educational tools and this shows parallelism with previous studies indicating high attitudes for digital games by pre-service teachers. 203 pre-service teachers participated in study of Scrader, Zheng, and Young (2006) valued digital games in the classroom. Similarly, Can and Cagiltay (2006) explained that 116 pre-service teachers believed digital games are useful tools. In their study Hsu and Chiou (2011) pointed out that 68.8% participants believed it is possible to use digital games in classroom. Furthermore, 71% of the pre-service teachers and 77% of the in-service teachers viewed integrating digital games as educational tools can be

effective by stressing that they enhance learning, motivate students, and incorporate visual representations into educational practices (Pastore & Falvo, 2010). In addition, 75 pre-service teachers participated in study of Bensiger (2011) expressed that they would be interested in using digital games in classroom if they had the opportunity. All of these studies show parallel results with present study in terms of *Learning factor* of digital games.

There were four items under *Learning factor* which are Item 5, “*I like taking courses that use computers*” ($X_5=3.09$, $std_5=1.28$), Item 6, “*Using computer games in school is a good way to learn*” ($X_6=3.80$, $std_6=0.99$), Item 7, “*Playing computer games improves my eye and hand coordination*” ($X_7=3.75$, $std_7=1.14$) and Item 8, “*Playing computer games enhances my imagination*” ($X_8=3.69$, $std_8=1.15$). Among four items, Item 6, “*Using computer games in school is a good way to learn*” has the highest mean by 3.80 which is also in line with findings of previous studies.

Nevertheless, findings related to Item 5 of *Learning factor* which is “*I like taking courses that use computers*” ($X_5=3.09$, $std_5=1.28$) contradicts with the study conducted by Ruggiero (2013) who surveyed 1704 teachers, 656 of which formed by pre-service teachers indicated that 75% of pre-service teachers would be willing to participate if they were given a chance to take courses introducing how to use digital games in the classroom.

Research question 2: What are the reflections of Turkish Pre-service EFL Teachers who appear to have high, medium and low attitudes towards digital games?

Following RCGAS was conducted with third year pre-service teachers and analysis of data was completed, second phase of the study started. Participant selection was conducted through stratified sampling method and 6 participants were selected for taking part in digital game enhanced language learning activities through a story-based role-playing game. Through the procedure participants played the game and completed necessary activities. At the end of the process they were interviewed for collecting their reflections for story based digital game enhanced language learning and teaching process they experienced. They were requested to reflect on the game they played, overall process, three stages of the application and activities used in sessions. Data analysis was conducted separately for *high*, *medium* and *low* group participants in terms of positive and negative reflections (See Chapter IV).

Previous research has shown that pre-service teachers have positive attitudes towards digital games, especially as educational tools, even if they do not use them for leisure purposes. Furthermore, the ones who have negative attitudes appear not to be aware of digital games or have not experienced any digital game enhanced activity. For this reason, they are not sure what to do and they cannot think of any possible use. In that case, Gros, (2010); Ketelhut and Schifter (2011) advised that practical evidence of possible uses of digital game integration into classroom is needed to be shown to teachers for leading successful implementations. In line with that this study aimed to investigate first, attitudes of Turkish Pre-service EFL Teachers on digital games. Designed as an explanatory sequential mixed method study, a second phase of the study conducted with participants who appeared to have attitudes as *high*, *medium* and *low*. The aim of the second phase, was to familiarize participants with digital game enhanced language learning activities through a story-based role-playing game and collect their reflections at the end of the process.

Findings of this study showed that participants uttered 232 reflections for the *game they played*, *overall process*, *explore*, *examine* and *extend sessions* and *materials* and *activities* used in *explore*, *examine* and *extend sessions*. Majority of these reflections were positive with frequency of 194 answers which formed 83.62% of all the reflections given. It can be clearly seen from this result that participants being involved in game enhanced activities of this study expressed more positive reflections than negative reflections for the procedure. In this context, this result shows parallelism with study of Jenny, Hushman and Hushman (2013) who studied 23 physical education pre-service teachers in United States. They investigated their perceptions on motion-based video gaming in education. Findings showed that participants reported positive attitudes towards motion-based video gaming in education. Moreover, Cózar-Gutiérrez and Sáez-López (2016) who studied on 89 master's students in primary education course at the University of Castilla-La Mancha, Spain. At the end of the implementation 95% of the participants indicated positive attitudes towards using digital games in education. However, investigating only total number of positive and negative reflections would not be enough to provide depth analysis of reflections that the participants expressed at the end of the digital game enhanced application.

Accordingly, findings of this study also pointed out the number of reflections participants from *high*, *medium* and *low attitude* groups stated in terms of positive and negative reflections. (See Figure 14). Participants having *high attitudes* stated 88 positive

reflections (45.36%) which is significantly higher than other groups of the study. Further analysis of individual reflections to support these findings also indicated that positive reflection frequency of P1H was 50, which comprised 25.77% of all the positive views and P2H was 33 which formed 17% of all the positive reflections. (See. Figure 15). While P1H had the highest frequency, P2H was the third participant after P5L in terms of individual positive reflection frequencies. Taking *high attitudes* of these participants who described digital games as part of their life into account and highest number of positive reflections they stated, it can be concluded that participants having *high attitudes* towards digital games tended to reflect positively for the procedure involving digital game enhanced activities.

Reflections of participants who were involved in *medium attitude group* showed that they stated 48 positive reflections (24.74%) which is even lower than *low attitude group* of the study. Further analysis of individual reflections to support these findings also indicated that positive reflection frequency of P3M was 27 (13.91%) and P4M was 21 (10.82%) of all the positive reflections (See Figure 15). While individual positive reflection frequency of P3M was the lowest of all participants, P4M was close to be the second lowest by only 1 reflection. Considering *medium attitudes* of these participants it was possible expect seeing either positive or negative tendency at the end of the study. As these participants stated they had some positive opinions about digital games for leisure activities and educational tools, however, they were still not convinced towards benefits of digital game enhanced activities and challenges to solve for implementing. s It was also mentioned in study of Van Eck (2006) who argues that teachers need to be shown how to benefit from digital games. Accordingly, it is possible to infer that medium attitude participants who were involved in game enhanced activities of this study tended to reflect negatively for digital game enhanced practices.

Last group of this study in terms of attitudes was *low group participants*. Participants having low attitudes stated 63 positive reflections (45.36%) which was lower than *high attitude group*, while it was also significantly higher than *medium attitude group* of the study. Further analysis of individual reflections to support these findings also indicated that positive reflection frequency of P5L was 37 which comprised 19% of all the positive views and P6L was 26 which formed 13.04% of all the positive reflections (See Figure 15). Taking low attitudes of these participants who stated they do not play digital games and not sure about educational potentials of digital game enhanced practices, reflections of P5L is significant. Clearly reflections of this participant have

positive effect on *low attitude group* to be the second in terms of positive reflection category just behind *high attitude* participants. Statements of P5L who mentioned her intrinsic motivation towards playing games and her intentional actions for staying away from games show that experiencing a real-life example of digital game enhanced language learning application had positive effects on her reflections. Meanwhile, the fact that same process effected *medium attitude participants* negatively and did not change position of P6L who ranked the lowest in terms of reflections, indicates that individual differences should be accounted while evaluating participants' tendencies.

All in all, as result of the findings and discussion above this study points out that high attitudes of participants for digital games had positive effect on reflection tendencies of participants who were third year Turkish Pre-service EFL teachers in a state university for digital game enhanced activities. On the other hand, this was not the case for medium and low attitude participants. Medium and low attitude participants introduced themselves as not gamers for leisure activities, and they wanted to be convinced by concrete, simple and practical solutions showing that there is a benefit in implementing these tools into their personal and professional life. Therefore, more practical ways of implementing digital games into educational situations need to be shown to hesitant pre-service teachers in terms of being convinced for benefits of digital game enhanced activities such as designing game enhanced activities into language learning context where they would be involved in design process with hands on practices.

Research question 3: What are the insights and intentions of Turkish Pre-service EFL Teachers on digital game enhanced activities?

Findings of semi structured interviews related to intentions of participants for using digital games and digital game enhanced activities in their language classrooms in their future professional career were analyzed. Results showed that 4 participants (P1H, P2H, P3M, P5L) forming 67% of all answers out of 6 participants stated that they intend to use digital games and digital game enhanced activities in their language learning activities, whereas 2 participants (P4M, P6L) forming 33% of all answers out of 6 participants were not sure whether use or not. It can be concluded from these findings that majority of pre-service teachers had positive intentions towards using digital games after participating in the study and plan to use digital game enhanced activities for their future activities. This result is parallel with findings of Can and Cagiltay (2006) who examined

116 pre-service teachers and found that participants believed digital games are useful tools and they indicated their plans to use in their future teaching practices. Another parallel findings were found in the study Hsu and Chiou (2011) conducted, in which they claimed 68.8% participants believed it is possible to use digital games in classroom. Pastore and Falvo (2010) studied 53 in-service teachers and 45 pre-service teachers and they found that %55 of the pre-service teachers intend to use digital game in their future classrooms.

Participants stating that they intend to use digital game enhanced activities in their future language learning and teaching activities pointed out reasons for their choice as *digital games are new type of materials, enables interaction, raise motivation and contextual learning*. On the other hand, participants who stated that they are not sure whether they will integrate digital games in their future classrooms, expressed that they need more experience to be able to feel comfortable using digital game enhanced activities. This result is in line with the conclusion of Karadag who pointed out that teacher educators should focus on equipping prospective teachers with awareness and possible uses of digital games in educational situations (Karadag, 2015). Another reason for being not sure was stated as the variables that they cannot control such as *technological equipment, curriculum alignment and school policies*.

Analysis of 4 participants who stated that they intend to use digital games in their educational activities shows that 50% of participants were formed by *high attitude* participants, which shows us that *high attitude* participants might have a positive tendency for using digital game enhanced activities in their future teaching practices. Claiming that this positive tendency of *high attitude participants* resulted from game enhanced procedure they experienced in this study would not be possible considering the scope of this study. However, it is possible to argue that experiencing an example of digital game enhanced application did not cause any negative intention for *high attitude participants* for future teaching practices. On the other hand, findings of this study demonstrated that there may not be a significant effect of attitudes on reflections of *low attitude participants*, especially P5L whose positive reflection frequency was even higher than P2H who held high attitudes towards digital games. Evaluation of general reflection tendencies showed that *low attitude participants* scored higher than *medium attitude participants* when distribution of reflections for attitude groups of participants analyzed (See Figure 14). Considering low attitudes of this group, it can be concluded that attitudes do not prevent even *low attitude participants* from reflecting positively on digital game enhanced

language learning activities. Further analysis of findings also supports this argument which demonstrate that *low attitude group* stated either higher number of positive answers than both high and low groups or the same frequency as *high attitude group*. (See Figure 3, Figure 5, Figure 6, Figure 7 and Figure 8). Investigating where *low attitude participants* reflected lower than other groups revealed that they scored higher in reflections of *overall process* and *explore, examine and extend stages*, whereas their positive reflections decreased when they were requested to comment on activities used in those stages. The reason why this decrease was seen in evaluation of materials could be their hesitant position and low attitudes towards digital games. Also, it is possible that the desire to be convinced for benefits of integrating digital game enhanced activities led them to be more critical while reflecting on specific materials compared to other groups of this study.

5.3. Chapter Summary

In this chapter, results for each research question have been discussed by referring studies conducted previously in the same field, similar results have been highlighted and differences have also been identified compared to previous results.

CHAPTER VI

CONCLUSION

6.1. Introduction

The present study investigated attitudes of third year Turkish Pre-service EFL Teachers towards digital games. Then reflections of selected participants who took part in digital game enhanced language learning sessions were analyzed. In this chapter, concluding remarks of the study are illustrated.

6.2. Conclusion

The present study aimed to investigate attitudes of Turkish Pre-service EFL Teachers on digital games in the first phase through a five-point Likert scale and then deeply investigate reflections of selected participants who were Turkish Pre-service EFL teachers, on their experiences of digital game enhanced activities through designed narratives within a story-based role-playing game in foreign language learning context by semi structured interviews. With these purposes series of sessions introducing game enhanced foreign language learning and teaching to Turkish Pre-service EFL Teachers in a state university were applied and reflections of participants on their; explore, examine and extend activities during game sessions were noted and evaluated under three groups as high, medium and low attitude participants and positive and negative reflection categories.

Computer Game Attitude Scale have been applied to 88 Turkish Prospective EFL Teachers to collect data on their attitudes towards digital games. answers of the participants were analyzed under three categories based on their mean scores as Low scores (1 - 2.6), Medium scores (2.61 - 3.40) High scores (3.41 - 5). Results showed that “Total” mean score of the whole sample was 3.34 (stdT=1.03). It was concluded that average attitude of all the participants were in *medium range*. However, this result was slightly lower than *high score range* and it was also *above mid-point*, therefore the results were interpreted as participants showed *positive tendency* in terms of attitudes towards digital games. Furthermore, it was also seen that sub factors of the scale showed *positive attitudes*. Mean scores of Confidence and Learning factors were in *high range* with slight changes in value, while Liking and Leisure factors were between *medium range* scores.

Participants of game play sessions were selected based on their attitudes as a result of the analysis of game attitude scale as high, medium and low attitude participants. The aim of doing this was to deeply investigate reflections of selected participants who were Turkish Pre-service EFL teachers, on their experiences of digital game enhanced activities through designed narratives within a story-based role-playing game in foreign language learning context by semi structured interviews and investigate their insights and intentions towards digital game enhanced language activities. With this aim series of sessions were conducted by selected participants, during which they were requested to complete necessary activities and reflect at the end of each session and whole procedure through semi structured interviews.

Participants were also asked whether they intend to use digital games and game enhanced activities in their future teaching experiences. Results showed that 4 participants (P1H, P2H, P3M, P5L) forming 67% of all the participants stated that they intend to use digital games and digital game enhanced activities in their language learning activities, whereas 2 participants (P4M, P6L) forming 33% of all the participants were not sure whether use or not. Analysis of 4 participants who stated that they intend to use digital games in their educational activities shows that 50% of participants who plan to use digital games were formed by *high attitude participants*, which shows us that high attitudes of pre-service teachers towards digital games may direct participants to reflect positively and have positive intentions for using digital game enhanced activities in their future applications after participating and experiencing an example application.

On the other hand, it was also important that none of the participants stated they do not intend to use digital game enhanced activities in their practices. The fact that 33% of participants were not sure because of their need for experiencing more sample studies shows that Turkish Pre-service EFL teachers who participated in this study were not resistant in terms of holding negative attitudes towards using digital games in language learning and teaching situations. Moreover, they stated they would like to experience more examples introducing digital game enhanced language learning activities.

6.3. Implications for English Language Teaching

This study has revealed that Turkish Pre-service EFL teachers participated in this study have *positive reflection tendencies* towards digital games. It was also found that Turkish Pre-service EFL Teachers having *high attitudes* towards digital games might be more inclined for reflecting positively on activities including digital games and intend to

use them in future teaching practices. On the other hand, it was also found that *low attitude participants* were hesitant but not resistant. They reflected independently from their low attitudes and tended to be more positive after experiencing digital game enhanced practices. However, they stayed cautious for stating that they intend to use digital game enhanced activities in their teaching practices, emphasizing on the need for experiencing more real-life examples.

As a result, exposing Pre-service EFL Teachers more with examples of digital game enhanced activities before their professional carrier might affect pre-service teachers' attitudes positively and increase possible future integration of new technological materials into educational practices by enabling them to feel more familiar with new technologies. In this respect, providing new opportunities for pre-service EFL teachers to participate and conduct hands on activities and projects where they can experience more ways of successful integration examples, integrating digital game enhanced practices into syllabus of Educational Technologies and Material Development course or designing and conducting an elective course in ELT department curriculum could be beneficial.

6.4. Suggestions for Further Research

This study focused on attitudes of Turkish Pre-service EFL Teachers on digital games first and reflections of selected participants and plans of Turkish Pre-service EFL Teachers on using digital game enhanced activities in their educational practices. Findings of this study should be justified in another study that will include a bigger sample to reach more reliable conclusions. Further studies also should concentrate on digital game enhanced activities based on different game genres in order to find out whether there is an effect of selected game genre on the findings of this study. Lastly, further studies should be designed as action research to reveal actual process of implementing game enhanced activities into teaching practices from teachers' perspective to show pre-service teachers how to better implement digital game enhanced activities in educational practices.

6.5. Chapter Summary

In this chapter a general conclusion of the study has been given, implications for English language teaching field have been highlighted and some topics for further research have been suggested.

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APPENDICES

Appendix 1. Revised Computer Game Attitude Scale

REVISED COMPUTER GAME ATTITUDE SCALE					
(Liu, C.-C. et al. Eds. 2014).					
Name: Gender: Age:					
<u>Items</u>	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I am good at playing computer games.					
2. Playing computer games is easy for me.					
3. I understand and play computer games well.					
4. I am skilled at playing computer games.					
5. I like taking courses that use computers.					
6. Using computer games in school is a good way to learn.					
7. Playing computer games improves my eye and hand coordination.					
8. Playing computer games enhances my imagination.					
9. I like it when people talk about computer games.					
10. I feel comfortable while playing computer games.					
11. I am very interested in solving quests / questions / missions in computer games.					
12. I always try to solve the current quest/question/mission in the computer game.					
13. Playing computer games makes me happy.					
14. Playing computer games is part of my life.					
15. When I have free time, I play computer games.					
16. I talk about computer games with my friends.					
17. I am not alone in a computer game as I can make friends there.					

Appendix 2. Semi Structured Interview Questions

1. What do you think about the game you played during the study?
2. What do you think about the whole procedure of the story-based role playing digital game enhanced application that you have been involved?
3. What do you think about the explore stage of the study?
4. What do you think about the materials used in explore session?
5. What do you think about the examine stage of the study?
6. What do you think about the materials used in examine session?
7. What do you think about the extend stage of the study?
8. What do you think about the materials used in extend session?
9. Are you planning to use story-based role playing digital games in your future EFL teaching and learning experiences?
10. Is there anything you want to add?

Appendix 3. Learning the tutorial form – Explore Session (Sykes & Reinhardt, 2012)**Learning the Tutorial**

Answer the following questions after paying the game tutorial session.

Name:

1. Was it hard for you to learn how to play the game?
2. Explain what you initially like about the game and what you dislike about it.
Make sure you provide reasons.
3. Name two different tasks that you can do in the game
4. For each task, explain why you need to do it to play the game
5. Write four words and two phrases you needed to know to complete the tasks.

Appendix 4. Solving the Puzzle Form

Fill the form below for each memory you changed and what other characters do at the same time. Then write the result of these actions. Use different forms for each action.

The diagram illustrates the structure of the 'Puzzle Form'. It consists of four rectangular boxes arranged horizontally at the top. Below these, a single rectangular box is positioned centrally. Four arrows point from each of the top boxes down to the central box, indicating that the information from the four individual memory changes is synthesized into a single result. A large, faint 'X' watermark is visible in the background of the lower half of the page.

Appendix 5. Designing Narratives – Character Description (Sykes & Reinhardt, 2012)

Designing Narratives – Character Description

This activity should be completed for each of in game characters that you encounter

- A. What is character's name?
- B. Describe his/her appearance.
- C. Describe his/her personality.
- D. Describe his/her role in the game (e.g. quest giver, enemy, shopkeeper etc.)
- E. How do you feel about this character? Why?

A. Name	B. Appearance	C. Personality	D. Role	E. Evaluation

Appendix 6. Designing Narratives – Setting Description (Sykes & Reinhardt, 2012)

Designing Narratives – Setting Description

This activity should be completed for each of the setting or places in the game that you encounter

- F. What is the name of the place?
- G. Describe its appearance. What does it look like?
- H. What unique qualities does this place have?
- I. What is the place for? What can you do here?
- J. How do you feel about this place? Why?

F. Name	G. Appearance	H. Qualities	I. Function	J. Evaluation

Appendix 7. Designing Narratives – Plot Description (Sykes & Reinhardt, 2012)**Designing Narratives – Plot Description**

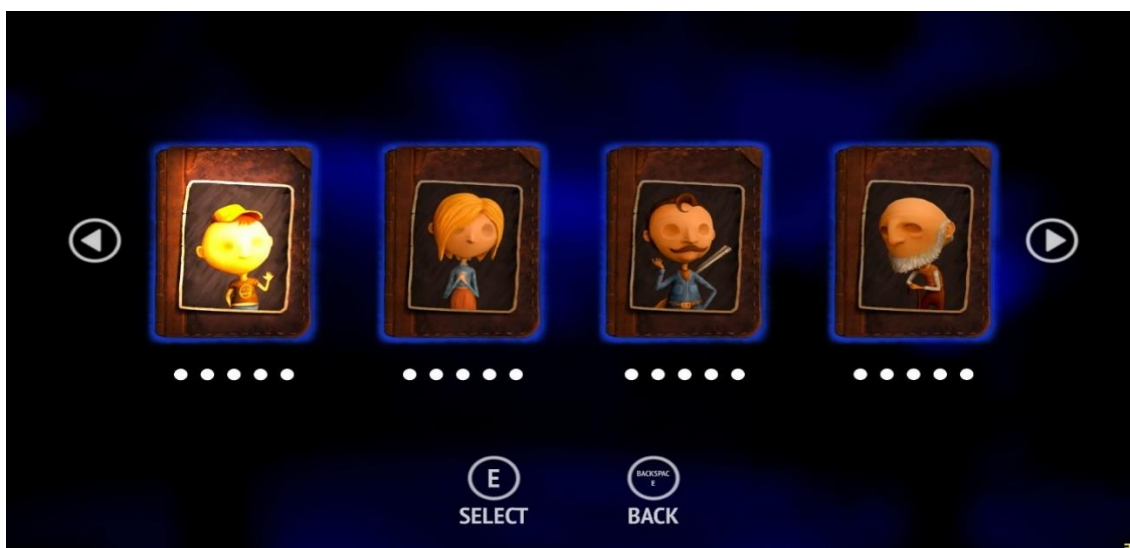
This activity should be completed for each game session. For this activity, you should record what actions happened during the game.

A. What happened during this session? What were the main points in the action?

B. What characters were involved? How did your character develop?

C. What did you learn about the game narratives?

D. What do you think will happen next in the game?

Appendix 8. Screenshots from Last Day of June

Appendix 9. Consent Form

Consent Form for Participation in a Research Study

TURKISH EFL PRE-SERVICE TEACHERS' ATTITUDES TOWARD AND REFLECTIONS ON DIGITAL GAME ENHANCED PRACTICE

Description of the research and your participation

You are invited to participate in a MA thesis study conducted by Ali Ceyhun MÜFTÜOĞLU. The purpose of this research is to introduce parallelism between game design elements and L2 teaching and learning to teacher candidates. Investigating their attitudes towards the potential of digital games, increasing their game literacy as a part of technological literacy and raising their awareness on possible use of narrative in digital games and L2 classroom; designing editing, reflecting on narratives on digital games through explore, examine and extend activities. The study will investigate whether these activities will be useful for teacher candidates or not.

Your participation will involve attending the sessions, completing activities and filling forms related to language practice, observation by the researcher during video recorded game sessions, being interviewed at the end of the study.

Risks and discomforts

There are no known risks associated with this research.

Potential benefits

This research may help you to learn about designing editing, reflecting on narratives on digital games through explore, examine and extend activities and their use in language teaching which gives you the chance of using authentic materials in your classroom, and vary the activities you implement.

Protection of confidentiality

We will do everything we can to protect your privacy. Your identity will not be revealed in any publication resulting from this study. The data gathered will only be used for academic purposes.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate, and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Contact information

If you have any questions or concerns about this study or if any problems arise, please contact Ali Ceyhun Müftüoğlu at Çukurova University.

Phone:

e-mail:

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant's signature _____ Date: _____

A copy of this consent form should be given to you.

CURRICULUM VITAE

PERSONAL INFORMATION

Name & Surname : Ali Ceyhun MÜFTÜOĞLU
Date / Place of Birth : 01.08.1991-İslahiye
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EDUCATIONAL BACKGROUND

2015-2018 : MA, Çukurova University, Institute of Social Sciences,
English Language Teaching Department
2009-2013 : BA, Anadolu University, Faculty of Education,
English Language Teaching Department

WORK EXPERIENCE

2016- : Research Assistant, Çukurova University, English
Language Teaching Department, Adana
2014-2015 : English Language Teacher, Şükrü Geliş
Secondary School, Şırnak