TURKISH REPUBLIC
TRAKYA UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
FOREIGN LANGUAGES TEACHING DEPARTMENT
DIVISION OF ENGLISH LANGUAGE TEACHING
A MASTER'S THESIS

THE ROLE OF DIGITAL GAME-BASED LEARNING IN ENHANCING VOCABULARY ACQUISITION

MERVE KURUKAYA

ADVISOR

ASSOC. PROF. DR. KUTAY UZUN

EDİRNE 2024

ACKNOWLEDGMENTS

Firstly, I would like to thank to my advisor Assoc. Prof. Dr. Kutay Uzun not only for enlightening me on this path with his experiences and knowledge but also for his supports and contributions to my learning process. I am grateful to you for being my advisor throughout this experience that I will remember for the rest of my life.

Also I would like to express my endless gratitude to my dear sister, Melek Çubukcu and my dear brother Ümit Ersin Kurukaya, who always made me feel loved and supported. And my parents, Mehrali and Ayşe Kurukaya, who have shown unconditional love and respect to me in every step I have taken from my childhood untill this very day. I am feeling so blessed to have a family like you in this increadible journey.

I am deeply grateful to each of my students who participated in this process voluntarily with their desire to and their participation in the lessons. As a teacher, my students' motivation and the values they showed during the lesson are really valuable and priceless.

Many exceptinal thanks to my dear friends who always supported me and shared their brilliant ideas with me, are the reason for my motivation during this period of my life. I am incredibly thankful to each of you for being more like a family rather than friends.

Tez Başlığı: Dijital Oyun Tabanlı Öğrenmenin Kelime Edinimini Geliştirmedeki Rolü

Yazar: Merve Kurukaya

ÖZET

Bu çalışmada, İstanbul'daki bir vakıf üniversitesinde hazırlık sınıfında okuyan öğrencilerin İngilizce kelime bilgisini geliştirmek için etkileşimli oyunlar oynayarak kelime öğrenmek için birden fazla araç sunan bir öğrenme platformu olan Quizizz'i dijital oyun tabanlı bir öğrenme aracı olarak kullanarak Dijital Oyun Tabanlı Öğrenme (DGBL) yöntemin kelime edinimini geliştirmedeki etkisi incelenmiştir. Toplamda 16 hafta süren bu araştırmada 40 öğrenci yer almıştır. Bu araştırmada 20 kişiden oluşan deney grubu öğrencileri ile bir sınıfta Quizizz işlenirken, kontrol gruubunda olan 20 öğrenci için ise geleneksel yöntemle başka bir sınıfta ders işlenmiştir. Öğrencilere yapılan testler gerçekleştirildikten sonra odak grup ile bir anket gereçekleştirilmiştir. Bu araştırmada elde edilen veriler istatiksel olarak analiz edilmiştir. Araştırmanın sonucu Quizizz ile ders işlenen sınıftaki deney grubu öğrencilerinin kelime kazanımının, geleneksel yöntem uygulanan kontrol grubu öğrencilerine kıyasla daha fazla kelime öğrendiği ve Dijital Oyun Tabanlı Öğrenme'nin kelime öğrenme sürecine olan olumlu etkisi ortaya çıkmıştır.

Anahtar Kelimeler: kelime öğreninimi**,** Dijital Oyun Tabanlı Öğrenme, Quizizz, kelime öğretimi

Title: The Role of Digital Game-Based Learning in Enhancing Vocabulary Acquisition

Author: Merve Kurukaya

ABSTRACT

In this study, the effect of Digital Game Based Learning (DGBL) approach in enhancing vocabulary was examined by using Quizizz, which is a learning platfrom that offers multiple tools to learn vocabulary by playing interactive games, as a Digital Game Based Learning tool to develop the english vocabulary of students studying in the prepatory class at a university in İstanbul. In this study, which lasted 16 weeks in total, 40 students took part. In this research, Quizizz was taught in a classroom with 20 students in the experimental group, while 20 students in the control group were taught in another classroom using the traditional method. After the tests were carried out on the students, a survey was conducted with the focus group. The data obtained in this research was analyzed statistically. The result of the research revealed that the vocabulary acquisition of the experimental group students in the class taught with Quizizz learned more words compared to the control group students who were taught with the traditional method, and the positive effect of Digital Game-Based Learning (DGBL) on the learning process was revealed.

Keywords: vocabulary learning, Digital Game Based Learning (DGBL), Quizizz, vocabulary teaching

TABLE OF CONTENTS

ACKNOWLEDGMENTS i
ÖZET ii
ABSTRACT iii
LIST OF TABLES vi
LIST OF FIGURES viii
1.1. Introduction 1
1.2. Statement of the Problem 1
1.3. The Aim and Scope of the Study 2
1.4. Research Questions 3
1.5. The Significance of the Study 3
1.6. Assumptions 4
1.7. Limitations 5
CHAPTER 2: LITERATURE REVIEW 6
2.1. Introduction 6
2.2. Educational Technologhy in the 21st Century 6
2.3. Vocabulary Teaching and Learning 8
2.4. Game-Based Learning, Gamification, Serious Games and Digtial Game Based Learning Approaches 10
2.4.1. Game-Based Learning (GBL) 12
2.4.1.1. Game Characteristics 14
2.4.2. Gamification 16
2.4.2.1. Gamification in Education 17
2.4.3. Serious Games 19
2.4.4. The Comparision of The Game-Based Learning, Gamification and Serious Games 19
2.4.5. Digital Game-Based Learning 22
2.4.5.1. Digital Game-Based Learning on Acquisition 26
2.4.5.2. Quizizz 27
CHAPTER 3: METHODOLOGY 29
3.1. Introduction 29
3.2. Research Method 29
3.3. Participants 30
3.4 Data Collection Tools and Procedure 31
3.4.1. Data Collection Tools 31
3.4.2. The Procedures 34
3.5. Data Analysis 36
CHAPTER 4: RESULTS 38

4.1. Introduction 38
4.2. Findings Related to Research Questions 38
4.2.1. Findings of Research Question 1 38
4.2.2 Findings of Research Question 2 57

CHAPTER 5: DISCUSSION 60

CHAPTER 6: CONCLUSION 64
6.1. Conclusion 64
6.2. Pedagogical Implications 65
6.3. Further research and limitations 67

REFERENCES 68

APPENDICES 80

Appendix 1: Pre-Post Test 80
Appendix 2: Quiz-1 89
Appendix 3: Quiz-2 91
Appendix 4: Quiz-3 93
Appendix 5: Quiz-4 95
Appendix 6: Quiz-5 97
Appendix 7: Quiz-6 99
Appendix 8: Quiz-7 101
Appendix 9: Quiz-8 103
Appendix 10: Survey 105
Appendix 11: Approval of Research Committee 107

LIST OF TABLES

Table 1. Gender Distribution Across Groups 31
Table 2. Testing and Treatment Procedure for Experimental and Control Groups ... 35
Table 3. Pre-Test Results of The Control Group 39
Table 4. Pre-Test Results of The Experimental Group 39
Table 5. Post-Test Results of The Control Group 40
Table 6. Post-Test Results of The Experimental Group 40
Table 7. Progress of Control Group Students from Pre-Test to Post-Test 41
Table 8. Progress of Experimental Group Students from Pre-Test to Post-Test 42
Table 9. Dependent Sample T-Test Results of The Control Group 42
Table 10. Dependent Sample T-Test Results of The Experimental Group 43
Table 11. Independent Sample T-Test Results of The Difference Between Pre- Post Tests 43
Table 12. Test Results of the Control Group 44
Table 13. Test Results of The Experimental Group 45
Table 14. Quiz-1 Results of The Control Group 46
Table 15. Quiz-1 Results of The Experimental Group 46
Table 16. Quiz-2 Results of The Control Group 47
Table 17. Quiz-2 Results of The Experimental Group 48
Table 18. Quiz-3 Results of The Control Group 48
Table 19. Quiz-3 Results of The Experimental Group 49
Table 20. Quiz-4 Results of The Control Group 50
Table 21. Quiz-4 Results of The Experimental Group 50
Table 22. Quiz-5 Results of The Control Group 51
Table 23. Quiz-5 Results of The Experimental Group 52
Table 24. Quiz-6 Results of The Control Group 52
Table 25. Quiz-6 Results of The Experimental Group 53
Table 26. Quiz-7 Results of The Control Group 54
Table 27. Quiz-7 Results of The Experimental Group 55

Table 28. Quiz-8 Results of The Control Group 55
Table 29. Quiz-8 Results of The Experimental Group 56
Table 30. Survey Results of The Experimental Group 59

LIST OF FIGURES

Figure 1. Model of game-based learning by (Garris, Ahlers, & Driskell, 2002). 14
Figure 2. Classification of Gamification (Deterding et al., 2011) 16

LIST OF ABBREVIATIONS

AI: Artificial Intellegence

DGBL: Digital Game Based Learning

DGBLL: Digital Game Based Language Learning

GBL: Game-Based Learning

GBLL: Game-Based Language Learning

MOOCs: Massive Open Online Courses

PBL: Points, Badges and Leaderboard

RQ: Research Question

SLA: Second Language Acquisition

SLVA: Second Language Vocabulary Acquisition

SPSS: Statistical Package for the Social Sciences

VR: Virtual Reality

LIST OF APPENDICES

Appendix 1: Pre-Post Test 80
Appendix 2: Quiz-1 89
Appendix 3: Quiz-2 91
Appendix 4: Quiz-3 93
Appendix 5: Quiz-4 95
Appendix 6: Quiz-5 97
Appendix 7: Quiz-6 99
Appendix 8: Quiz-7 101
Appendix 9: Quiz-8 103
Appendix 10: Survey 105
Appendix 11: Approval of Research Committee 107

CHAPTER I: INTRODUCTION

1.1. Introduction

In this chapter, statement of the problem, the aim and the scope of the study, research questions, the significance of the study, assumptions, limitations, and definitions of terms are briefly introduced.

1.2. Statement of the Problem

In the 21st century, there have been many innovative methods, techniques and approaches as for vocabulary acquisition, which play a vital role in acquiring a new language. With the introduction of technology into our lives, the place of technology in education is increasingly gaining importance worldwide day by day. Like many countries around the world, in Turkey, too, technology is being integrated into education in some schools.

However, due to the lack of this integrated education in some schools, students are not exposed to equal conditions for vocabulary learning. In some public schools some students who are still educated with the traditional learning, are not able to benefit from this technology integrated education in Turkey. Balcı & Çakır (2012) points out that when teaching vocabulary in EFL classrooms in Turkish schools, teachers typically favor using traditional methods. Ulum and Uzun (2020) provide a critical perspective on English teaching and learning in Turkey by stating "The failure of the traditional English teaching and learning system can be attributed to the types and nature of exams as well as the use of the grammar translation method" (p. 458).

Traditionally, students who learn in a traditional manner adhere to textbooks, which are the traditional learning tools provided by teachers who control the course.

However, innovative learning strategies brought by our age include interactive learning involving games and activities where the student is at the forefront, contrary to this traditional learning approach. And this has a crucial importance for vocabulary acquisition, which is the cornerstone of learning a new language.

Unfortunetely, without the integration of technology into education, many students are missing out on effective tools for vocabulary acquisition. It has been determined that students learning vocabulary through the traditional education model learn fewer words compared to students learning vocabulary with the interactive tools. Furthermore, their motivation has been observed to be lower as well. Relevant studies indicate that digital game-based learning (DGBL) possesses significant potential for increasing students' learning motivation (Papastergiou, 2009; Huang, 2011) and enhancing their learning effectiveness (Yang, 2012; Wang & Chen, 2010). For this reason, all students should receive education through the DGBL approach and move away from traditional learning approaches.

1.3. The Aim and Scope of the Study

The aim of this study is to examine the effect of the Digital Game-Based Learning (DGBL) approach by using Quizizz, which is a learning platform that offers multiple tools to learn vocabulary by playing games interactively, as an digital game-based learning tool to improve the learning of English vocabulary. Specifically, this study focused on the vocabulary learning of the participating students by using a digital game based learning tool named Quizizz. By using Quizizz, learners were applied Digital Game-Based method for their vocabulary acquisiton. In this study, not only the contribution of the DGBL approach to learners' vocabulary acquisition has been examined, but also the learners' thoughts about this method have been investigated.

1.4. Research Questions

The study investigates the following research questions:

RQ 1: Is there a significant effect of Digital Game-Based Learning on prep class students' vocabulary acquisition?

RQ 2: What are the students' thoughts on vocabulary acquisiton by using Digital Game Based Learning?

The following hypotheses were formed based on these research questions:

1. The use of Digital Game-Based Learning is expected to influence vocabulary acquisiton positively.
2. The majority of the students are expected to hold positive feelings towards Digital Game-Based Learning.

1.5. The Significance of the Study

Today, technology has a very important place in many fields, including education. With the increasing use of technology in schools and online courses, the way of learning of the future is shaped by technology. Being aware of this importance, many studies have been conducted on the positive effects of using technology in education on children's language acquisition. One of the methods that has been directly engaged to the technology is the Digital Game-Based Learning approach which involves many kinds of games that can contribute to students' second language acquisition. As many DGBL environments simulate complex real-life social networks, they can be aligned with theories of situated cognition, schema theory, and interactional cognitive development. These theories underscore the importance that cognitive apprenticeships and learning communities play in the development of higher mental processes and the acquisition of knowledge. Furthermore, DGBL has also been found to be amenable to instructional approaches utilizing situated learning, anchored

instruction, and discovery-based learning (Brown & Adler, 2008; Gibson & Aldrich, 2007; Van Eck, 2006, 2007).

The discovery learning that based on Digital Game Based Learning method has an important role on language acquisition. Therefore DGBL also has an important role on vocabulary acquisiton as well. Although there are many studies on digital game-based learning, this research specifically examines the role of Quizizz, a tool of digital game-based learning, in vocabulary learning. In this digital age, where the place of technology in education increases day by day, the importance of Quizizz and similar digital game-based learning tools also increases.

Quiroz et al. (2021) used a quasi-experimental test after their study to see how Kahoot! impacted learning English words in a non-native English environment. They concluded that using Kahoot! led to an important increase in English vocabulary. This shows that using a digital game based learning platform may lead to an increase in vocabulary learning. This research aims to uncover the impact of Quizizz, an interactive learning platform similar to Kahoot! in enhancing vocabulary. It seeks to shed light on Quizizz's role in vocabulary learning. Educators can better understand Quizizz's role in vocabulary learning by examining how students interact with Quizizz and its effectiveness in facilitating vocabulary learning. Understanding the specific benefits and challenges of using Quizizz for English language learning can inform teaching practices and curriculum development, ultimately increasing the effectiveness of digital tools in education in the future.

1.6. Assumptions

It was anticipated that the quantitative data collected within the scope of this study would provide adequate responses to the research questions. Also it was expected that the participants answered the interview questions truthfully. Informed

by previous studies, it is considered that Digital Game-Based Learning has an important impact on vocabulary acquisition.

1.7. Limitations

In this study, participants engaged in an 16-week vocabulary teaching process by attending classes weekly. This study took place at a preparatory school affiliated with a foundation university in Istanbul. This study can also be conducted at various universities around the world. However, same results may not occur.

1.8. Definitions

Digital Game-Based Learning (DGBL): Digital Game Based Learning (DGBL) approach utilizes the game as a medium for conveying learning contents. (Matzin, N. A., Jaafar, A., & Wong, S. Y., 2009, p. 1)

Quizizz: It refers to a digital game-based learning platform that includes digital games.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter aims to provide contextual information relevant to the objectives of the current research. The primary goal of this research is to evaluate the impact of the DGBL method on vocabulary acquisition. Another objective of this study is to learn about students' perspectives on vocabulary acquisition when the DGBL method is integrated into the classroom. In addition, in this section of the current research, the definition of Digital Game-Based Learning (DGBL) method, its place and usage in education, along with its use in second language acquisition, are described. Information regarding the relationship between vocabulary acquisition and Digital Game-Based Learning (DGBL) is provided.

2.2. Educational Technologhy in the 21st Century

The comprehending of education is continuously evolving with the advancement of technology by increasing each day. One of the significant reason for this change is the integration of technology into education, which has now become a significant aspect of the educational process. Çelik (2021) thinks that nowadays, as in many fields, the rate of using new technologies in the field of education is increasing rapidly.

Eeducational technology consists in the set of available for teachers, students and parents digital tools, platforms, and resources that help improve teaching and learning as well as student outcomes. Digital learning platforms offer an online medium where students can access course materials, engage in activities or exercises interactive with the class, work collaboratively with fellow classmates and get real-

time feedback from the teachers while taking lessons. In recent years, as they provides us the opportunity of learning everywhere and ever that due to benefits like “smartphones” or other tablets. Now it is very common for all human kind throughout the world. Present and video conferencing tools and virtual classrooms allow remote teaching and learning, through the use of platforms available for computers with internet access that bring together multiple communication formats such as videos, audio recordings, texts or presentations. Such initiative is likely to offer an understanding in more detail to communicate virtually better which will lead students can get the education easier than before.

Online courses and Massive Open Online Courses (MOOCs) provide learners across the globe with easily digestible, self-paced learning experiences on virtually any topic. This enables access to world-class level education for anyone who has an internet connection to a computer. By contrast, adaptive learning systems use data analytics and artificial intelligence to make individualized changes for each student’s experience—in other words, making the learning process more effective as well as efficient. Gamification and game-based learning (GBL) use these aspects of games to encourage students’ engagement, thus enhancing their understanding and recollection while doing so.

Virtual Reality (VR) technology that help in creating highly immersed learning experiences to improve students’ engagement levels even on complex subjects such as science, history and geography are also effective. Learning analytics tools collect and analyze data on student performance, behaviors, and interactions with educational content, empowering educators to make data-driven decisions to improve instructional practices and student outcomes.

Technology integrated into education in the 21st century has some significant effect on critical thinking, creativity, and self-directed education model. Instead of a teacher-centered education model, a model occured where students can engage in self-directed learning during the process of learning. Multiple tools incorporating

technology used in classrooms have emerged to enhance communication and critical thinking through many kinds of activities. Some researches indicate that innovative educational models combined with technology have led to increased critical thinking and creativity within students. Mishra, Koehler, and Henriksen (2011) mention that the best way to use educational technology must be grounded in a creative mindset that embraces openness for the new and intellectual risk-taking.

In some studies, it is observed that students educated through traditional methods experience negative impacts on their creativity. Giroux & Schmidt (2004) show that traditional "drill and kill" approaches or standards-based teaching have often squeezed creativity out of the curriculum or areas of policy and assessment. That's exactly why teachers have a significant role, because they need to adapt to this change, move away from traditional teaching methods, and embrace innovative educational teaching models to add something new to their students.

One of the most important benefits of integrating digital technologies into education is that it is also reachability. The fact that students can access information more quickly both in the classroom and in their own lives depicts the importance of digital technology once again. In reference to this issue, Henriksen et al. (2016) mention that one of the key feature of digital technologies is that content or knowledge can be created, shared and discovered much more quickly and easily.

2.3. Vocabulary Teaching and Learning

The importance of communication is increasing day by day in the world that begins to evolve with the continuous development of technology. In the 21st century where communication is very effective, vocabulary acquisition has a vital role in learning a new language. Schmitt (2000) indicates that lexical knowledge is the base of communication skills and the acquisition of a second language. To know a new word, learners must be familiar with its meaning, usage, form, and pronunciation.

Nontasee and Sukying (2021) mention that the aspects of form and meaning are essential for the production of a word. In the process of learning a new language, vocabulary plays a vital role because it requires the most extensive learning. Miller (1996) points out that "it is not the speech sounds or the rules for generating grammatical sentences that require the most extensive learning" (p. 5). It is the vocabulary: thousands of words, each with its own sound, its own spelling, its own meaning, its own role, its own use, its own history. Knight (1994) indicates that acquisition of words can be considered the most important part of second language acquisition. Thus, vocabulary acquisition, which requires an extensive learning process, is crucial for language teaching.

Furthermore, lexical knowledge has an important role on the development of grammar, listening, reading and writing skills. Nation (2001) states that vocabulary learning is not a goal in itself; it is done to help learners listen, speak, read or write more effectively. For this reason, vocabulary is the main focus of the second language acquisition. Schmitt (2008) emphazes that vocabulary is an essential component of a language, which makes the learning of new words a crucial element of language pedagogy.

In second language education, teachers can present these usage areas to their students implicitly or explicitly. Hiebert (2005) discusses that an individual's vocabulary is formed either through indirect exposure to a word by coincidence or by acquisition directly (intentionally) through various strategies and practices.

Implicit and explicit learning are two controversial forms of learning, especially in second language acquisition (SLA). The main reason for the debates surrounding these two forms of learning is their fundamentally different nature. Implicit learning involves individuals learning words unconsciously through exploration, whereas explicit learning occurs when individuals consciously engage in learning. Nagy, Herman and Anderson (1985) think that children learn most words through reading and that they do so incidentally; Krashen’s input hypothesis (1989)

shows that vocabulary can be acquired by reading as long as the input is comprehensible to the learner. However, there are different opinions regarding incidental learning, with both positive and negative perspectives. Horst et al. (1998, cited in Hulstijn, 2003) find out from their study that the power of incidental learning for SLVA might previously overestimated.

Considering these views put forward, both learning styles have various aspects influencing vocabulary acquisition. Considering the meaning and form of the word in vocabulary acquisition, both learning styles can have positive effects. In this regard, N. Ellis (1994) indicates that word forms and their related features are best learned implicitly as procedural knowledge; word meanings are best learned explicitly as semantic knowledge, part of the declarative knowledge. Morever, Saeidi (2007) suggests that what is important is integrating form, meaning, and use. Thus, vocabulary teaching can occur both explicitly and implicitly according to the lesson content. In some of the lessons, both learning methods can be applied to teach vocabulary. The important thing is to teach the word to be taught from all aspects.

2.4. Game-Based Learning, Gamification, Serious Games and Digtial Game Based Learning Approaches

Information acquisition and learning, which has been a subject of debate for years, is still an important research topic today. Learning, which is lifelong and constantly changing around the world, has many definitions. Selcuk (2003) notes that the definition of learning varies according to the perspective from which learning is viewed.

Many studies on learning from past to present indicates that one of the factors influencing the learning process is learning approaches. Senemoglu (2011) assert ‘As a matter of fact, many findings obtained from studies in the literature indicate that

students' learning approaches and study skills are important factors affecting the quality of learning’ (p. 65).

Different learning approaches offer different methods for learners to acquire knowledge and skills. While the traditional or didactic approach focuses on teacher-led instruction through lectures and readings, the constructivist approach emphasizes active participation and hands-on activities for students to construct their own understanding. Experiential learning immerses students in real-world experiences to practically apply theoretical knowledge, while collaborative learning encourages teamwork and peer interaction through group projects and discussions. Problem-based learning challenges students to solve real-world problems, and inquiry-based learning encourages discovery and critical thinking through inquiry and investigation. Self-directed learning gives students the power to take control of their own learning process, These approaches can be applied depending on the subject matter, learning goals, and student preferences.

Various approaches is developed on learning, which is an important issue in education. These approaches differ among each other, especially in the learning processes and application areas. Entwistle & McCune (2004) indicate that learning approaches express the differentiation in the purpose and activities students choose to perform a particular learning task. The integration of technology in education leads innovative learning approaches to gain an important place in the literature. According to the researches on learning in the 21st century, changes are observed in learning approaches. The learning process has undergone many changes in recent years, which have been driven mainly by the evolution of ICT (Almerich et al., 2005; Navarro, 2017).

These changes in learning approaches are resulted in innovative learning approaches. The inclusion of technology in education is pioneered the gamified learning approach, which has become the focus in digitized education. Within the scope of gamified learning approaches, gamification, serious games, game-based

learning and digital game-based learning approaches, which differ among themselves, become important approaches that include digital games in today's education.

2.4.1. Game-Based Learning (GBL)

In the 21st century, with the integration of technology into education, strategies and methods used in language education begin to show differences. Magogwe & Oliver (2007) indicate that language learners have attempted to adopt a number of learning strategies, as well as cognitive approaches in the process of English acquisition. The development of technology has impacted Game-Based Language Learning (GBLL) to gain an incredible popularty. As technology integrated to education learners are exposed to innovative activities in their classrooms.

Considering the game-based learning, the first thing that comes to mind is the digital game-based language learning method, which contributes to the education system at this very point. One of the aims of the the digital game-based learning approach is that to integrate pedagogically designed digital games into the educational curriculum. Deterding et al. (2011) implies that Digital Game-Based Language Learning (DGBLL) is a pedagogical experience that emerges within a wider term involving the specifc application of technological and non-technological funds. The positive effects of digital game-based learning is not only significant for learners' educational process but also for their ability use their imagination. Margarida et al. (2010) state that through games, learners can relate themselves to the virtual surroundings, which provides a meaningful context to the learner environments.

Due to the integration of technology into education, many gaming models find their place in the educational system. The game-based learning approach, which emphasizes the importance of games in education, holds a significant position in today's educational model. Aghlara & Tamjid (2011) states that game is a nature part of children’s life because they tend to play more than adults because they are not

involved in work and survival activities, and so they have greater amounts of energy to expend. In some studies, it is found that students facilitate vocabulary acquisition by showing interest in words within the framework of game-based learning as lessons become more fun than usual with the involvement of games. (Gagné, 1985; cited in Yien et al, 2011) indicate that learning vocabulary through Game-Based Learning provides the students a chance to experience learning that is more fun than usual, so their learning motivation is likely to be increased because of having fun and being involved in the process of learning as well.

In a classroom where the game-based learning approach is effectively used, students engage in fun, competitive, and interactive activities to conduct the lesson. As a result, not only does students' interest increase, but their motivation also increases. (Soltanzadeh, Hashemi, & Shahi, 2013) suggest that the students' learning motivation can be increased because of having more chance to take part in learning activities.

In research conducted on game-based learning, it is observed that GBL also has positive contributions to students' cognitive development. Zou et al. (2019) points out that studies in 21 publications in SSCI journals showed that GBL in L2 acquisition demonstrates positiveeffects in promoting short-term and long-term vocabulary learning. Game-based learning holds an important place in students' vocabulary acquisition through playing language games. It has been observed that students who play language games not only improve their vocabulary but also enhance their development in other skills. Hooshyar et al. (2018) mention that the theory of "procedural content generation" in GBL uncovers the children who plays language games can foster English reading skills at an early stage.



Figure 1. Model of game-based learning by (Garris, Ahlers, & Driskell, 2002).

Figure 1 above explains the important role of debriefing in closing the gap between experiences encountered in games and the achievement of learning goals. Through debriefing, participants are taken through a reflective process that helps them understand how their in-game actions relate to real-world scenarios. This connection is vital to facilitating meaningful learning experiences because it allows participants to transfer the knowledge and skills they gain in the gaming environment to practical situations. Debriefing also encourages critical thinking by encouraging participants to analyze their decisions and consequences within the context of the game, resulting in deeper understanding and application of concepts.

As a result, debriefing serves as a critical link in the learning cycle, ensuring that lessons learned from gaming experiences are effectively integrated into real-world contexts.

2.4.1.1. Game Characteristics

The main characteristics of a game can be of different types and target different purposes. But in general, there are some basic features that a game should have. The primary feature of games should be to entertain and impress players. A game should be engaging, immersive and exciting to keep players entertained. A game should not be both easy and too difficult with the challenges players face. Thus, players

experience a sense of accomplishment when they overcome obstacles or complete missions. Games should allow players to interact with the game world and make meaningful choices that affect the results of the game. This adds depth to players' gaming experience and increases engagement.

Players need to have a clear understanding of the game's goals and objectives. This provides players with motivation and direction to progress the game. Effective feedback mechanisms inform players' performance and guide their actions within the game. Feedback mechanisms such as visual and audio cues or progress indicators can be effective. A successful game makes players feel immersed in the game world, captures their attention and makes them feel involved in the gaming experience. The use of innovative elements along with familiar mechanics and concepts can distinguish a game from others and make it popular.

Thornton et al. (1990) claim that interactivity is an essential aspect of a game. Felix and Johnston (1993) indicate that the structural components of a game, including dynamic visuals, interaction, rules, and a goal, are the essential features. Baranauskas et al. (1999) state that the essence of playing is challenge and risk. However, when we think about the most important factor in game characteristics, it varies from person to person. Thomas and Macredie (1994) suggest that the core characteristic of games is that actions have no real-world consequences. For some, graphical quality or visual appeal might be paramount, while for others, it could be the depth of the story and character development. Some might prioritize gameplay mechanics and challenges, while others might value social interaction and multiplayer features.

Hence, the most important characteristics in gaming can indeed differ significantly from individual to individual. It can be concluded that specific features make a game enjoyable can vary widely depending on individual preferences and the nature of the game itself.

2.4.2. Gamification

Gamification is increased utilization across various fields with the development of technology. Morschheuser et al. (2017) claim that gamification is considered one of the top software trends nowadays. Gamification is the integration of game design elements and mechanics into non-game contexts to enhance user engagement, motivation, and participation. Essentially, it involves applying elements commonly found in games, such as points, badges, levels, challenges, leaderboards, and rewards, to activities outside of games, such as education, marketing, fitness, and productivity tools. "Gamification is a multidisciplinary concept spanning a range of theoretical and empirical knowledge, technological domains and platforms and is driven by an array of practical motivations" (Seaborn & Fels, 2015, p.14).

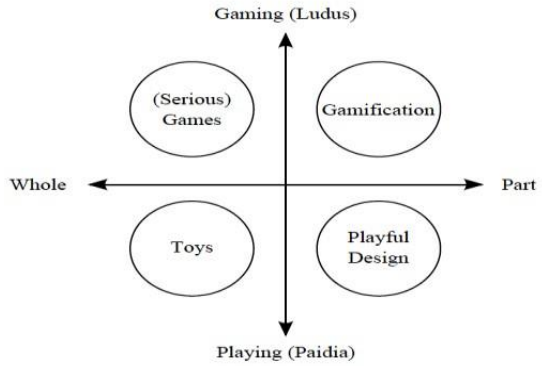


Figure 2. Classification of Gamification (Deterding et al., 2011)

Deterding et al. (2011) have made important contributions to the understanding and classification of multiple concepts related to games, play and design. According to Deterding et al. (2011), serious games are designed for goals not only for entertainment but also for education, health, or social change. Moreover, serious games provide platforms for learning, training, or promoting positive behavior change through engaging gameplay experiences. Gamification, involves incorporating game

design elements into non-game contexts to enhance user engagement, motivation, and behavior. Serious games applies principles such as rewards, challenges, and feedback to encourage desired actions or results. In view of Deterding et al. (2011) toys are objects or devices created for play, catering to various age groups and offering diverse play experiences. Toys can range from physical toys like dolls or blocks to digital toys such as video games or interactive apps. Playful design, integrates elements of playfulness, creativity, and exploration into the design of products, services, or experiences. This approach aims to improve learner engagement and enjoyment with the ecouragement of interactive, imaginative, and stimulating experiences.

The development of the technology makes it easier for gamification to be used widely across different areas. Websites, apps, and social media provide good ways to use gamification. Businesses can use data tools to understand how people behave and improve gamification. Virtual Reality (VR) make games more immersive. Wearable devices, like fitness trackers, turn activities into games with rewards. Artificial Intelligence (AI) can make games more personalized. Blockchain makes rewards fairer and more secure. Social media lets people share their game achievements. Technology and gamification keep improving, making things more fun for users and helping businesses meet their goals all together.

2.4.2.1. Gamification in Education

Gamification in education involves incorporating game elements into learning experiences to improve student engagement, motivation, and learning outcomes. Integrating educational games and simulations into the curriculum makes learning fun and interactive. Implementation of the Points, Badges, and Leaderboard (PBL) system provides students with points for completing tasks, earning badges for achievements, and competing on leaderboards. Using gamified progress tracking systems allows students to track their own progress, set goals, and track their performance over time. Combining role-playing elements and storytelling techniques allows students to

immerse themselves in fictional scenarios, historical events, or real-world contexts. Designing learning activities as tasks or challenges adds a narrative and goal-oriented structure to the curriculum.

Gamification also encourages collaboration and social interaction among students through collaborative challenges, group competitions, and peer-to-peer feedback mechanisms. Finally, using personalized learning pathways tailors learning experiences to individual student needs, preferences, and learning styles, ensuring that each student receives targeted support and challenges tailored to their unique abilities. Caponetto et al. (2014) claim that it is adopted to support learning in a variety of contexts and subject areas and to answer related activities and behaviors, such as participatory approaches, collaboration, self-guided study, completion of assignments, making assessments easier and more effective, integration of exploratory approaches to learning, and strengthening student creativity and retention.

Motivation is a considerably critical factor in education. The motivated learners are more likely to be actively engaged in the learning process by the use of challenges, and eventually achieve better results. Linehan et al. (2011) indicate that motivation is among the important predictors of student academic achievements, which influences the effort and time a student spends engaged in learning. Gamification can significantly impact students' motivation levels. When students are motivated, they are more likely to be actively engaged in the learning process, persist through challenges, and ultimately achieve better outcomes. Gamification influences student motivation by tapping into intrinsic motivators such as curiosity, autonomy, and mastery. It offers students a sense of achievement through progression systems like leveling up or earning badges. Immediate feedback provided in gamified learning allows students to see the direct consequences of their actions, motivating them to track their progress and make informed decisions.

Social interaction, facilitated by features like leaderboards and multiplayer challenges, fosters a sense of community and friendly competition, further motivating students to engage actively in the learning process. In accordance with Kapp (2012) gamification can enhance elements such as problem-solving, collaboration, and self learning. In accordance with Kingsley & Grabner-Hagen (2018) many empirical researches show that incorporating gamification into English vocabulary classes can turn the learning experience from being tedious and boring to becoming playful.

2.4.3. Serious Games

The base of serious games lies in the application of gaming principles to non-entertainment purposes, such as education, training, health, or public policy. Serious games are designed to educate, train, inform, or promote behavioral change in players. The concept of serious games emerged from the recognition that games can be powerful tools for engagement and learning. The founder of the serious games movement is often attributed to Clark C. Abt, an American political scientist, who in 1970 defined a serious game as one that has an explicit and carefully thought-out educational purpose and is not intended to be played primarily for amusement. Sawyer (2003) discuss that these are games designed specifically for purposes other than or in addition to pure entertainment. However, it is worth noting that serious games have evolved significantly since then, with many contributors and pioneers shaping the field across the years.

2.4.4. The Comparision of The Game-Based Learning, Gamification and Serious Games

When looked at through the lens of gaming, gamification and serious games may appear similar, but in reality, they are quite different. Gamification and serious games are two distinct approaches that utilize elements of games but serve different

purposes. Gamification involves integrating game-like features such as points, badges, and leaderboards into non-game contexts to motivate and engage users. For example, a language learning app might use gamification by awarding points for completing lessons or quizzes.

On the other hand, serious games are standalone games designed explicitly for educational, training, or informational purposes. These games immerse players in interactive experiences where learning or skill development occurs naturally through gameplay. For instance, a serious game about environmental conservation might simulate real-world challenges and decision-making processes to educate players about sustainability practices. Both gamification and serious games harness the power of games to achieve specific objectives, but they differ in their implementation and focus within interactive experiences.

Zhonggen (2019) mentiones that serious games are referred to as entertaining tools with a purpose of education, where players cultivate their knowledge and practice their skills through overcoming numerous hindrances during gaming. It is important to distinguish between serious games, game-based learning and gamification because of the differences in their purpose, approach and impact on learning.

- **Game-based learning** is defined as the *"the pedagogical approach of utilizing games in education"* (Anastasiadis, Lampropoulos & Siakas, 2018, p. 3)
- **Gamification** refers to *"use of game design elements in non-game contexts"* (Deterding et al., 2011, p. 1).

Also it is important to know that not all serious games are digital. Hunicke et al. (2004) suggest that whether digital or not, they are governed by similar kind of design, such as mechanics, dynamics and aesthetics.

Bedwell et al. (2012) present that the attribute categories which involves environment, game fiction, human interaction, immersion, rules/goals, action language, assessment, conflict/challenge and control described in their taxonomy are generally present in all serious games, but vary in how they are expressed and to what extent. A fundamental distinction between serious games and gamification is that serious games typically encompass various gaming elements, but these elements may vary in their prominence or implementation. On the other hand, gamification involves taking specific elements or mechanics from games and integrating them into non-game contexts, particularly for learning or motivation purposes. It is about leveraging the engaging aspects of games to enhance experiences outside of traditional gaming environments.

Gamification, serious games, and game-based learning are distinct approaches to integrating gaming elements into various contexts, each with its own unique focus and purpose. Gamification involves incorporating game elements, such as points, badges, and leaderboards, into non-game environments to enhance user engagement and motivation. It aims to leverage intrinsic motivators like competition and achievement to drive desired behaviors, such as increased participation or loyalty.

Nonetheless, serious games are designed with a primary purpose to include more than just entertainment and focuced on education, training, or other serious objectives. They provide immersive experiences that facilitate learning or skill development through gameplay, often incorporating elements of simulation, problem-solving, and decision-making. Game-based learning utilizes games as the central tool for delivering educational content and fostering learning experiences.

Unlike gamification, which adds game elements to an existing system, game-based learning integrates learning objectives directly into the game mechanics and narrative. It encourages active participation and exploration, allowing learners to construct their understanding through interaction with the game environment. While gamification enhances engagement through game elements, serious games are

standalone experiences designed for serious purposes, and game-based learning uses games as the primary medium for delivering educational content and facilitating learning experiences.

Many research studies are conducted based on serious games. There are also studies on whether students' vocabulary skills improve or not by playing serious games. As Hitosugi et al. (2014) adopt Food Force to examine college students' perception of the gameplay and understanding of Japanese vocabulary. After conducting this research, improvement is observed in students' vocabulary skills. The serious game "bingo" was reported effective in sight word training and reading by an earlier exploration (Kirby, Holborn, & Bushby, 1981). Franciosi (2017) suggests that serious games can improve vocabulary recall practice, and facilitate vocabulary transferability in authentic contexts, which led to developments on English vocabulary learning.

Alshaiji (2015) claims that another important mechanism might be that serious gaming prolonged the retention of English vocabulary and thus improved the effectiveness of serious gaming in vocabulary learning and teaching. Sundqvist & Wikström (2015) also claim that Serious games which reported are more effective to acquire English vocabulary compared with the traditional vocabulary learning approach via reading comprehension.

2.4.5. Digital Game-Based Learning

The integration of technology into our lives leads to a digitalization era in education. Prensky (2001) presents a new game-based learning approach, named digital game-based learning. Prensky (2001) explains that the emergence of digital game-based learning came in the "last decades of the 20th century," when there was a global technology boom. Digital Game-Based Learning has actually been around for over three decades with advances in information technology and the Internet leading

to an increase in use and popularity (Brom, Sisler, & Slavik, 2010). Digital game-based learning can also be defined as an "Instructional method that incorporates educational content or learning principles into computer or video games with the goal of engaging learners" (Coffey, 2017, para. 1). DGBL contains two important elements: fun/entertainment and an educational component (Bellotti, Kapralos, Lee, Moreno-Ger, & Berta, 2013). DGBL is the consequence of a balance between learning and gaming elements (Nussbaum & Beserra, 2014).

Consequently, in the DGBL literature and published effectiveness studies both learning and player engagement/motivation are considered relevant to assess (Bellotti et al., 2013). Digital game-based learning combines elements of both gamification and serious games. It uses digital games or game-like experiences to facilitate learning. These games can range from simple quizzes with game-like features (gamification) to complex simulations or scenarios designed to teach specific skills or concepts (serious games). Fort this reason, DGBL leverages the engaging and immersive nature of games to enhance the learning experience. Prensky, (2001) indicates 'Digital Game-Based Learning is about fun and engagement, combined with serious learning and interactive entertainment into a definite exciting medium of learning, the digital games' (p. 16).

Digital game-based learning is proven to be an effective and engaging approach that can positively impact learning performance across various educational settings and subject areas. Randel et al. (1992) note that just 22 studies comparing digital games with conventional classroom instruction conclude that games/simulations have a beneficial effect on learning performance. Digital game-based learning promotes enhanced engagement by captivating students' attention and sustaining their interest in educational activities.

Griffiths (2002) suggests that the interactive nature of video games stimulates learning and encourages participants to challenge new topics or knowledge. In digital game-based learning approach, students can access knowledge through self-discovery,

leading to a student-centered rather than teacher-centered education. Digital game-based learning fosters competitiveness between students and encourages them to think critically. Erhel and Jamet (2013) describe digital game-based learning as a competitive activity in which educational goals are set with the aim of promoting students' knowledge acquisition. Collaboration and social skills are nurtured through multiplayer games, which encourage teamwork, communication, and interaction among students.

Prensky (2001) defines the key characteristic of digital game-based learning as the "coming together" of interactive entertainment and serious learning through digital games. Immediate feedback is provided in games, allowing students to learn from mistakes and make improvements in real-time, enhancing learning effectiveness. Feedback in educational games appears to reduce redundant cognitive processes, all the while supplying learners with schemas to help them correct their comprehension errors (Clark & Mayer, 2008). Subject mastery and retention are promoted as students engage in repeated practice and reinforcement within the game environment.

According to Deubel (2006), digital game-based learning has the potential to engage and motivate students and offer custom learning experiences while promoting longterm memory and providing practical experience. Digital game-based learning fosters creativity and imagination by encouraging students to express themselves and think innovatively within the game context.

The motivation of learners is a very important factor in the process of acquiring new vocabulary. Motivation affects learning in a multitude of ways, and students with higher motivation normally obtain better learning outcomes than those with lower motivation (Gardner,2007).

Through many studies, it is observed that gamified education has positive effects on students' motivation. The study of Hung et al. (2012) show that, with proper design, digital games can improve students' spatial cognition ability. Wang et al.

(2015) indicate that the digital games designed according to meaningful learning materials available in daily life contributed to the development of listening and speaking skills on the basis of mobilizing the learners' motivation.

Digital Game-Based Learning (DGBL) presents with significant potential for increasing learner motivation (Huang, 2011; Papastergiou, 2009). Also, accessibility and flexibility are key features of digital games, enabling students to access learning materials anytime, anywhere, and accommodating diverse learning styles and abilities.

Based on this information about digital game-based learning, it can be said that Digital Game-Based Learning (DGBL) provides students with an accessible, flexible, and interactive learning environment. This learning method enhances students' motivation, encourages participation, and promotes deeper learning experiences. In addition, it accommodates diverse learning styles and abilities, allowing students to engage with the material in ways that suit their preferences and needs. Furthermore, digital game-based learning is inherently enjoyable, making the learning process fun and engaging for students.

Moreover, it offers immediate feedback to learners, enabling them to assess their progress and make adjustments in real-time. In conclusion, digital game-based learning offers a dynamic and engaging approach to education that can positively impact students' learning outcomes.

Games produced based on digital game-based learning can be categorized according to their concepts. According to Deubel (2006), games can be categorized as "action, adventure, fighting, puzzle, role-playing, sports, and strategy. Teachers can modify the category of the game to match the preferences of the students and create a more enjoyable learning environment in the classroom. However, there are certain factors that teachers should consider when selecting games for digital game-based learning.

Deubel (2006) recommends that the following information should be taken into account when teachers are selecting games for students:

- Students' age, characteristics, gender, competitiveness, and previous gaming experience.
- The game's target age level.
- Special needs. Would students with disabilities be left out?
- Gender and racial diversity. In its choice of characters, language, or situations, does the game offend or slight any particular group of students?
- Number of players. How many students can play at one time? Will too many be left sitting on their hands?
- The role of the teacher. Passive observer or active participant?

2.4.5.1. Digital Game-Based Learning on Acquisition

One prominent focus of research is the effects of Digital Game-Based Learning (DGBL) on second language (L2) vocabulary acquisition (Hwang & Wu, 2012). Digital games are employed, particularly in vocabulary and grammar teaching in order to vary the materials and activities used in class because it has been accepted as a hidden approach that offers students with interactive and enjoyable learning opportunities (Prensky, 2001).

Chiu et al's (2012) study illustrate that meaningful and engaging types of games have a significantly larger effect than that of drill-andpractice types of games on vocabulary learning.

Digital game-based learning has positive effects not only on students' acquisition of new vocabulary and motivation but also on their cognitive development too. Some studies show the impact of the digital game-based learning method on the development of students' short-term and long-term memories. In fact, Zou et al. (2019)

conduct that digital game-based learning contributes to the development of long-term and short-term memory in students learning English vocabulary.

On the other hand, according to a second opinion, there are also researchers who find that digital game-based learning has negative effects on vocabulary acquisition. Aghlara and Tamjid (2011) indicate that, when lower grade students learn English vocabulary, intuitive games such as word cards and board games had better impacts compared to the computer games. Also, DeHaan, Reed, et al. (2010) state that "video games would have a negative impact on English vocabulary learning" (p. 74).

As a result, there are positive and negative opinions on the role of digital game-based learning on vocabulary acquisition. Since the studies on this subject have been limited from past to present, this quasi-experimental study was carried out to add a new perspective and scope to the literature.

2.4.5.2. Quizizz

The use of interactive technologies in classroom has gained popularity in the last decade in response to an increasingly digital generation (Boyle, J. and Nicol, D. 2003). These technologies appear in the literature under different names such as electronic voting systems, audience response systems, personal response systems, and classroom response systems (Fies, C. and Marshall, J. 2006). A classroom response system uses gadgets like smartphones and tablets to quickly gather students' answers during lessons. The system then shows all the answers together in class. This helps teachers see how well students understand the lesson and get instant feedback on their teaching.

Nowadays, there are many tools and websites designed for classrooms to make learning more interactive. Teachers now have lots of choices for creating and sharing quizzes and polls in real-time during classes. Some popular examples include

Socrative, Poll Everywhere, Kahoot, Verso, Classmaker, Google Forms, Quizizz, and others. These platforms offer various features to engage students actively in the learning process, assess their understanding, and promote collaborative learning environments.

Quizizz is a digital game-based learning platform enabling teachers to craft engaging quizzes for students. These quizzes can include various question formats, such as multiple choice, true/false, and open-ended questions. Students can participate in these quizzes individually or in teams, and they receive immediate feedback on their answers. Quizizz also provides teachers with detailed reports on student performance, making it a valuable tool for assessing learning outcomes. Quizizz is a popular choice for gamifying the learning experience and keeping students engaged in the classroom. Teachers create online quizzes interactively and thanks to taking part in the activities by using their devices, the students learn actively and in an interactive manner (Zhao, 2019).

Therefore, it is evident that Quizizz serves as a valuable and enjoyable tool for learners to facilitate self-access learning. In self-access learning, the students assess their progress and define a suitable way hat is in accordance with their learning styles (Blanche & Merino, 1989; McMillan & Hearn, 2008). Also, Wibawa et al. (2019) suggest that Quizizz can be a learning medium if it achieves five criteria, namely adequate Wi-Fi, accessed virtually anywhere, enthusiasm of learners, fair in scoring, and in accordance with students' learning preference.

Moroever, (Mohamad, Arif, Alias, & Yunus, 2020) highlight that marks displayed on the leaderboard in Quizizz promote a positive learning experience. According to Bal (2018), Quizizz proves to be very beneficial for enhancing vocabulary acquisition among engineering students in Turkey. Based on these research findings, this study aims to investigate the practicality of using Quizizz in all schools in Turkey.

CHAPTER 3: METHODOLOGY

3.1. Introduction

This chapter provides a comprehensive explanation of the processes involved in collecting and analyzing data. It starts with a discussion of the research model and then carries on to describe the participants and research tools. The following section details the data collection procedures, providing concise justifications for their role in obtaining results.

3.2. Research Method

The current study utilitazes a quantitative research design in data collection and analysis. Quantitative research in the context of the social sciences can be defined as "a type of empirical research into a social phenomenon or human problem, testing a theory consisting of variables which are measured with numbers and analyzed with statistics in order to determine if the theory explains or predicts phenomena of interest" (Yılmaz, 2013 p. 311). Erlandson et al. (1993) mentions that quantitative research endeavors to predict, measure, and manage phenomena of interest by identifying pertinent variables and systematically measuring them.

The current study is classified as Quasi-Experimental due to the assignment of participants to groups was not random but rather based on convenience sampling. The researcher, who also works as an English teacher, included certain classes in the study and assigned them to experimental and control conditions.

To illuminate the answer to the first research question, a quasi-experimental study was conducted with two groups of participants. In the experimental group, participants encountered the words from the textbook during the word acquisition

process and revisited them through games on the Quizizz application. In comparison, participants in the control group underwent traditional word acquisition, by only learning from the textbook.

To answer the second research question, only students in the experimental group were given a survey using a Likert scale. This method was applied as a quantitative research design and was chosen to obtain numerical data about students' specific opinions, attitudes or experiences.

3.3. Participants

The participants of the study were selected from Beginner (A1) level students enrolled in the English preparatory program at a foundational university in Istanbul. 40 students voluntarily participated in the research from two different preparatory classes, where the researcher was an English teacher. The students were part of an English Preparatory program and received 22 hours of English classes per week. The average age of the students was 18. The students' proficiency level was determined through a standard placement test and their classes were organized based on their results at the beginnig of the first semester. For this standard placement test, the foundation university uses the integrated skills test method. In this question format, the student is expected to synthesize using different skills, and in the exam, all skills are examined together to determine the level of the students efficiently.

The research was carried out on two distinct groups identified as the experimental and the control group. Each group consisted of 20 students. These two classes were the classes assigned to the English lecturer, who was also the researcher of this current research, by the administration to teach English during that academic year.

Convenience sampling method was used to select the participants for the study. The students were A1 level as a result of the school's placement test and were placed in their classes according to these results. Additionally, the classes were given to the teacher who conducted this research. Due to the researcher's easy access to the students, this study was conducted using convenience sampling. The method of non-probability sampling is convenience sampling. According to Taherdoost (2016), convenience sampling entails choosing individuals who are frequently and conveniently accessible.

Table 1 shows that the sample of the present research consisted of 40 university students. The participants included 17 female and 11 male students. Both the control group and experimental group consisted of 20 participants.

Table 1. *Gender Distribution Across Groups*

Gender	Control group	Experimental group
Female	13	9
Male	7	11
Total	20	20

3.4 Data Collection Tools and Procedure

3.4.1. Data Collection Tools

The research involved using quantitative data collection method. Quantitative data was collected through pre-post tests (Appendix 1), quizzes and survey. Throughout the qualitative data collection process, pre-tests, post-tests, and quizzes were administered to both the experimental and control groups. However, data of the

survey was obtained only from the students in the experimental group. The study employed multiple instruments to collect data.

3.4.1.1. Pre-test / Post-test and Quizzes

The participants in the study took a recognition test both as the pre-test and post-test, which included multiple-choice questions, vocabulary building tasks, sentence completion tasks, word completion tasks, and vocabulary association tasks. In the quizzes, unlike the pre-post tests, there were multiple-choice questions, fill-in-the-blank questions, and picture-based vocabulary completion tasks. All of the sentences used in the pre-post test and quizzes were taken from two internationally valid dictionaries. The researcher aimed to include different types of questions due to the fact that the length of the text, the homogeneity of the test items are factors that affect the reliability of the test.

For the reliability of the test, the researcher applied the tests, paying attention to all factors affecting the validity of the test. For the pre-test and post-test, which consists of 72 questions, the researcher pilot-tested the tests before applying them and the test duration was calculated in advance. The researcher conducted the same pilot test once for the quizzes, each consisting of nine questions. The tests of both the control group and the experimental group students were controlled exactly three times, once by entering the data into Excel, and this increased the reliability of the test. The participants were fully present during the testing period, and all students completed the tests in their entirety.

The study compared the number of correct and incorrect words produced by both groups in the pre-test and post-test evaluations using frequency analyses in the SPSS program. The research was evaluated at a significance level of $p < .05$ with a

95% confidence level which indicates that the study was conducted with sufficient reliability to obtain statistically significant findings.

The appropriateness of the images enhances the validity of the test. Validity refers to how accurately and appropriately a test measures what it is intended to measure. Selecting appropriate images ensures that the test accurately assesses the intended knowledge and skills. Considering this information, the researcher selected the pictures which are suitable for the students and applied this approach in both the pre-post tests and the quizzes.

3.4.1.2. Survey

The researcher used the Likert scale survey which conducted only with the students in the experimental group. The Likert scale is a tool used to measure participants' attitudes, opinions and perceptions in surveys. This scale was chosen by the researcher because it has high reliability features such as internal consistency and test-retest reliability. Also, in terms of content validity, it provides broad and comprehensive information about the construct to be measured in surveys. The researcher aimed to increase the validity and reliability of the study by evaluating the answers of the students in the experimental group through this survey. The survey allows to effectively measure the experiences of the students in the experimental group, while providing a solid basis for understanding and interpreting the results of the research.

Researcher did not use the students' names in the survey because researcher wanted to enable the participants to give their answers more freely and objectively. This approach can contribute to more reliable and valid survey results because the answers are less influenced by external factors.

3.4.2. The Procedures

In this study, which lasted a total of 16 weeks, a pre-test was conducted using 72 words from the textbook for both the experimental group, consisting of 20 students, and the control group. Over the course of four months of data collection, students in both groups took quizzes every two weeks, covering every nine words taught, resulting in a total of eight quizzes during this data collection period. On 9th of October, the vocabulary teaching process was initiated.

During these four months, students in the experimental group played a Quizizz game designed by the researcher, which presented questions related to the taught words for three days a week, based on the words learned each week. The Mastery Peak game on Quizizz was conducted interactively. Students in the experimental group connected to the game using their own phones in their classroom. The questions were prepared for the nine words seen at the beginning of each week, and the game was built around these questions.

After seeing the nine words with their teachers in class on Mondays, students in the experimental group played this game at the end of each class until the quiz day, which occurred on Tuesdays, Wednesdays, and Thursdays, for two weeks. They competed with each other to reach the summit of the mountain in the game, which lasted a maximum of 10 minutes. The student who answered the fastest and most accurately during this competition became the winner. In addition, every two weeks, they had quizzes based on these words.

However, students in the control group only encountered these words in the textbook and took the same quizzes as the experimental group every two weeks. The vocabulary teaching process concluded at the end of the 16th week. After post-test, a survey was conducted only for the experimental group on their opinions about Quizizz, a tool in digital game based learning. The names of the students were not involved in

the research; instead, they were identified by placing a number next to each student's name and categorizing as Experimental Student 1, (ES1). ES2, ES3….ES25 and Control Student 1, (CS1), and as CS2, CS3..... CS22.

Table 2. *Testing and Treatment Procedure for Experimental and Control Groups*

Weeks	Sessions
Week 1	Pre-test and Quiz-1 for both groups Vocabulary treatment through Quizizz games only for experimental group
Week 2	Vocabulary treatment through Quizizz games only for experimental group
Week 3	Quiz-2 for both groups Vocabulary treatment through Quizizz games only for experimental group
Week 4	Vocabulary treatment through Quizizz games only for experimental group
Week 5	Quiz-3 for both groups Vocabulary treatment through Quizizz games only for experimental group
Week 6	Vocabulary treatment through Quizizz games only for experimental group
Week 7	Quiz-4 for both groups Vocabulary treatment through Quizizz games only for experimental group
Week 8	Vocabulary treatment through Quizizz games only for experimental group
Week 9	Quiz-5 for both groups Vocabulary treatment through Quizizz games only for experimental group

Week 10	Vocabulary treatment through Quizizz games only for experimental group
Week 11	Quiz-6 for both groups Vocabulary treatment through Quizizz games only for experimental group
Week 12	Vocabulary treatment through Quizizz games only for experimental group
Week 13	Quiz-7 for both groups Vocabulary treatment through Quizizz games only for experimental group
Week 14	Vocabulary treatment through Quizizz games only for experimental group
Week 15	Quiz-8 for both groups Vocabulary treatment through Quizizz games only for experimental group
Week 16	Post-test for both groups Survey for only experimental group

3.5. Data Analysis

To adress to first research question, SPSS 25.0 (Statistical Package for the Social Sciences) package program was used in the analysis of the collected data. The normal distribution was evaluated based on the skewness and kurtosis values. According to the analysis, a skewness of 0.655 and a kurtosis of -0.547 in the pre-test were observed. In the post-test, a skewness of -0.077 and a kurtosis of -1.221 were observed. Statistically, it was observed to be normally distributed.

To determine where there was any difference between the control and experimental groups independent sample t-test was used for the pre-test that applied at the beginning of the research. Likewise, to examine any changes between pre-test and post-test, independent sample t-test was used as there was no significant statistical difference between experimental and control group students in pre-test. Additionally, progress made during the pre-test and posttest assessments within both groups was evaluated using the dependent sample t-test. Frequency analyzes were performed to compare the number of correct and incorrect words produced by students in the control and experimental groups in the pre-test and post-test evaluations. The study was evaluated at a significance level of $p < .05$ at a 95% confidence level. Additionally, the Excel program was employed to draw the graphs of the tests and quizzes.

To answer the second research question, The Likert Scale which includes the form of five statements; Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD) was applied to 20 students in the experimental group as a survey. To obtain the data of this survey, the frequency and percentage of the survey were determined by using the frequency analysis in SPSS.

CHAPTER 4: RESULTS

4.1. Introduction

The findings of the study regarding the role of Digital Game-Based Learning in enhancing vocabulary is discussed in this chapter. The initial section begins with quantitative findings obtained from students' pre-test, quizzes, and post-test results. Subsequently, the findings of the survey conducted with focus group were analyzed and qualitative data was obtained.

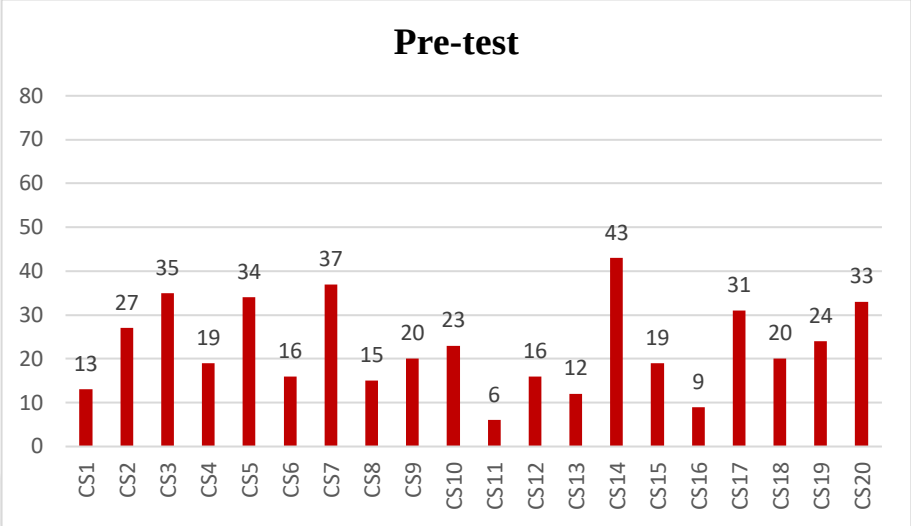
4.2. Findings Related to Research Questions

4.2.1. Findings of Research Question 1

The results of the pre-test, post-test and quizzes were compared to answer the first research question. (RQ 1*: Is there a significant effect of Digital Game-Based Learning on prep class students' vocabulary acquisition*?)

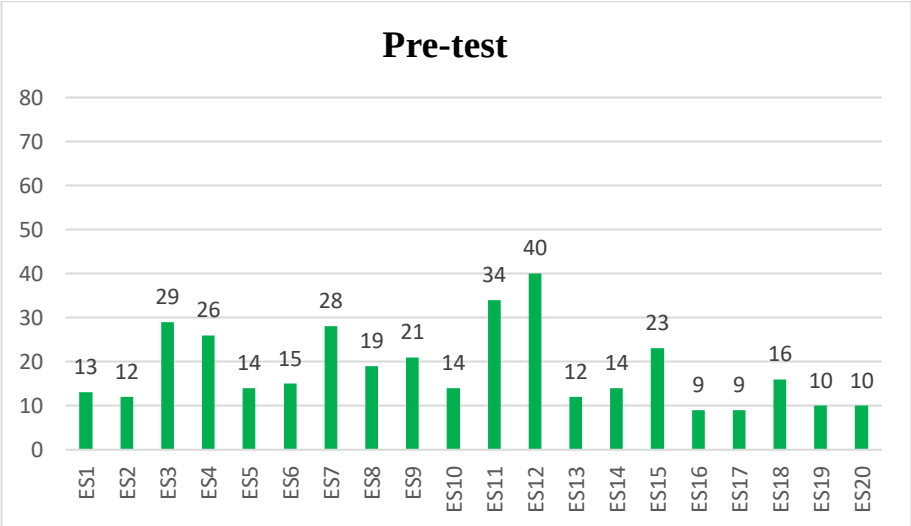
There were 72 questions in total, each question was covering a different word. In addition, nine questions were asked each week, covering nine words presented in that week's quiz. Each question was worth one point. Reviewing the post-test scores, it can be seen that the experimental group received higher grades. Considering the difference between the pre-test and post-test results, it can be said that the experimental group was almost three times more successful compared to the control group. According to the pre-test findings, the pre-test scores of the control group range from the lowest of six to the highest of 43, based on 72 words. Table 3 shows the pre-test outcomes of the students belonging to the control group.

Table 3. *Pre-Test Results of The Control Group*



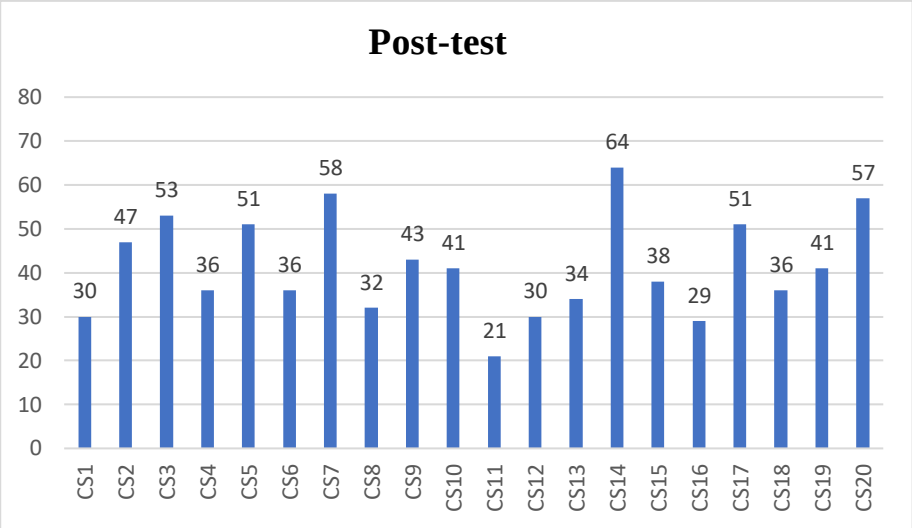
Based on the findings, the lowest number of correct answers in the Pre-Test in the experimental group was nine and the highest number of correct answers was 40. Table 4 shows the pre-test findings peraining to the participants belonging to the experimental group.

Table 4. *Pre-Test Results of The Experimental Group*



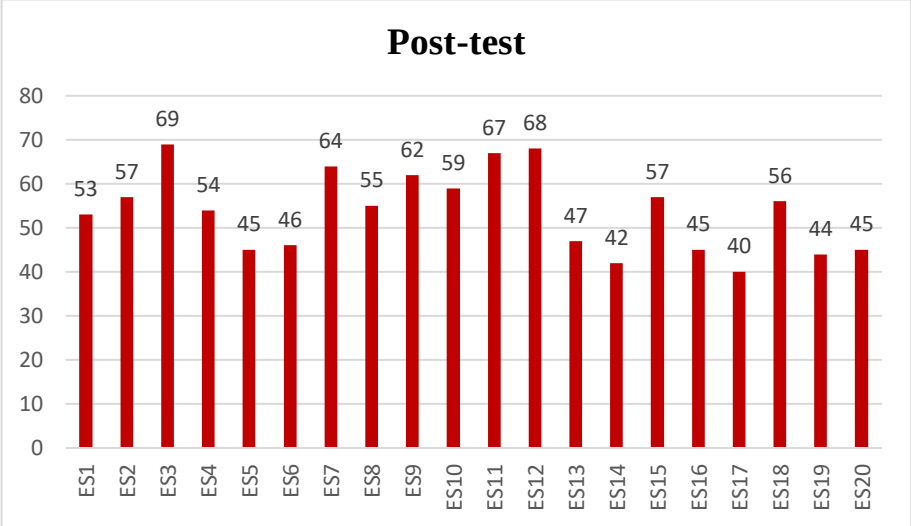
The correct numbers of participants were determined in the Post Test, which consisted of 72 questions answered by the control group participants. Accordingly, in the post-test conducted in the control group, it was seen that the lowest number of correct answers was 21 and the highest number of correct answers was 64. Table 5 indicates the post-test results of the control group's students.

Table 5. *Post-Test Results of The Control Group*



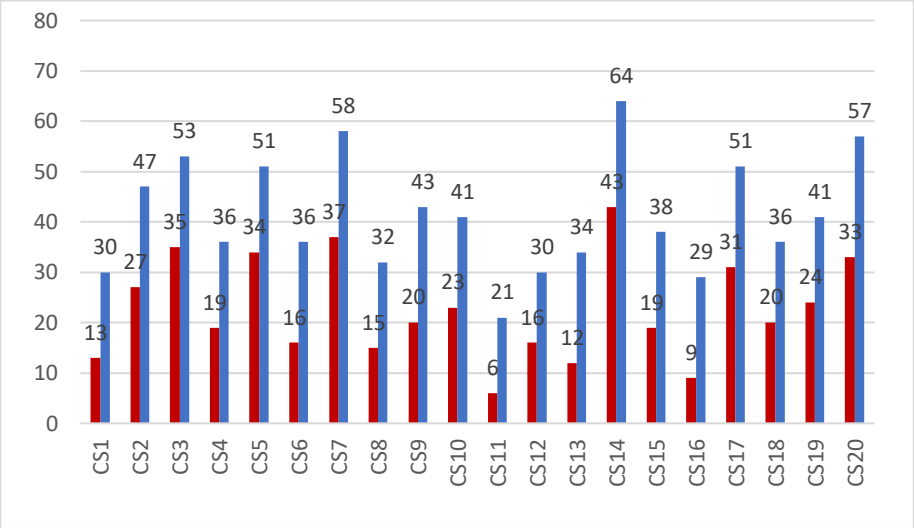
Following the findings, the lowest number of correct answers in the 8th Quiz in the experimental group was six, while seven students made only one mistake. Table 6 indicates the post-test results of the experimental group's students.

Table 6. *Post-Test Results of The Experimental Group*



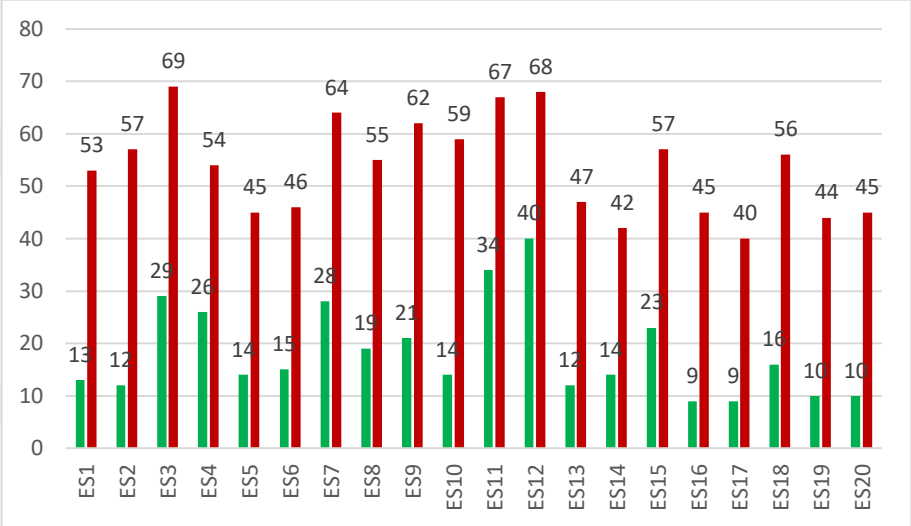
After examining the development of the control group students from pre-test to post-test, it was noted that the disparity between the two assessments showed statistical significance ($p < .05$). The results revealed a significant increase in the scores of the students in the post-test. Table 7 illustrates the progress observed among students in the control group as measured by their pre-test and post-test results.

Table 7. *Progress of Control Group Students from Pre-Test to Post-Test*



After assessing the advancement observed among the participants of the experimental group, it was determined that the difference between their pre-test and post-test outcomes was statistically significant ($p < .05$). A notable improvement in the students' test scores was observed during the post-test. Table 8 illustrates the progress made by students in the experimental group from the pre-test to the post-test.

Table 8. *Progress of Experimental Group Students from Pre-Test to Post-Test*



According to the results presented in tables 9 and 10, the mean pre-test score for the control group was determined to be 22.6±10.148, while the mean pre-test score for the experimental group was calculated as 18.4±8.899. An independent sample t-test conducted between the pre-tests revealed no significant statistical difference between the groups (t: 1.392; p=0.172 > 0.05). This indicates that the pre-test scores were not statistically different from each other, suggesting that both groups both groups commenced the study on similar footing.

Table 9. *Dependent Sample T-Test Results of The Control Group*

Control group	**$\bar{X}$±S.S.**	**t**	**p**
Pre-test	22.6±10.148	31.754	**< 0.001***

Post-test	41.4±11.366

Table 10. *Dependent Sample T-Test Results of The Experimental Group*

Experimental group	**$\bar{X}$±S.S.**	**t**	**p**
Pre-test	**18.4±8.899**	**30.438**	**< 0.001***
Post-test	**53.7±9.170**		

The average difference between post-test and pre-test scores for the control group was calculated as 18.8±2.647, while for the experimental group, it was determined to be 35.4±5.193. An independent samples t-test revealed a statistically significant difference between the post-test and pre-test difference scores of the control and experimental groups (t: -12.696; $p < .001$). This indicates that the pre-test and post-test difference scores of the control and experimental groups were statistically different, favoring the experimental group. Table 11 displays the outcomes of an independent sample t-test, which investigates the disparity between pre-test and post-test.

Table 11. *Independent Sample T-Test Results of The Difference Between Pre- Post Tests*

Pre-test & Post-test (difference)	**$\bar{X}$±S.S.**	**t**	**p**
Control group	17.68±3.759	-12.696	**< 0.001***
Experimental group	42.80±7.592		

The results shows that, a higher percentage of incorrect responses to the pre-test questions among students in both groups, which support that an equitable starting point for the study. Furthermore, the findings suggest that the experimental group had a greater number of students providing correct responses to the post-test questions. Consequently, this finding addresses the first research question and highlights the significant impact of Digital Game-Based Learning on vocabulary acquisition.

Table 12. *Test Results of the Control Group*

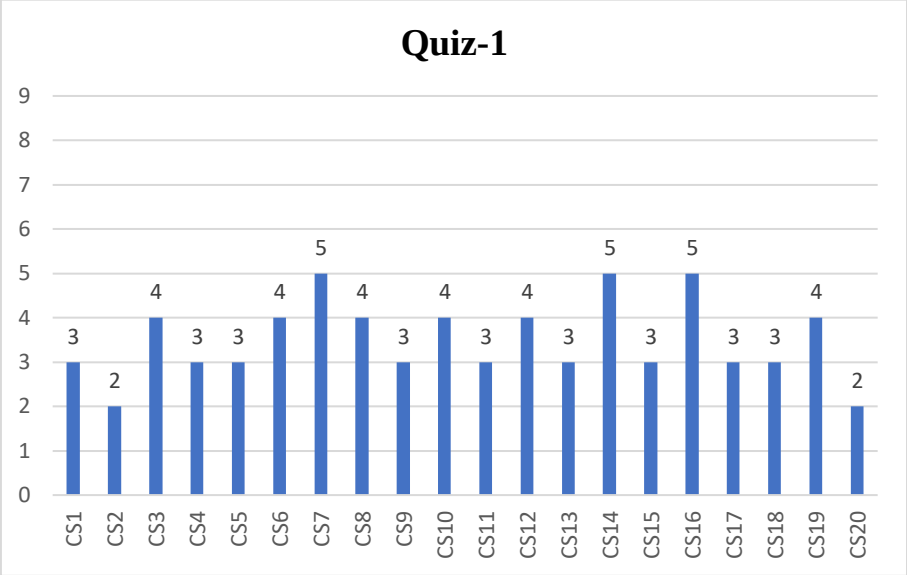
	Week 1	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15	Week 16	Pre-Post Test	Pre-Post Test
	PRE-TEST-72	Q1-9	Q2-9	Q3-9	Q4-9	Q5-9	Q6-9	Q7-9	Q8-9	POST-TEST-72	Difference	Difference Percentage
CS1	13	3	2	1	3	3	4	3	0	30	17	130.7%
CS2	27	2	1	3	1	3	2	3	1	47	20	74.00%
CS3	35	4	5	5	4	4	5	3	5	53	18	51.42%
CS4	19	3	3	4	3	4	4	4	2	36	17	89.47%
CS5	34	3	4	4	2	3	3	3	1	51	17	50,00%
CS6	16	4	4	3	5	6	5	4	5	36	20	125%
CS7	37	5	3	3	4	5	5	4	3	58	21	56.75%
CS8	15	4	2	4	2	2	3	4	2	32	17	113.33%
CS9	20	3	5	4	4	5	3	3	2	43	23	115%
CS10	23	4	2	4	2	3	2	3	3	41	18	78.26%
CS11	6	3	5	2	1	1	3	3	1	21	15	250%
CS12	16	4	3	4	1	3	3	3	0	30	14	87.5%
CS13	12	3	5	4	4	2	3	4	2	34	22	183.3%
CS14	43	5	4	5	5	6	4	5	5	64	21	48.83%
CS15	19	3	3	3	2	2	5	2	1	38	19	100%
CS16	9	5	5	4	5	5	4	4	3	29	20	222.22%
CS17	31	3	6	4	5	4	5	3	3	51	20	64.51%
CS18	20	3	3	3	3	2	3	3	2	36	16	80%
CS19	24	4	3	3	5	5	4	4	3	41	17	70.83%
CS20	33	2	2	4	3	4	4	3	2	57	24	72.72%

Table 13. *Test Results of The Experimental Group*

	Week 1	Week 1	Week 3	Week 5	Week 7	Week 9	Week 11	Week 13	Week 15	Week 16	Pre-Post Test	Pre-Post Test
	PRE-TEST-72	Q1-9	Q2-9	Q3-9	Q4-9	Q5-9	Q6-9	Q7-9	Q8-9	POST-TEST-72	Difference	Difference Percentage
ES1	13	7	8	8	7	7	7	6	7	53	40	307.69%
ES2	12	7	7	7	7	6	7	7	8	57	45	375%
ES3	29	8	9	7	7	7	8	7	8	69	40	137.93%
ES4	26	8	8	7	8	7	8	7	6	54	28	107.69%
ES5	14	6	8	7	6	6	7	6	8	45	31	221.42%
ES6	15	4	7	8	6	6	5	6	6	46	31	206.66%
ES7	28	6	7	7	6	6	7	7	8	64	36	128.5%
ES8	19	8	8	8	6	8	7	8	8	55	36	189.47%
ES9	21	7	8	8	7	8	7	6	7	62	41	195.23%
ES10	14	8	7	7	6	7	6	7	7	59	45	221.42%
ES11	34	6	8	7	7	6	5	8	7	67	33	97.05%
ES12	40	9	9	7	8	8	7	8	7	68	28	70%
ES13	12	9	9	8	9	7	6	8	7	47	35	291.66%
ES14	14	7	7	6	8	9	9	7	8	42	28	200%
ES15	23	7	7	6	7	8	7	7	6	57	34	147.82%
ES16	9	8	9	9	9	9	8	8	8	45	36	400%
ES17	9	6	7	7	6	8	8	7	7	40	31	344.44%
ES18	16	6	7	5	7	8	7	9	7	56	40	250%
ES19	10	8	8	7	7	7	8	7	6	44	34	340%
ES20	10	9	8	7	8	7	7	6	7	45	35	350%

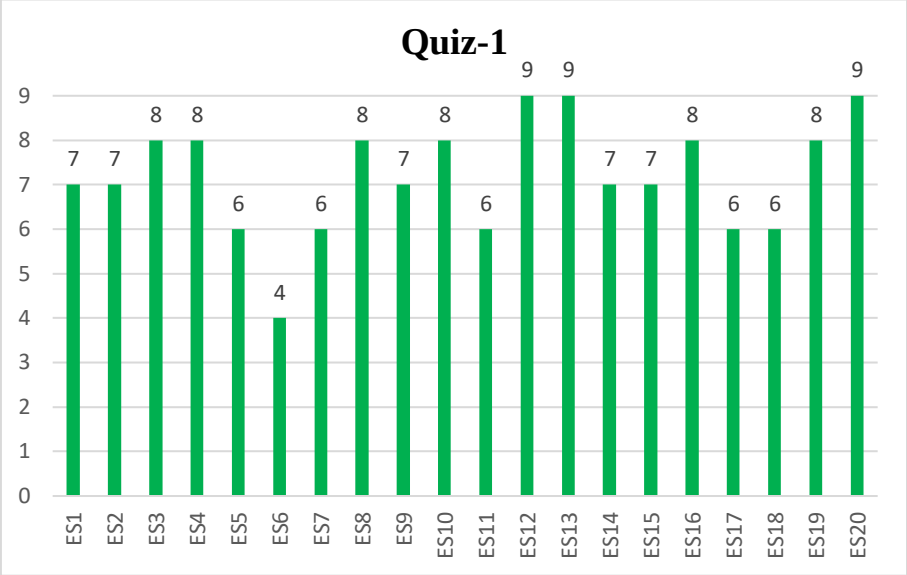
The correct answers given by the control group students in the quiz-1 (Appendix 2) were analyzed. Accordingly, it was seen that the lowest number of correct answers in the 1st Quiz in the control group was two and the highest number of correct answers was six. Table 14 illustrates the result of quiz-1 conducted for the control group.

Table 14. *Quiz-1 Results of The Control Group*



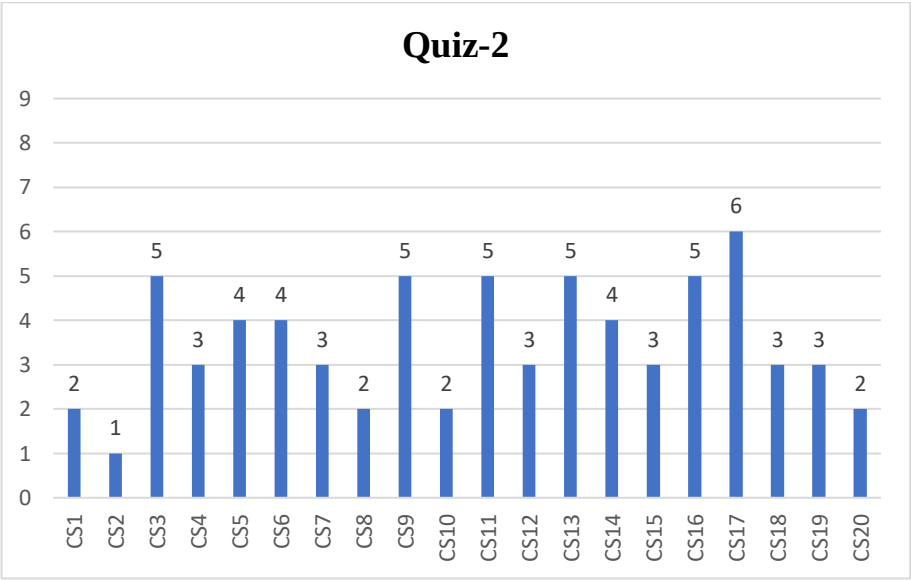
Based on the findings, although the lowest number of correct answers in the quiz-1 in the experimental group was four, it was found that three students in the experimental group answered all the questions correctly which makes it clear that the students in the experimental group demonstrated superior performance on the quiz compared to those in the control group. Table 15 displays the test scores of students in the experimental group for quiz-1.

Table 15. *Quiz-1 Results of The Experimental Group*



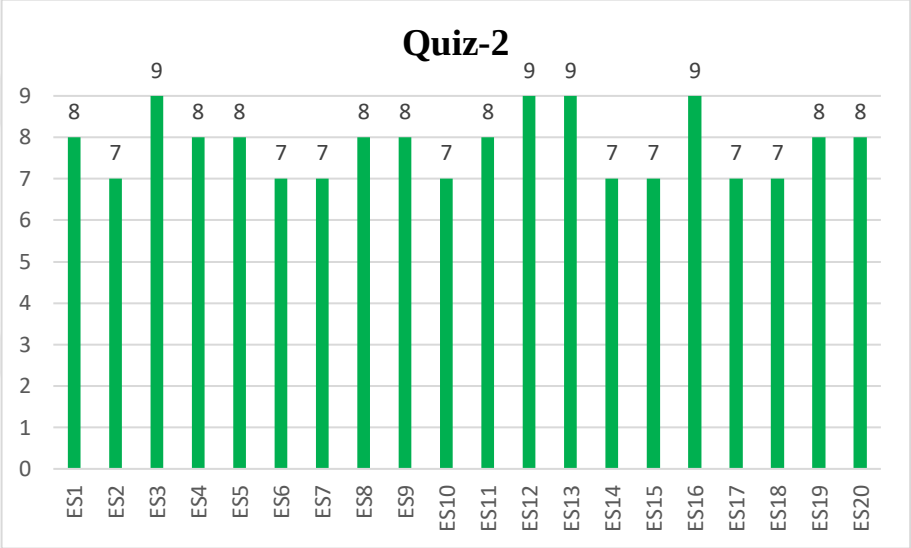
On the basis of the data analyzed, it was observed that the lowest number of correct answers on the quiz-2 (Appendix 3) in the control group was one, while the highest number of correct answers was six. Table 16 demonstrates the quiz-2 outcomes attained by students in the control group.

Table 16. *Quiz-2 Results of The Control Group*



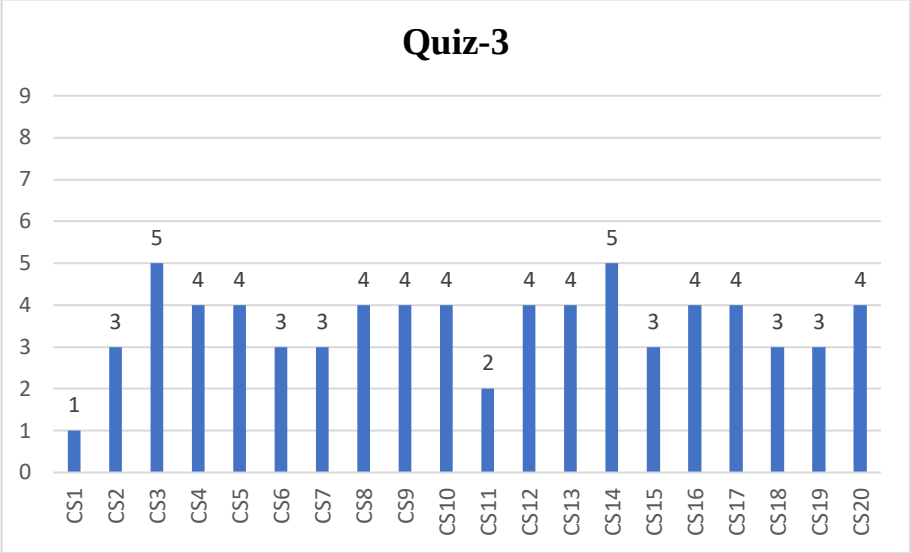
Considering the quiz-2 results, it can be observed that while the lowest number of correct answers among the experimental group students was seven, four students in the experimental group answered all the questions correctly. The results of quiz-2 indicates that once the control and experimental groups are compared, students in the experimental group obtained better results. Table 17 displays the test scores of students in the experimental group for quiz-2.

Table 17. *Quiz-2 Results of The Experimental Group*



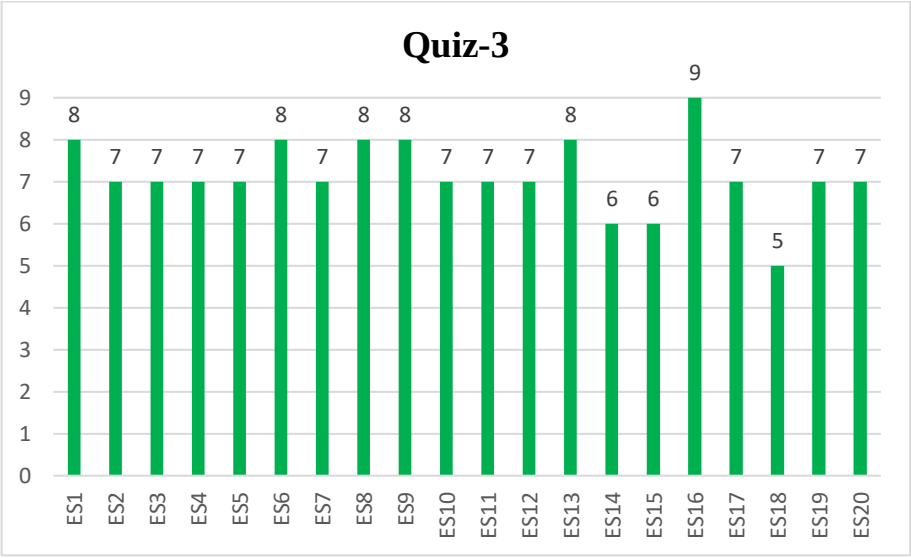
The data obtained from quiz-3 presents that the lowest number of correct answers in the control group was one and the highest number of correct answers was five. Table 18 exhibits the results of quiz-3 for the participants belonging to the control group.

Table 18. *Quiz-3 Results of The Control Group*



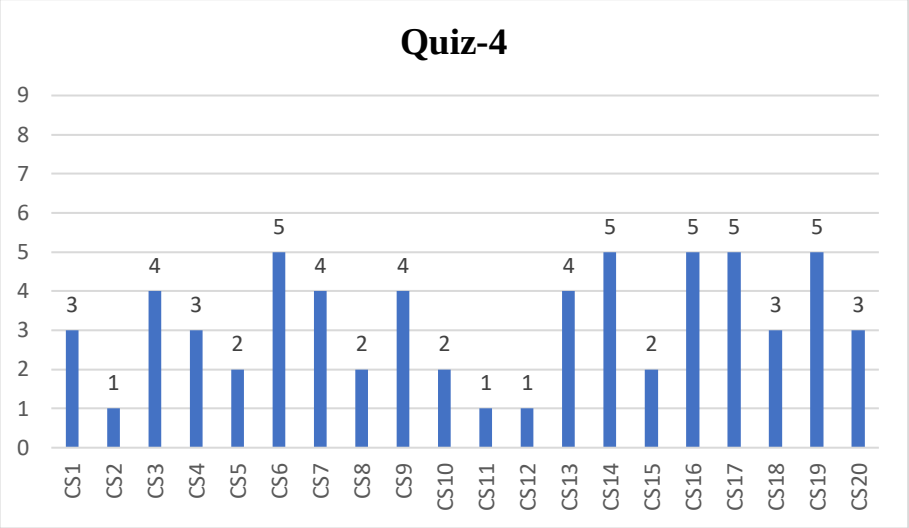
As the lowest number of correct answers in quiz-3 (Appendix 4) was five, it was observed that one student in the experimental group answered all the questions correctly, and five students gave only one incorrect answer which proves that the experimental group's students obtained a higher score compared to the control group's students. Table 19 reveals the results of quiz-3 for the experimental group students.

Table 19. *Quiz-3 Results of The Experimental Group*



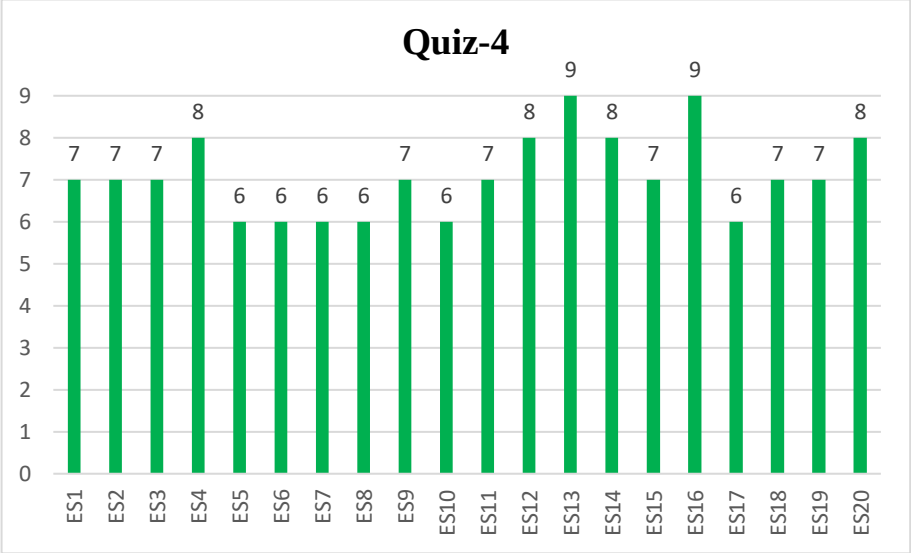
It was observed that the minimum number of correct answers in the 4th quiz in the control group was one and the maximum number of correct answers was five. Table 20 depicts the quiz-4 (Appendix 5) outcomes of the students in the control group.

Table 20. *Quiz-4 Results of The Control Group*



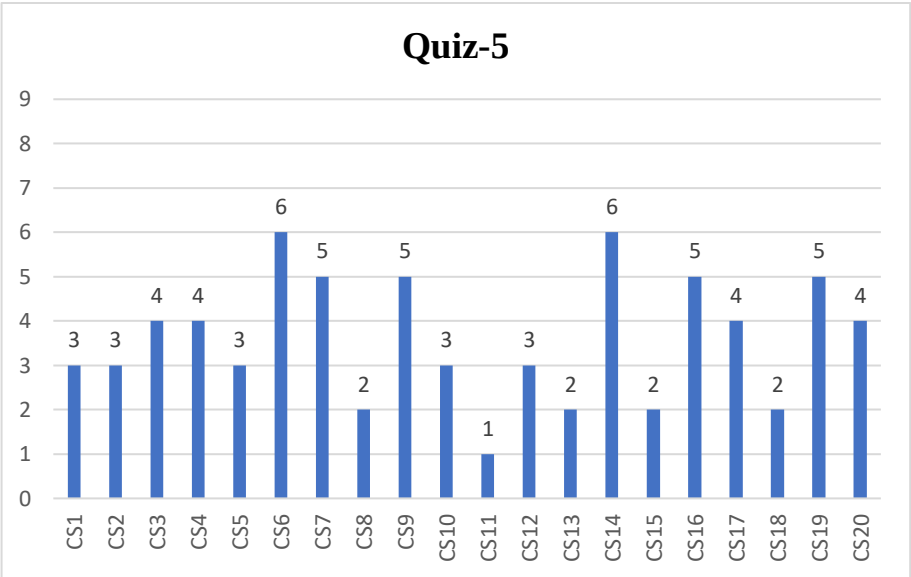
By virtue of the results of quiz-4, while the lowest number of correct answers in the experimental group was six, it was observed that the experimental group achieved very good results, two students answered all the questions correctly, and four students gave only one incorrect answer. Considering the scores of control group, experimental group's scores are higher on the quiz-3. Table 21 reveals the outcomes of quiz-4 for the student population comprising the experimental group.

Table 21. *Quiz-4 Results of The Experimental Group*



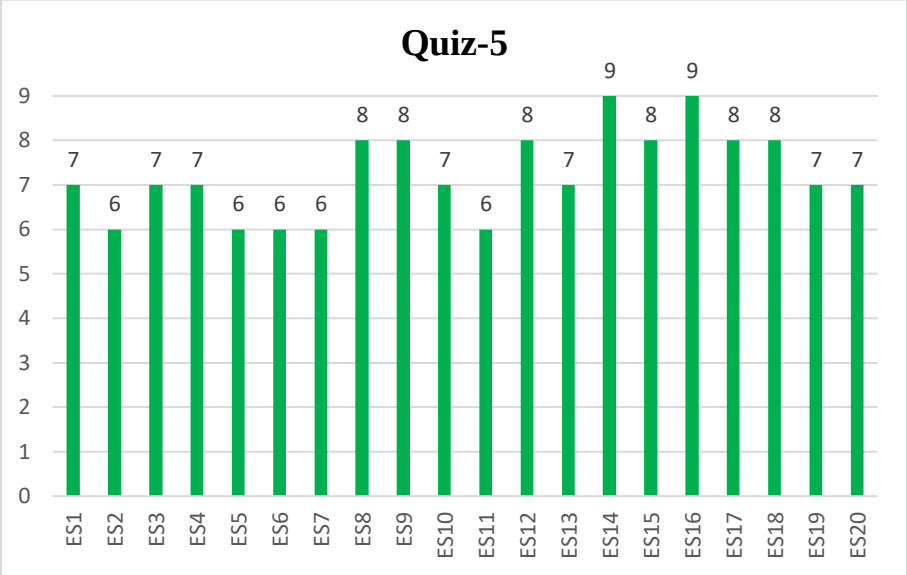
It was noted that the minimum number of correct answers made by the control group students in Quiz-5 (Appendix 6) was one and the maximum number of correct answers was six. Table 22 presents the outcomes of control group's students on quiz-5.

Table 22. *Quiz-5 Results of The Control Group*



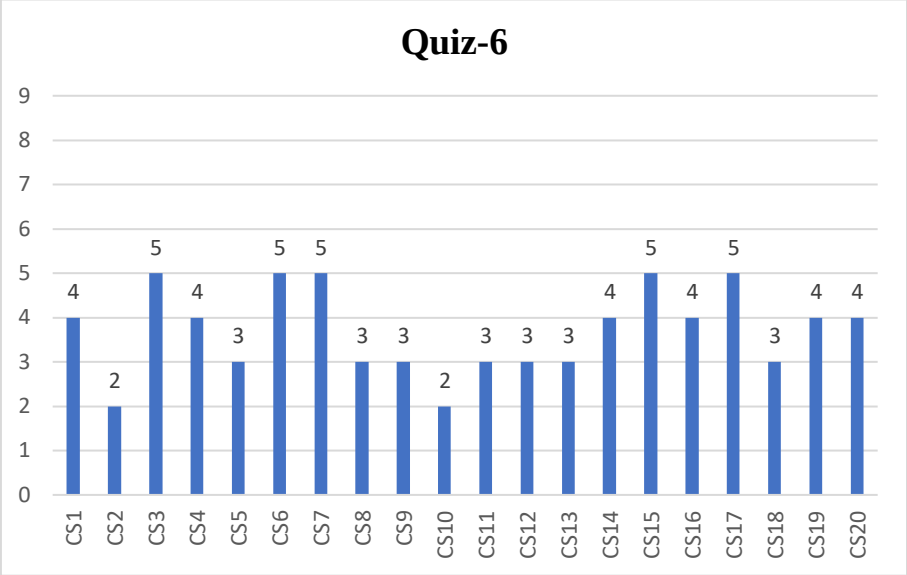
The lowest number of correct answers in the quiz-5 test was six, with two students in the experimental group answering all questions correctly, while six students made only one mistake. This shows that the experimental group performed significantly better than control group's students. Table 23 displays the outcomes of quiz-4 for the students in the experimental group.

Table 23. *Quiz-5 Results of The Experimental Group*



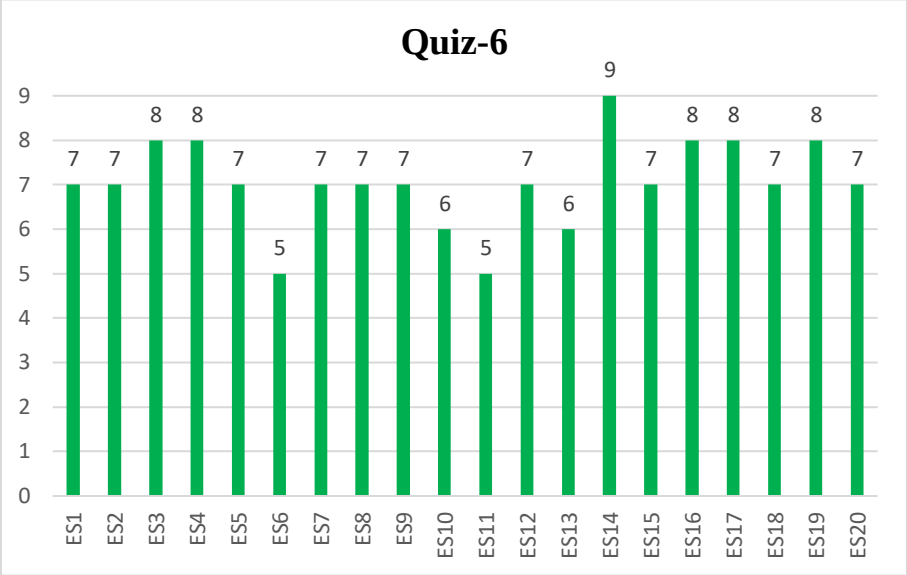
In quiz-6, the correct numbers answered by the control group students were analyzed and determined. Accordingly, in the control group, the lowest number of correct answers in Quiz-6 (Appendix 7) was two, and the highest number of correct answers was five. Table 24 shows the results of quiz-6 undertaken by the participants of the experimental group are showed.

Table 24. *Quiz-6 Results of The Control Group*



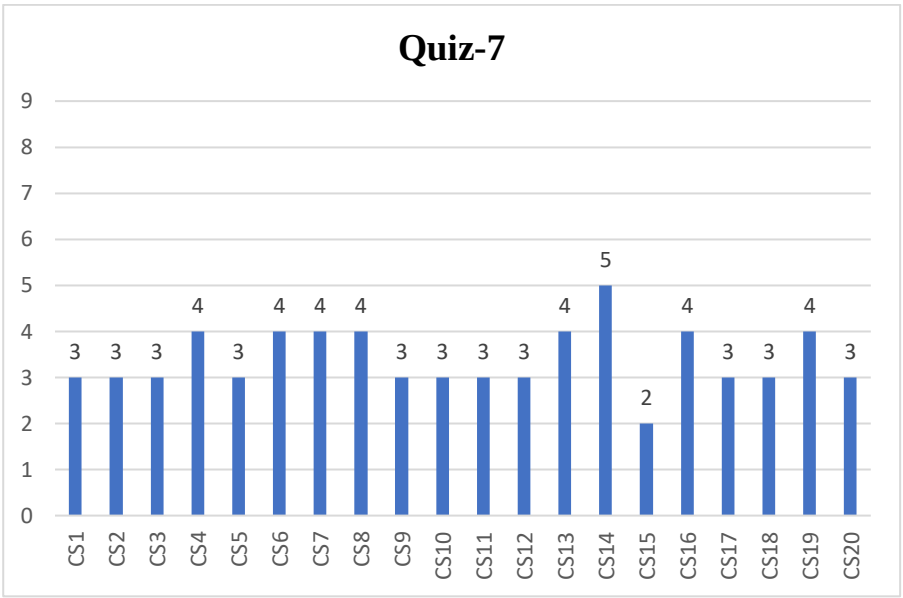
The number of correct answers made by students in the experimental group was analyzed for quiz-6. According to this analysis, the lowest number of correct answers in the experimental group was five on the quiz-6, with one student answering all questions correctly and five students making only one mistake. Based on the outcomes of quiz-6, it has been observed that students in the experimental group achieved better results compared to students in the control group. Table 25 shows the results of quiz-6 for the students in the experimental group.

Table 25. *Quiz-6 Results of The Experimental Group*



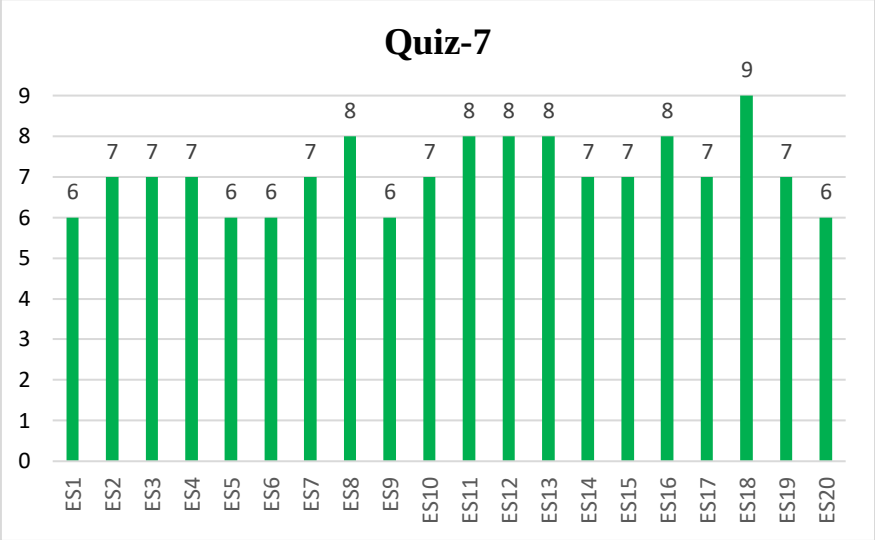
It was noted that the scores in quiz-7 ranged from a minimum of two to a maximum of five in the control group. The results of quiz-7 for the control group are revealed in Table 26.

Table 26. *Quiz-7 Results of The Control Group*



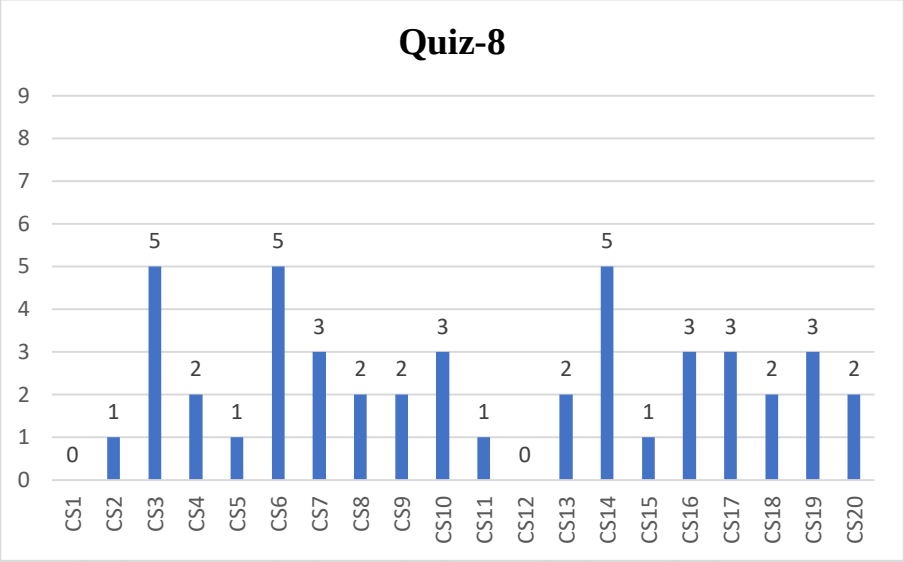
The number of correct answers given by the experimental group students in quiz-7 was analyzed. In light of this analysis, while the lowest number of correct answers in the 7th Quiz in the experimental group was six, it was observed that one student in the experimental group answered all the questions correctly and five students made only one mistake. Within the framework of this information, it emerged that the students in the experimental group had significantly higher answers than the students in the control group. Table 27 presents the results of quiz-7 (Appendix 8) for the students in the experimental group.

Table 27. *Quiz-7 Results of The Experimental Group*



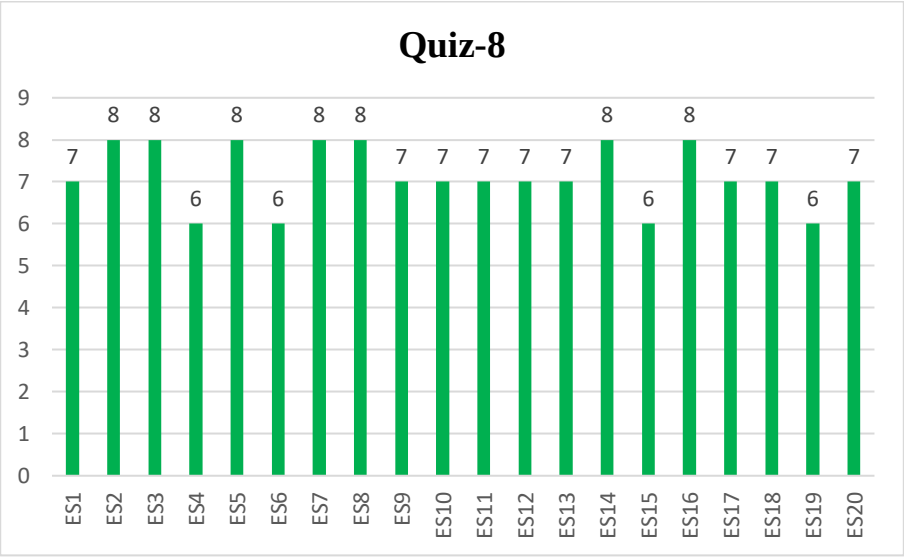
It was found that the scores on quiz-8 ranged from a minimum of zero to a maximum of five in the control group. The results of quiz-8 for the control group are illustrated in Table 28.

Table 28. *Quiz-8 Results of The Control Group*



In accordance with the quiz-8 results of the experimental group, which achieved better scores compared to the results of the control group students, it was observed that the minimum number of correct answers in quiz-8 was six, while seven students gave only one incorrect answer. Table 29 illustrates the results of quiz-8 (Appendix 9) belonging to the experimental group.

Table 29. *Quiz-8 Results of The Experimental Group*



4.2.2 Findings of Research Question 2

In this section, frequency analysis was used to measure the frequency and percentage of the survey in order to find an answer to the second research question. *(RQ:2 What are the students' thoughts on vocabulary acquisiton by using Digital Game Based Learning approach?)*

The Likert scale survey (Appendix 10) conducted according to qualitative analysis data, there were no students in the study who selected the "disagree" or "strongly disagree" options. Only in Item 7, two student outcomes were reported as "neutral". According to the survey results, Item 1 illustrates that 90% of the students chose the strongly agree option, thinking that Quizizz contributes to their vocabulary development, while 10% chose the agree option. This shows that all of the students strongly agree and agree that Quizizz contributes to their vocabulary acquisition which reveals the answer to the second research question.

In addition, in light of to the analysis results, 55% of the students thought that Quizizz was motivating and exciting and chose the strongly agree option, while 45% chose the agree option and it was revealed that all students found Quizizz motivating and exciting. Based on the Item three analysis, 60% of the students chose the strongly agree option and 40% chose the agree option, showing that the students thought that the games in Quizizz made it easier for them to memorize words.

In Item 4, where 80% of the students chose the strongly agree and 20% chose the agree option, it was observed that the students liked the competition and cooperation in Quizizz. In line with the Item 5, where 85% of the students chose the strongly agree and 15% chose the agree option, students found Quizizz games much more fun than traditional class sessions. In accordance with the students' opinions, it is shown in Item 6 that instant feedback for the questions helps them to control their vocabulary level, with 65% strongly agree and 35% agree.

In Item 7, where only two students chose the neutral option with a rate of 10%, the students think that the interactive games on Quizizz are engaging, with a rate of 60% strongly agree and 30% agree. The analysis of item 8 showed that 60% of the students chose the strongly agree and 40% agree option, and as a result, all of the students thought that being in control while playing Quizizz games in the classroom increased their self-confidence.

According to the analysis of Item 9, it was stated that all of the students thought that they comprehended the use of words in the sentences thanks to Quizizz, with 70% strongly agree and 30% agree. The data in Item 10, where 75% strongly agree and 25% agree options were chosen by the students, shows that the students thought that it was easy to learn vocabulary with Quizizz. According to Item 10, where 85% strongly agree and 15% agree option were selected by the students, students thought that their vocabulary level increased by playing games together as a class.

Following the findings, in Item 12, where 75% of the students strongly agreed and 25% chose the agree option, the students thought that the leaderboard in Quizizz satisfied them. As reported by the students' opinions, Quizizz encouraged them to use the newly learned words in real life, and this was stated in item 13 as 80% strongly agree, 20% agree.

As stated in Item 14, it is seen that 80% strongly agree and 20% agree that Quizizz provides the opportunity for students to learn about their mistakes in a fun way. As mentioned in Item 15, it is seen that 65% of the students strongly agree and 35% of the students agree that playing the games in Quizizz helped students to remember words for a long time.

Table 30. *Survey Results of The Experimental Group*

ITEMS RELATED TO THE SURVEY		STRONGLY AGREE		AGREE	
		n	%	n	%
1	Quizizz helped me to imrove my vocabulary skills	18	90.0	2	10,0
2	I found Quizizz motivating and exciting	11	55.0	9	45.0
3	Games on Quizizz contributed me to memorize words more easily	12	60.0	8	40.0
4	I liked the competitiviness & collaboration on Quizizz	16	80.0	4	20.0
5	Playing games on Quizizz is much more fun than traditional lesson session	17	85.0	3	15.0
6	Instant feedbacks for questions helped me to control my vocabulary level	13	65.0	7	35.0
7	Interactive games on Quizizz were engaging	12	60.0	6	30.0
8	Being in control while playing Quizizz games in class increased my self-confidence	12	60.0	8	40.0
9	I comprehended the use of words in sentences thanks to Quizizz	14	70.0	6	30.0
10	It is easy to learn new words with Quizizz	15	75.0	5	25.0
11	I think our vocabulary level has increased with the games we play together as a class	17	85.0	3	15.0
12	The leaderboard on Quizizz satisfied me	15	75.0	5	25.0
13	Quizizz encouraged me to use the newly learned words in real life	16	80.0	4	20.0
14	Quizizz provided me to learn from my mistakes in a fun way	16	80.0	4	20.0
15	Playing the games on Quizizz repeatedly helped me remember the words for a long time	13	65.0	7	35.0

CHAPTER 5: DISCUSSION

5.1. Introduction

In this chapter, the discussion of the findings is illustrated by focusing on the research questions. The current study examined the effect of Digital Game-Based Learning on prep class students' vocabulary acquisition and students' thoughts on vocabulary acquisiton by using Quizizz as a Digital Game Based Learning (DGBL) tool. The overall findings of the research indicate that Digital Game-Based Learning plays a significantly postive role in enhancing vocabulary.

Discussion of RQ1. *Is there a significant effect of Digital Game-Based Learning on prep class students' vocabulary acquisition?*

The first research question of the study aimed to define the influence of Digital Game-Based Learning on prep class students' vocabulary acquisition.

According to the results of the research, the mean score of the experimental group showed a significant increase of 35.3 from pre-test to post-test. By the results of the control group consisting of students who learned words in a traditional way, the mean score increased by 18.8 from pre-test to post-test. As the pre-test-post test of the experimental group and control group students' avarage scores were compared as a percentage, according to the quantitatively analyzed data results, the average score of the control group students increased by 83%, while this rate was determined as 191.8% in the experimental group. Thus, it was revealed that the experimental group students acquired approximately three times more vocabulary compared to the control group students.

Chaiyo and Nokham (2017) conducted a study with 121 undergraduate students who were attending gerontological nursing course four hours a week for one semester. They investigated how the use of Kahoot!, Quizizz, and Google forms affected the students' concentration, engagement, enjoyment, perception, motivation and satisfaction. The results showed that students learned better from doing the quizzes with these tools. The sample size in this study is larger compared to the current study. In this study, it was carried out on course students using more than one tool. In the current study, the students are in the preparatory department of a university. However, these two studies show that Quizizz, a digital game-based learning tool, affected students' learning outcomes postively.

Permana and Permanawati (2020) claims that Quizizz is effective in increasing students' vocabulary acquisition in German lessons. Although their research was in a different language, the results of this study were similar to this study and revealed that Quizizz had a positive effect on vocabulary acquisition.

Moreover, Franciosi (2017) carried out a quasi-experiment in Nihon University. The experimental group uses Quizlet as an online vocabulary learning tool and an online game, while the control group is exposed to the vocabulary application only. It is later found that the experimental group's test scores are better than the control group which is similar to the result of this current study. In these studies, it was observed that tools such as Quizizz, which is included in the digital game-based learning approach used, have positive effects on vocabulary acquisition and learning.

Chen et al. (2018) analyzed the effect of digital game-based learning has on student vocabulary acquisition. They found out that Digital game-based learning showed a large effect size on vocabulary acquisition. These studies provide additional evidence for the the importance of the digital game-based learning approach in enhancing vocabulary.

Considering the results of this research, it was observed that the effect of Quizizz, an interactive tool of Digital Game-Based Learning, on vocabulary acquisition in the classroom is significantly higher, and thus the first question of the research has been addressed.

Discussion of RQ 2: What are the students' thoughts on vocabulary acquisiton by using Digital Game Based Learning?

According to the results, the students in the experimental group thought that Quizizz helped them learn new words more easily, with 75% choosing the strongly agree and 25% agree option. All of the students stated that Quizizz helped them acquire new words more easily and expressed their positive thoughts about vocabulary acquisition with digital game based learning. The majority of students in the survey showed strong agreement, stating that Quizizz had a positive effect not only on acquiring new words but also on enhancing their vocabulary skills, retaining words, memorizing words more easily, and using these words in sentences and in real life situations. In line with these results, the second research question, students' thoughts on vocabulary acquisition in digital game based learning, was clarified.

Additionally, in this survey where students' opinions were assessed, the most of the students selected 'strongly agree' and 'agree' for statements regarding the motivating and exciting nature of Quizizz, the engaging quality of interactive games, the sense of control students feel while playing, which increases their self-confidence, the joy of learning from mistakes, and the collaborative aspects.

Similar to the findings of this study, Jannah, and et al. (2020) state that, completing an online quiz in Quizizz is fun and not dull. They have positive beliefs about having an online English quiz in Quizizz.

As mentioned by Hamel (2016), Quizizz allows all students to practice collaboratively. Quizizz motivates the players by providing a fun game. Resembling this view, the students in the experimental group who took part in this research and were exposed to Quizizz also thought that the games were fun and motivating. In light of these informations, digital game-based learning not only enhances vocabulary but also has positive effects on different areas such as motivation.

Zhao (2019), who has worked with students on Quizizz, noted that students consider Quizizz has a positive impact on their vocabulary acquisition process. In this current research, in line with the answers given by the students in the experimental group to the second research question students' thoughts on Quizizz are highly positive. The findings of these studies align with the current study's outcomes. In accordance with all these results, Quizizz, an interactive learning tool in Digital Game-Based Learning (DGBL) has a positive effect not only on students' vocabulary acquisition and learning but also on their experiences in the learning process.

CHAPTER 6: CONCLUSION

6.1. Conclusion

There have been many debates regarding vocabulary acquisition in second language learning. Within these debates, various theories and approaches have been proposed. In our digitally evolving world of the 21st century, we should adapt to the modern age by embracing an educational model where technology is integrated, leaving behind traditional vocabulary teaching methods. Throughout education, we should not only focus on theories or approaches that include games solely for entertainment purposes or solely for learning objectives, but also incorporate games that aim to both entertain and educate. These games can contribute to students' vocabulary acquisition.

A few studies have been conducted on the vocabulary acquisition of Quizizz, which belongs to the Digital Game-Based Learning approach. By closing this gap in the literature, Quizizz aims to be used more in the vocabulary education process in second language education in Turkey and later around the world.

A total of 40 students from two classes, with 20 students in each class, participated in this research. While the study was being conducted, the same English teacher taught both classes, and thus, the students were exposed to the same teaching methods and there was no difference in terms of teaching methods in the research. In this research, a total of 8 quizzes were held every two weeks after the students who were placed in preparatory classes at A1 level at a foundation university in Istanbul, were given a pre-test to answer the first research question and it was seen that they were at the same level. While the students in the experimental group acquired vocabulary with Quizizz, the control group students were given a pre-test to answer the first research question. Students acquired vocabulary by adhering to books in a

traditional way. Finally, a post-test was conducted for both groups, and in addition, a survey was conducted for the experimental group students to answer the second research question. The results of the pre-post tests and quizzes were obtained using the SPSS 25.0 (Statistical Package for the Social Sciences) package program. Frequency analysis was used for the survey conducted only on the experimental group.

According to the findings of the study, the students who acquired vocabulary through quizzes acquired almost three times more vocabulary than the control group students during this 16-week period. According to this result, the first research question was answered and it was found that Digital-Game Based Learning had a significant effect on the students' vocabulary acquisition. For the second research question. The survey found answers to the students' thoughts about Quizizz, which was applied in the classroom on vocabulary acquisition through digital game-based learning. The survey results showed that almost all of the students thought that the Quizizz helped them to acquire vocabulary, and there was no negative response among them. According to the students' opinions, the Quizizz was also a tool that was interesting, motivating, fun, collaborative, competitive.

Moreover, students thought that Quizizz increased their self-confidence, was effective in memorizing words, and had effective feedback. Anastasiadis, Lampropoulos, and Siakas (2018) examine that DGBL allows students to explore different parts of the game while at the same time develop their skills and expand their knowledge. In the light of this research, it has been revealed that Digital Game-Based Learning has an important role in enhancing vocabulary.

6.2. Pedagogical Implications

In this age we live in, it is very important that we, as English teachers, keep up with the times because today's learners' interest in technology can be effective when used in their learning processes. This shows how important it is for us, as today's

teachers, to adapt to innovative educational methods and theories in the light of technology. Chang & Lehman (2002) propose that provided technology is integrated into the learning environment, it can be useful for students.

This study has shown that digital game-based learning has an important role in students' vocabulary acquisition. Regarding the use of Quizizz, a tool in digital game-based learning, in the classroom, it has been revealed that it facilitfates not only vocabulary acquisition but also the ability to remember words for a long time and memorize words, and also reveals its cognitive importance. Within this framework of information, teachers can use Quizizz in the classroom to help their students acquire vocabulary more effectively.

Since Quizizz is a collaborative and competitive tool, it has been revealed that students are motivated and had fun working together. By the use of this collaborative tool in lessons, it can help students acquire vocabulary in a more motivating way.

According to the opinions of the students within the scope of this research, the games played in Quizizz are also under the control of the students, so they increase their self-confidence in a course content under their own control. Accordingly, in second language education, teachers can integrate vocabulary with other skills and add these games to the course content. Students can be enabled to learn the language more confidently in second language acquisition.

Rasti-Behbahani & Shahbazi (2020) put forward that additionally, the teachers employing games for vocabulary learning need to keep in mind that this method may be more efficient in developing productive recognition of form–meaning relationships, in contrast to traditional teaching methods, which proved to develop more receptive knowledge of acquisition.

Finally, the role of teachers who use tools such as Quizizz in the classroom and adopt a student-centered education model rather than a teacher-centered one is very important. The teacher's understanding of teaching is a factor that affects the entire learning process. As Richards (1994) mention that teachers' beliefs are defined as "the information, attitudes, values, theories, and assumptions about teaching and learning which teachers build up over time and bring with them to the classroom.

6.3. Further research and limitations

This research was conducted with 40 students enrolled in the preparatory classes of a foundation school in Istanbul. Even though the findings of this study cannot be generalized to all universities in Turkey, it can serve by shedding light on future studies with similar content involving more participants.

The current research investigated the role of digital game-based learning in students' vocabulary acquisition. Throughout this research, Quizizz was used as a tool of digital game-based learning. In future research, the effect of Quizizz and other tools in digital game-based learning on vocabulary acquisition can be done by comparing the tools. Especially considering the limited number of studies on tools, researching the effect of these tools not only on vocabulary but also on all other skills in second language education could be a significant research for the future studies. In future research studies can also be carried out to develop different tools by focusing on all skills.

REFERENCES

Aghlara, L., & Tamjid, N. H. (2011). The effect of digital games on Iranian children's vocabulary retention in foreign language acquisition. *Procedia- Social and Behavior Sciences, 29*, 552-560.

Almerich, G., Orellana, N., Suárez-Rodríguez, J., & Díaz-García, I. (2005). Teachers' ICT competencies and training needs. *Education and Information Technologies, 10*(4), 237-254.

Alshaiji, O. A. (2015). Video games promote Saudi children's English vocabulary retention. *Education, 136*(2), 123–132.

Anastasiadis, T., et al. (2018). Digital Game-based Learning and Serious Games in Education. *International Journal of Advances in Scientific Research and Engineering, Vol. 4*, No. 12.

Bal, S. (2018). Using Quizizz.com to enhance pre-intermediate students' vocabulary knowledge. International Journal of Language Academy, 6(3), 295–303. https://ijla.net/?mod=makale_ing_ozet&makale_id=25682.

Balcı, Ö. & Çakır, A. (2012). Teaching vocabulary through collocations in EFL Classes: The case of Turkey. *International Journal of Research Studies in Language Learning. 1*(1). 21-32. https://doi.org/10.5861/IJRSLL.2012.V1I1.31

Baranauskas, M., Neto, N., & Borges, M. (1999). Learning at work through a multi-user synchronous simulation game. In *Proceeding of the PEG'99 Conference* (pp. 137-144). Exeter, UK: University of Exeter.

Bedwell W. L., Pavlas D., Heyne K., Lazzara E. H., Salas E. (2012). Toward a taxonomy linking game attributes to learning: An empirical study. *Simulation & Gaming: An Interdisciplinary Journal, 43*, 729-760.

Bellotti, F., Kapralos, B., Lee, K., Moreno-Ger, P., & Berta, R. (2013). Assessment in and of serious games: an overview. *Advances in Human-Computer Interaction, 2013*

Blanche, P., & Merino, B. J. (1989). Self-assessment of foreign-language skills: Implications for teachers and researchers. *Language Learning, 39* (3), 313-338.

Boyle, J., & Nicol, D. (2003). Using classroom communication systems to support interaction and discussion in large class settings. *Association of Learning Technology Journal, 11*(3), 43-57.

Brown, J., & Adler, R. (2008). Minds on fire: Open education, the long tail, and learning 2.0. *EDUCAUSE Review, 43*(1), 16–32.

Caponetto, I., Earp, J., & Ott, M. (2014). Gamification and education: a literature review. In *8th European Conference on Games Based Learning* (pp. 50–57).

Chaiyo, Y., & Nokham, R. (2017). The effect of Kahoot, Quizizz and Google Forms on the student's perception in the classrooms response system. *2017 International Conference on Digital Arts, Media and Technology (ICDAMT)*, 178-182.

Chang, M. M., & Lehman, J. D. (2002). Learning foreign language through an interactive multimedia program: An experimental study on the effects of the relevance component of the ARCS model. *CALICO journal*, 81-98.

Chen, M., Tseng, W., & Hsiao, T. (2018). The effectiveness of digital game-based vocabulary learning: A framework-based view of meta-analysis. *British Journal of Educational Technology, 49* (1), 69-77.

Chiu, Y. H., Kao, C. W., & Reynolds, B. L. (2012). The relative effectiveness of digital game-based learning types in English as a foreign language setting: A meta-analysis. *British Journal of Educational Technology, 43*, 104–107.

Creswell, J. W. (2005). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (2nd ed.). Upper Saddle River, NJ: Pearson Education.

Çelik, T. (2021). Web 2.0 Araçları Kullanımı Yetkinliği Ölçeği Geliştirme Çalışması. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 51*, 449-478.

DeHaan, J., & Reed, W. M. et al. (2010). The Effect of Interactivity with a Music Video Game on Second Language Vocabulary Recall. *Language Learning & Technology, 14*(2), 74.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: defining gamification. In *Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments* (pp. 9-15). ACM.

Deubel, P. (2006). Game on! *T.H.E. Journal (Technological Horizons in Education), 33*(6), 30-35.

Ellis, N. (1994). Vocabulary acquisition: The implicit ins and outs of explicit cognitive mediation. In N. Ellis (Ed.), *Implicit and explicit learning of language* (p. 211–282). London, San Diego: Academic Press.

Entwistle, N., & McCune, V. (2004). The conceptual bases of study strategy inventories.
Educational Psychology Review, 16(4), 325-345.

Erhel, S., & Jamet, E. (2013). Digital game-based learning: Impact of instructions and feedback on motivation and learning effectiveness. *Computers & Education, 67*, 156-167.

Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing naturalistic inquiry: A guide to methods*. London: Sage Publications.

Felix, W., & Johnston, R. T. (1993). Learning from video games. *Computers in the Schools, 9,* 199-233.

Fies, C., & Marshall, J. (2006). Classroom response systems: A review of the literature. *Journal of Science Education and Technology, 15*(1), 101-109.

Fraenkel, J. R., & Wallen, N. E. (2009). How to Design and Evaluate Research in Education. McGraw-Hill Education.

Franciosi, S. J. (2017). The effect of computer game-based learning on FL vocabulary transferability. *Educational Technology & Society, 20*(1), 123–133.

Gardner, R. C. (2007). Motivation and second language acquisition. *Porta Linguarum, 8*, 9–20.

Garris, R., Ahlers, R., & Driskell, J. E. (2002). Games, motivation and learning. *Simulation & Gaming: An Interdisciplinary Journal of Theory, Practice and Research, 33*(4), 445-459.

Gibson, D., & Aldrich, C. (2007). Games and simulations in online learning: Research and development frameworks. *Information Science Publishing.*

Giroux, H. A., & Schmidt, M. (2004). Closing the achievement gap: A Metaphor for children left behind. *Journal of Educational Change, 5*, 213-228.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a Conceptual Framework for Mixed-Method Evaluation Designs. *Educational Evaluation and Policy Analysis, 11*(3), 255–274.

Griffiths, M. (2002). The educational benefits of videogames. *Education and Health, 20*(3), 47-51.

Hamel, J. (2016). *Interactive Quizizz cheatsheet*.

Henriksen, D., Hoelting, M., & the Deep-Play Research Group. (2016). Rethinking creativity and technology in the 21st century: Creativity in a YouTube World. *TechTrends, 2*(60), 102-106.

Hiebert, E. H. (2005). In pursuit of an effective, efficient vocabulary curriculum for elementary students. In Teaching and learning vocabulary: Bringing research to practice (p. 243-264).

Hitosugi, C. I., Schmidt, M., & Hayashi, K. (2014). Digital game-based learning in the L2 classroom: The impact of the UN's off-the-shelf videogame, Food Force, on learner affect and vocabulary retention. *CALICO Journal, 31*(1), 19–39.

Hulstijn, J. H. (2003). Factors in incidental vocabulary learning. *ERL Language Teaching Research, 7(*3), 211-236.

Hunicke, R., Leblanc, M. & Zubek, R. (2004). MDA: A Formal Approach to Game Design and Game Research. In Proceedings of the AAAI Workshop on Challenges in Game AI. Available from http://www.cs.northwestern.edu/~hunicke/MDA.pdf

Ho, J. C. S., Hung, Y. S., & Kwan, L. Y. Y. (2021). The impact of peer competition and collaboration on gamifed learning performance in educational settings: A Meta-analytical study. *Education and Information Technologies, 27*, 1–34. https://doi.org/10.1007/s10639-021-10770-2

Hooshyar, D., Yousefi, M., & Lim, H. (2018). A procedural content generation-based framework for educational games: Toward a tailored data-driven game for developing early English reading skills. *Journal of Educational Computing Research, 56*(2), 293–310. https://doi.org/10.1177/0735633117706909

Horst, M., Cobb, T., & Meara, P. (1998). Beyond a clockwork orange: Acquiring second language vocabulary through reading. *Reading in a Foreign Language, 11*(2), 207-223.

Huang, W.-H. (2011). Evaluating learners' motivational and cognitive processing in an online gamebased learning environment. *Computers in Human Behavior, 27*(2), 694-704.

Hung, P. H., Hwang, G. J., Lee, Y. H., & Su, I. H. (2012). A cognitive component analysis approach for developing game-based spatial learning tools. *Computers & Education, 59(*2), 762–773.

Hwang, G. J., & Wu, P. H. (2012). Advancements and trends in digital game-based learning research: A review of publications in selected journals from 2001 to 2010. *British Journal of Educational Technology ,43*(1), 6–10. https://doi.org/10.1111/j.1467-8535.2011.01242.x

Jannah, N. A., Supiani, S., & Perdana, I. (2020). The EFL Students' Perceptions of Using Quizizz in Doing Online English Test at High School. *Proceeding: Islamic University of Kalimantan, 1*(1).

Kapp, K. M. (2012). The gamification of learning and instruction. *Game-based methods and strategies for training and education.* Pfeiffer.

Kingsley, T. L., & Grabner-Hagen, M. M. (2018). Vocabulary by gamification. *The Reading Teacher, 71*(5), 545-555.

Kirby, K. C., Holborn, S. W., & Bushby, H. T. (1981). Word game bingo: A behavioral treatment package for improving textual responding to sight words. *Journal of Applied Behavior Analysis, 14*(3), 317.

Knight, S. (1994). Dictionary while reading: The effect on comprehension and vocabulary acquisition for students of different verbal abilities. *The Modern Language Journal, 78*(3), 285-299.

Krashen, S. (1989). We acquire vocabulary and spelling by reading: Additional evidence for the input hypothesis. *The Modern Language Journal, 73*(4), 440–464.

Linehan, C., Kirman, B., Lawson, S., & Chan, G. (2011). Practical, appropriate, empirically-validated guidelines for designing educational games. In *ACM Annual Conference on Human Factors in Computing Systems, May 7–12* (pp. 1979–1988).

Magogwe, J. M., & Oliver, R. (2007). The relationship between language learning strategies, proficiency, age and self-efficacy beliefs: A study of language learners in Botswana. *System, 35(*3), 338-352.

Margarida, R., Veloso, A., Papastergiou, M., & Kordaki, M. (2010). Design of a computer game for an information technology class. In *Proceedings of Videojogos* (p. 51–60). Lisboa: Universidade Técnica de Lisboa.

Mat Zin, Nor Azan & Jaafar, Azizah & Wong, Associate Prof Ts. Dr. Seng Yue. (2009). Digital game-based learning (DGBL) model and development methodology for teaching history. WSEAS Transactions on Computers. 8. 322-333.

Miller, G. A. (1996*). The Science of Words*. New York: Scientific American Library.

Mishra, P., Koehler, M. J., & Henriksen, D. A. (2011). The Seven trans-disciplinary habits of mind: Extending the TPACK framework towards 21st century learning. *Educational Technology, 51*(2), 22-28.

Mohamad, M., Arif, F. K. M., Alias, B. S., & Yunus, M. M. (2020). Online game-based formative assessment: Distant learners postgraduate students' challenges towards Quizizz. *International Journal of Scientific and Technology Research, 9*(4), 994-1000.

Morschheuser, B., Hassan, L., Werder, K., & Hamari, J. (2017). How to design gamification? A method for engineering gamified software. *Information and Software Technology, 82*, 101-112.

Nagy, W. E., Herman, P. A., & Anderson, R. C. (1985). Learning words from context. *Reading Research Quarterly, 20*, 233–253.

Nation, I.S.P. (2001). Learning Vocabulary in Another Language. Cambridge University Press.

Navarro, P. (2017). The impact of gamification on motivation and engagement in language learning. *International Journal of Computer-Assisted Language Learning and Teaching, 7*(3), 20-33.

Nontasee, W., & Sukying, A. (2021). The learnability of word knowledge aspects in Thai EFL high school learners. *Journal of Language and Linguistic Studies, 17*(1), 34-55.

Nussbaum, M., & Beserra, V. d. S. (2014). Educational videogame design. In *Advanced learning technologies (ICALT), 2014 IEEE 14th international conference on* (pp. 2e3). IEEE.

Quiroz M., Gutiérrez R., Rocha F., Valenzuela M., and Vilches C., Improving English vocabulary learning through Kahoot: a quasi-experimental high school experience, *Teaching English with Technology*. (2021) 21, no. 2, 3–13.

Papastergiou, M. (2009). Digital game-based learning in high school computer science education: Impact on educational effectiveness and student motivation. *Computers & Education, 52*(1), 1-12.

Permana, P., & Permatawati, I. (2020). Using Quizizz as a formative assessment tool in German classrooms. In 3rd International Conference on Language, Literature, Culture, and Education (ICOLLITE 2019) (pp. 155-159). Atlantis Press. https://doi.org/10.2991/assehr.k.200325.073

Prensky, M. (2001). Digital game-based learning. New York: McGraw-Hill.

Randel, J. M., Morris, B. A., Wetzel, C. D., & Whitehill, B. V. (1992). The Effectiveness of Games for Educational Purposes: A Review of Recent Research. *Simulation & Gaming, 23*(3), 261-276. https://doi.org/10.1177/1046878192233001

Rasti-Behbahani, A., & Shahbazi, M. (2020). Investigating the Effectiveness of a Digital Game-Based Task on the Acquisition of Word Knowledge. *Computer Assisted Language Learning, 35*, 1920–1945.

Richards, J. C. (1994). *Teacher thinking and foreign language teaching. The Language Teacher, 18(2).* Retrieved 2005, January 20, 2005.

Saeidi, M. (2007). Multiple Intelligence-Based Focus on Form Approach: From Theory to Practice. Tabriz: Islamic Azad University- Tabriz Branch.

Sawyer, B. (2003). Serious Games: Improving Public Policy through Game-based Learning and Simulation.Retrieved from http://www.seriousgames.org/images/ seriousarticle.pdf

Schmitt, N. (2000). *Vocabulary in language teaching.* Cambridge: Cambridge University Press.

Schmitt, N. (2008). Instructed second language vocabulary learning. *Language Teaching Research, 12*(3), 329–363. https://doi.org/10.1177/1362168808089921

Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: a survey. *International Journal of Human Computer Studies*, *74*, 14–31.

Selcuk, Y. (2003). The impact of cultural diversity on team performance: An empirical study. *Journal of Applied Psychology, 88*(3), 562-571.

Senemoğlu, N. (2011). College of Education Students' Approaches to Learning and Study Skills.*Education and Science,* 36(160), 65.

Soltanzadeh, L., Hashemi, S., & Shahi, S. (2013). The effect of active learning on academic achievement motivation in high schools students. *Scholars Research Library, 127-131*.

Sundqvist, P., & Wikström, P. (2015). Out-of-school digital gameplay and in-school L2 English vocabulary outcomes. *System, 51*, 65–76.

Taherdoost, H. (2016). Sampling methods in research methodology; how to choose a sampling technique for research. *SSRN Electronic Journal, 5(*2), 18-27. https://doi.org/10.2139/ssrn.3205035

Thomas, P., & Macredie, R. (1994). Games and the design of human-computer interfaces. *Educational and Training Technology International, 31*(2), 134-142.

Thornton, G. C., & Cleveland, J. N. (1990). Developing managerial talent through simulation. *American Psychologist, 45*(2), 190-199.

Van Eck, R. (2006). Digital game-based learning: It's not just the digital natives who are restless. *EDUCAUSE review, 41*(2), 16-30.

Van Eck, R. (2007). Building artificially intelligent learning games. In *Artificial intelligence in education* (pp. 97-99). IOS Press.

Wang, L. C., & Chen, M. P. (2010). The effects of game strategy and preference-matching on flow experience and programming performance in game-based learning. *Innovations in Education and Teaching International, 47*(1), 39-52.

Wibawa, R. P., Astuti, R. I., & Pangestu, B. A. (2019). Smartphone-based application "Quizizz" as a learning media. *Education Dynamics, 14*(2), 244–253.

Yang, Y.-T. C. (2012). Building virtual cities, inspiring intelligent citizens: Digital games for developing students' problem solving and learning motivation. *Computers & Education, 59*(2), 365-377.

Yien, J., Hung, C., Hwang, G., & Lin, Y. (2011). A Game-Based Learning Approach to Improving Students' Learning Achievements in a Nutrition Course. *TOJET: The Turkish Online Journal of Educational Technology, 10*, 1-10.

Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. *European Journal of Education*, *48*(2), 311-325. https://doi.org/10.1111/ejed.12014

Zhao, F. (2019). Using Quizizz to Integrate Fun Multiplayer Activity in the Accounting Classroom. *International Journal of Higher Education*, *8*(1), 37-43.

Zhonggen, Y. (2019). A Meta-Analysis of Use of Serious Games in Education over a Decade. *International Journal of Computer Games Technology*, *2019*(4797032). https://doi.org/10.1155/2019/4797032

Zou, D., Huang, Y., & Xie, H. (2019). Digital Game-Based Vocabulary Learning: where are we and where are we going? *Computer Assisted Language Learning*, *34*(6), 1–27. https://doi.org/10.1080/09588221.2019.1640745

Ulum, Ö., & Uzun, K. (2020). Critical perspective of English teaching and learning in Turkey. *International Journal of Evaluation and Research in Education (IJERE)*, *9*(2), 458. https://doi.org/10.11591/ijere.v9i2.20469

APPENDICES

Appendix 1: Pre-Post Test

Name & Surname:
Class:
Date:

PART 1: Read the sentences and choose the correct word.

1) The circumstances or past events that help explain why something is how it is; information about these.

A) deal B) over C) recognise D) background

2) To know something without a doubt.

A) certain B) spot C) charger D) circle

3) To think very carefully about something you are doing and nothing else.

A) feel B) knowledge C) compare D) concentrate

4) The part of your mind that stores what you remember.

A) memory B) describe C) show D) nail

5) A situation in which there is little or no noise.

A) quiet B) certain C) essential D) idiom

6) To tell someone something that someone else has told you.

A) accurate B) exactly C) repeat D) fluency

7) To find a way of dealing with a problem or difficult situation.

A) solve B) order C) desire D) direction

8) The effect that is produced by the music of a particular singer or group of musicians.

A) complain B) poverty C) enough D) sound

9) To make a short, sharp sound, or to use something to make this sound.

A) handle B) click C) point D) recommendation

10) To share information with others by speaking,writing, moving your body or using other signals.

A) list B) give C) owe D) communicate

PART 2: Look at the pictures and complete the missing letters of the words.

11)



O - - - - - -

12)



- - A - -

13)



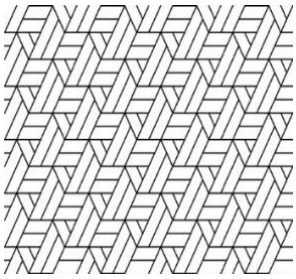
- - U - - - - - -

14)



- - - - - E

15)



- - - T - - -

16)



- - B - -

17)



- - - - R

18)



- O - L - - - - -

19)



C - - - - - - -

20)



- - E -

PART 3: Read the sentences and complete the missing letters.

21) The beliefs and attitudes about something that people in a particular group or organization share.

- - - - - - -

22) The knowledge and skill that you have gained through doing something for a period of time; the process of gaining this.

- - - - - - - - -

23) To make something happen or exist.

- - - - -

24) The level of sound produced by a television, radio, etc.

- - - - -

25) The way that parts of something are arranged or put together.

- - - - - - - - -

26) To get things from different places and bring them together.

- - - - - - -

27) To be the first person to find something important.

- - - - - - - -

28) To make somebody/something come somewhere or take part in something.

- - - - - -

29) To make somebody/yourself believe that something is true.

- - - - - - - -

30) To become a member of an organization, a company, a club, etc.

- - - -

PART 4: Look at the box. Write the word best completes the sentence.

Disadvantage/ available / beat / soundtrack / interactive / universal / type / useful / popular / however / modern / noisy /

31) People find it difficult to concentrate in _____ environments such as open-plan offices.
32) In the early _____ period some significant themes emerge.
33) We're not going to get there in time, _____ fast we drive
34) This is one of our most _____ designs.
35) The website turned out to be a really _____ resource.
36) I am not the _____ of person who gives up easily.
37) Such problems are a _____ feature of old age.
38) An _____ online map that helps people find bicycle routes through the city.
39) I've just bought the _____ of the latest Miyazaki movie.
40) I _____ her by just three points.
41) We have plenty of office space _____ .
42) One _____ of living in the country is the lack of public transport.

PART 5: Match the explanation with the correct word.

	43) Prevent	a. To give someone instructions or information
	44) Influence	b. To give someone confidence or hope.
	45) Product	c. To have something or someone as part of something larger or more general, such as a group, price, or process.
	46) Select	d. A piece of work, especially something unpleasant or difficult.
	47) Option	e. An illegal act or activity that can be punished by law.
	48) Crime	f. A subject that a student can choose to study, but that they do not have to do.
	49) Task	g. To choose somebody/something from a group of people or things, usually according to a system.

	50) Include	h. A thing that is grown, produced or created, usually for sale.
	51) Encourage	i. The effect that somebody/something has on the way a person thinks or behaves or on the way that something works or develops.
	52) Brief	j. To stop somebody from doing something; to stop something from happening.
		k. To behave in a particular way, in order to make other people believe something that is not true.
		l. A period of time when somebody/something has to wait because of a problem that makes something slow or late.
		m. The action of revising.

PART 6: Circle the correct word.

53) The government wants to leave companies …….. to make their own decisions.

A) solution B) important C) reason D) free

54) She began her …….. career as a dancer 20 years ago.

A) ordinary B) few C) professional D) rather

55) According to this evening's weather ……..,, there will be snow tomorrow.

A) freshwater B) some C) report D) many

56) It happened almost …….. a year ago.

A) specially B) saltwater C) hard D) exactly

57) It's ……. impossible to get tickets for her gigs.

A) steady B) nearly C) enter D) decision

58) He made no effort to …… her tears and just let them run down her face.

A) towards B) in C) close D) check

59) The UN resisted any tougher sanctions, opting ……. for more time to give talks a chance.

A) quantity B) real C) instead D) citizen

60) She paints with …… strokes of the brush.

A)bold B)boredom C)essential D)specify

61) When highlighted information is clicked, a pop-up …… appears.

A) cubicle B) sensational C) menu D) mobile

62) The method used will vary with the soil ……. and climate.

A) reveal B) paint C) advert D) texture

63) They were …….. , excluding even milk and honey from their diets.

A) healthy B) vegan C) particular D) society

64) She ……. carried the baby upstairs.

A) safe B) almost C) honestly D) carefully

65) This product contains only …….. ingredients.

A) tournament B) perfectly C) occasion D) natural

66) If the result of a test to prove if someone is pregnant or sick is ……..,
that personis not pregnant or sick.

A) rear B) accountancy C) negative D) positive

67) There is disagreement in one ……. of the community.

A) further B) section C) resident D) cxclude

68) The ……. family went to the show.

A) adequate B) whole C) amount D) real

69) She went on a ..... to lose weight.

A) diet B) heavy C) surface D) audience

70) He pretended to be a doctor, but he was a ……..

A) producer B) fake C) expectation D) illustrate

71) She asked me for ..... about writing a book.

A) local B) reaction D) contribution D) advice

72) We wanted to have only films from Spain at this year's festival……..……, however, there weren't enough good ones.

A) unfortunately B) more C) real D) suddenly

Appendix 2: Quiz-1

Name & Surname:
Class:
Date:

A: Read the sentences and choose the correct word.

1) The things that you can see from a place.

A) View B) Solve C) Relationship D) Fluence

2) The way in which people or things are placed or arranged in relation to each other.

A) Knowledge B) Power C) Order D) Evidence

B: Read the sentences and complete the missing letters.

3) They sell camping equipment, hiking gear and ..... clothing.

A) Real B) Far C) Seem D) Outdoor

4) Everyone should bring the necessary ..... for camping in the mountains.

A) Admire B) Turn C) Equipment D) Pull

5) The forces of ..... are constantly reshaping our world.

A) Honest B) Devil C) Admire D) Nature

C: Read the sentences and complete the missing letters.

6) The regular way in which something happens or is done.

- - - - - - -

7) A piece of paper, etc. that is attached to something and that gives information about it.

- - - - -

8) A person that you work with, especially in a profession or a business.

- - - - - - - - -

D: Look at the pictures and complete the missing letters of the words.

9)



- - - - - - - -

Appendix 3: Quiz-2

Name & Surname:
Class:
Date:

A: Read the sentences and choose the correct word.

1) To stop somebody from doing something; to stop something from happening.

A) Bucket B) Rock C) Attact D) Prevent

2) The effect that somebody/something has on the way a person thinks or behaves or on the way that something works or develops.

A) Influence B) Leave C) Deserve D) Handle

B: Read the sentences and complete the missing letters.

3) I could hear a baby crying in the .....

A) Direct B) Observe C) Aim D) Background

4) The museum is only open at ..... times of the day

A) Certain B) Disagree C) Expect D) Drive

5) I can't ..... with all that noise going on.

A) Different B) Same C) Concentrate D) Ordinary

C: Read the sentences and complete the missing letters.

6) The period of time that a person or group of people is able to remember events.

- - - - - -

7) The habits, traditions, and beliefs of a country, society, or group of people.

- - - - - - -

8) The music used in a film.

- - - - - - - - - -

D) Look at the pictures and complete the missing letters of the words.

9)



- - - - -

Appendix 4: Quiz-3

Name & Surname:
Class:
Date:

A: Read the sentences and choose the correct word.

1) A class or group of people or things that share particular qualities or features and are part of a larger group; a kind or sort.

A) Resource B) Human C) Learn D) Type

2) To defeat somebody in a game or competition.

A) Confess B) Beat C) Dull D) Touch

B: Read the sentences and complete the missing letters.

3) They are hoping to ..... last year's victory.

B) Repeat B) Save C) Contact D) Believe

4) I hope that he can find a good way to ..... these problems.

A) Help B) Truth C) Solve D) Try

5) ..... the OK button to start.

A) See B) Ordinary C) Click D) Handle

C: Read the sentences and complete the missing letters.

6) A small piece of paper with a design on it that you buy and stick on an envelope or a package before you post it.

- - - - -

7) A copy of something that , is intended to look real or valuable and deceive people.

- - - -

8) A period when someone eats less food, or only particular types of food, because they want to become thinner, or because they are sick.

- - - -

D) Look at the pictures and complete the missing letters of the words.

9)



- - - - -

Appendix 5: Quiz-4

Name & Surname:
Class:
Date:

A: Read the sentences and choose the correct word.

1) Used to emphasize how large or important something is.

A) Whole B) Body C) Correct D) Choose

2) Something that is natural exists or happens because of nature, not because it was made or done by people.

A) Conflict B) War C) Patient D) Natural

B: Read the sentences and complete the missing letters.

3) You can ..... goods from our catalogue.

C) Select B) Over C) Tell D) Force

4) He has eliminated dairy ..... from his diet.

A) Full B) Amazing C) Calm D) Product

5) Waiting a year may be your best .....

A) Option B) Fail C) Trust D) Department

C: Read the sentences and complete the missing letters.

6) To cause problems and tend to stop somebody/something from succeeding or making progress.

- - - - - - - - - - - -

7) Used to introduce a statement that contrasts with something that has just been said.

- - - -

8) Able to live, happen or exist without being controlled by anyone or anything.

- - - -

D) Look at the pictures and complete the missing letters of the words.

9)



- - - -

Appendix 6: Quiz-5

Name & Surname:
Class:
Date:

A: Read the sentences and choose the correct word.

1) A written or spoken account of an event, especially one that is published or broadcast.

A) Thing B) Ride C) Rational D) Report

2) Used to emphasize that something is correct in every way or in every detail.

A) May B) Real C) Orderly D) Exactly

B: Read the sentences and complete the missing letters.

3) Further details are ..... on request.

B) Dishonest B) Agree C) Some D) Available

4) He committed a serious .....

A) Crime B) Tissue C) Occur D) Fail

5) His books ..... the best-selling novel 'The Foundling'.

A) Love B) People C) Art D) Include

C: Read the sentences and complete the missing letters.

6) With a lot of attention or thought, so that you avoid hurting yourself, damaging something or doing something wrong.

- - - - - - - - -

7) A person or an organization that buys goods or services from a shop or business.

- - - - - - - -

8) The way a surface, substance or piece of cloth feels when you touch it, for example how rough, smooth, hard or soft it is.

- - - - - - -

D) Look at the pictures and complete the missing letters of the words.

9)



- - - - - -

Appendix 7: Quiz-6

Name & Surname:
Class:
Date:

A: Read the sentences and choose the correct word.

1) A separate part of a structure from which the whole can be put together.

A) Section B) Home C) Original D) Important

2) A list of the food that is available at a restaurant or to be served at a meal.

A) Cook B) Menu C) Pretend D) Small

B: Read the sentences and complete the missing letters.

3) He crept into the house trying not to make a .....

A) Dinner B) Food C) Surf D) Sound

4) We only ..... by email.

A) Tidy B) Touch C) Communicate D) Draw

5) She didn't get paid much but it was all good .....

A) Habit B) Office C) Part D) Experience

C: Read the sentences and complete the missing letters.

6) To examine something to see if it is correct, safe or acceptable.

- - - - -

7) As a substitute; in place of something or someone.

- - - - - - -

8) Someone who does not eat meat, fish, egg, milk, or cheese.

- - - - -

D) Look at the pictures and complete the missing letters of the words.

9)



- - - - - - -

Appendix 8: Quiz-7

Name & Surname:
Class:
Date:

A: Read the sentences and choose the correct word.

1) Having a job which needs special training and a high level of education.

A) Profeesional B) Tailor C) Purpose D) Accuracy

2) Relating to everyone in the world, or to everyone in a particular group.

A) Power B) Universal C) Perfect D) Connection

B: Read the sentences and complete the missing letters.

3) The government plans to ..... more jobs for young people.

C) Agree B) Artifical C) Observe D) Create

4) Changes in the economic ..... of society.

A) Friendship B) Sructure C) Business D) Divorce

5) ....,, I won't be able to attend the meeting.

A) Unfortunetly B) Finally C) Perhaps D) Mostly

C: Read the sentences and complete the missing letters.

6) Right or appropriate for the taste and knowledge of ordinary people.

- - - - - - -

7) New and intended to be different from traditional styles.

- - - - - -

8) Helping you to do or achieve something.

- - - - - -

D) Look at the pictures and complete the missing letters of the words.

9)



- - - -

Appendix 9: Quiz-8

Name & Surname:
Class:
Date:

A: Read the sentences and choose the correct word.

1) Involving communication between people.

A) Interactive B) Antisocial C) Parents D) Under

2) Strong in colour or shape.

A) Bold B) Percent C) Hate D) Paint

B: Read the sentences and complete the missing letters.

3) The general tried to ..... the troops.

A) Back B) Hurt C) Encourage D) Permission

4) It took some doing to ..... him to come.

A) Convince B) Take C) Enroll D) Put

5) She ..... drowned when she was eight.

A) Happen B) Nearly C) Fact D) Never

C: Read the sentences and complete the missing letters.

6) To get information about something for the first time.

- - - - - - - -

7) Suggestions about what you think someone should do or how they should do something.

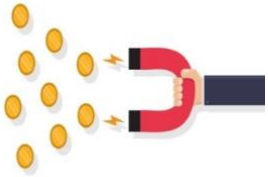
- - - - - -

8) To give someone instructions or information.

- - - - -

D) Look at the pictures and complete the missing letters of the words.

9)



- - - - - - -

Appendix 10: Survey

Respondent's Details:

Age: _____ Education: _____

Mobile Number: _____ Gender: Male / Female

Strongly Agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly Disagree (5)

	SECTION	(1)	(2)	(3)	(4)	(5)
1	Quizizz helped me to imrove my vocabulary skills					
2	I found Quizizz motivating and exciting.					
3	Games on Quizizz contributed me to memorize words more easily.					
4	I liked the competitiviness & collaboration on Quizizz.					
5	Playing games on Quizizz is much more fun than traditional lesson session.					
6	Instant feedbacks for questions helped me to control my vocabulary level.					
7	Interactive games on Quizizz were engaging.					
8	Being in control while playing Quizizz games in class increased my self-confidence.					
9	I comprehended the use of words in sentences thanks to Quizizz.					
10	It is easy to learn new words with Quizizz.					
11	I think our vocabulary level has increased with the games we play together as a class.					

12	The leaderboard on Quizizz satisfied me.					
13	Quizizz encouraged me to use the newly learned words in real life.					
14	Quizizz provided me to learn from my mistakes in a fun way.					
15	Playing the games on Quizizz repeatedly helped me remember the words for a long time.					

Appendix 11: Approval of Research Committee

Evrak Tarih Sayısı: 29.02.2024-608562

T.C.
TRAKYA ÜNİVERSİTESİ REKTÖRLÜĞÜ
Sosyal ve Beşeri Bilimler Araştırmaları Etik Kurulu Başkanlığı

Sayı : E-29563864-050.04-608562 29.02.2024
Konu : Kararlar

Sayın Doç. Dr. Kutay UZUN

Danışmanlığını yaptığınız, Trakya Üniversitesi Sosyal Bilimler Enstitüsü Yabancı Diller Eğitimi Anabilim Dalı İngiliz Dili Eğitimi Yüksek Lisans Programı öğrencisi Merve KURUKAYA tarafından, Trakya Üniversitesi Sosyal ve Beşeri Bilimler Araştırmaları Etik Kurulu'nun 28.02.2024 tarihli toplantısında alınan 02/35 numaralı kararı ile uygun görülmüştür.

Gereğini bilgilerinize rica ederim.

Prof. Dr. Ayhan GENÇLER
Başkan

Ek:Etik Kurul Kararı

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Belge Doğrulama Kodu :BSPA7S87KR Pin Kodu :87472 Belge Takip Adresi : https://www.turkiye.gov.tr/trakya-universitesi-ebys

Adres : Trakya Üniversitesi Rektörlüğü Balkan Yerleşkesi 22030 Edirne
Telefon : 2842234004 Faks : 2842234203
e-Posta:ozelkalem@trakya.edu.tr Web:https://www.trakya.edu.tr
Kep Adresi : trakyauni@hs01.kep.tr

Bilgi için : Ceyda DURSUN
Unvanı : Sekreter