

T. R.
GAZİANTEP UNIVERSITY
GRADUATE SCHOOL OF EDUCATIONAL SCIENCES
DEPARTMENT OF FOREIGN LANGUAGES TEACHING
ENGLISH LANGUAGE TEACHING PROGRAM

**The Effect of the Use of ICT through Smart
Boards on Language Attitude, Vocabulary
Achievement & Retention of Turkish EFL Learners**

Master of Arts Thesis

AYŞİN YILMAZ

**GAZİANTEP
MAYIS 2024**

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MASTER OF ARTS THESIS

AYŞİN YILMAZ

Supervisor: Assoc. Prof. Dr. Fadime YALÇIN ARSLAN

GAZIANTEP
MAYIS 2024

APPROVAL OF THE JURY

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DEDICATION



To me and my beloved family...

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ÖZET

AKILLI TAHTA YOLUYLA BİLGİ VE İLETİŞİM TEKNOLOJİLERİ KULLANIMININ İNGİLİZCEYİ YABANCI DİL OLARAK ÖĞRENEN ÖĞRENCİLERİN DİL TUTUMU, KELİME BAŞARISI VE KALICILIĞI ÜZERİNDEKİ ETKİSİ

YILMAZ, Ayşin

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Teknolojinin yaygın kullanımı, eğitim alanını da etkilemiş ve teknoloji, akıllı tahta formunda sınıflara girmiştir. Bu çalışmanın amacı, akıllı tahta kullanımının öğrencilerin dil tutumu, kelime başarısı ve kalıcılık düzeyi üzerindeki etkisini araştırmaktır. Sonuçlara ulaşmak için yarı deneysel bir araştırma tasarımı seçildi ve Gaziantep İlinde bir ortaokulda kontrol ve deney grupları oluşturuldu. Deney grubundaki öğrencilere akıllı tahta kullanımı uygulandı, kontrol grubu ise sınıflarında geleneksel öğretim teknikleri ve materyallerini kullandı. Veri, araştırmacı tarafından hazırlanan bir kelime başarı testi ve Aydoslu (2015) tarafından geliştirilen bir tutum ölçeği aracılığıyla toplandı. Uygulama öncesinde ön test ve tutum ölçeği uygulandı. Uygulama sekiz hafta sürdü ve 2 üniteden oluştu. Başarı testi ve tutum ölçeği deney sonrası tekrar uygulandı ve akıllı tahta kullanımının etkililiğini görmek için sonuçlar karşılaştırıldı. Ayrıca, uygulamadan 4 hafta sonra akıllı tahta kullanımının öğrencilerin kelime kalıcılık düzeyini etkileyip etkilemediğini görmek için bir kalıcılık testi uygulandı. Sonuçları değerlendirmek için gruplar hem kendi içinde hem de birbirleri arasında karşılaştırıldı. Bulgular, uygulama sonrasında kontrol ve deney grupları arasında kelime başarısı açısından anlamlı bir fark olmadığını ortaya koydu. Ancak, uygulamanın, deney grubundaki öğrencilerin dil tutumlarında anlamlı bir artışa neden olduğu görüldü. Son olarak, kalıcılık testi sonuçları göz önüne alındığında, akıllı tahta kullanımının öğrencilerin hatırlama düzeyini artırdığı, ancak bu artışın anlamlı ölçüde olmadığı gözlemlendi.

Anahtar sözcükler: Akıllı tahta, dil tutumu, kelime başarısı, kelime hatırlama düzeyi.

ABSTRACT**THE EFFECT OF THE USE OF ICT THROUGH SMART BOARDS
ON LANGUAGE ATTITUDE, VOCABULARY ACHIEVEMENT
&RETENTION OF TURKISH EFL LEARNERS**

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Widespread technology usage affected the education field, and technology entered the classrooms through smart boards. This study aimed to explore the effect of smart boards on the language attitude, vocabulary achievement, and retention level of students. A quasi-experimental research design was chosen to reach the results, and control and an experimental group of students were constituted in a secondary school in a state school in Türkiye. The experimental group students were exposed to smart boards, and the control group used traditional teaching techniques and materials in their class. The data was collected through a vocabulary achievement test, which was prepared by the researcher, and an attitude scale, which was developed by Aydoslu (2015). Before the treatment, a pre-vocabulary achievement test and pre-attitude scale were applied. The treatment lasted for eight weeks. The achievement test and the attitude scale were applied after the treatment, and the results were compared to see the effectiveness of the vocabulary achievement and language attitude of learners. Furthermore, four weeks after the treatment, a retention test was applied to see whether the usage of smart boards affected students' retention levels or not. The groups were compared both within and among themselves to evaluate the results. The findings revealed that there was no significant difference in terms of vocabulary achievement between the control and experimental groups after the treatment. However, it was observed that the treatment caused a significant increase in students' language attitudes in the experimental group. Lastly, considering the results of the retention test, it was observed that the usage of smart boards increased the students' recall level, although this increase was not statistically significant.

Keywords: Smart Boards, Language Attitude, Vocabulary Achievement, Vocabulary Retention.

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LIST OF ABBREVIATIONS

ICT: Information and Communication Technology

CALL: Computer-Assisted Language Learning

E-learning: Electronic Learning

M- Learning: Mobile Learning

MOOCs: Massive Open Online Courses

MT: Machine Translation

FATİH: Fırsatları Artırma ve Teknolojiyi İyileştirme Hareketi (Movement to Increase Opportunities and Technology)

IWB: Interactive White Board

CHAPTER I

INTRODUCTION

1.1.Statement of the Problem

Nowadays, technology has become an indispensable part of life. As in all parts, we cannot isolate technology from education as it enters many classrooms as interactive boards. With interactive smartboards, most teachers from different fields begin to use the benefits of the technology in their classes. Language classes can be seen as one of the classes that need technology because teaching a language with the help of technology could cause an efficient teaching process. Teachers can use smartboards to bring the outside world into the classroom. Kırbaş (2019) stated that in late 2010, Turkey initiated the FATİH project to enhance teachers' knowledge and skills to maximize the benefits of technology in education. With this project, using smart boards in class gained importance because, with the FATİH project, smart boards became available teaching aids in classrooms (Kırbaş, 2019). Teachers have interactive smartboards in their classes as material so they can use these materials in their classes.

In language education, one of the main problems that students experience is that they cannot expand their language knowledge because they forget what they have learned after a short time has passed over the teaching session, as I have observed in my classes. The curriculum in Turkey has a spiral system, so every year, the students revise the things they have learned in their previous grade, but mostly, they forget nearly all of them as far as I have observed. This may lead to some difficulties in

language learning, such as non-native students can forget the words they have learned regardless of whether it is receptive or productive vocabulary, and they proceed to the next grade with a lack of background knowledge. For learning, it is necessary to establish contact between the newly learned item and existing learning. The strength of each contact may vary depending on the amount of exposure, and whether learners give their attention or not. If these contacts are not strong enough, forgetting the newly learned items is inevitable (Cohen, 1986). Frise (2018) stated that “forgetting looks like a wearing down of memory connections.”(p.224).

Forgetting items can occur due to various reasons, such as lack of attention, lack of familiarity, and so on. One of the main reasons for forgetting the learned items in the language-learning process could be the lack of exposure to the language (Hashemzadeh, 2012). Students learn new items in class and generally have only a few exercises about them, and after the class, there is no suitable environment for using newly discovered items. Laufer and Rozovski-Roitblat (2015) supported the idea that the most effective learning occurs when new words are gradually introduced and practiced, so the amount of exposure to the latest items is a crucial issue for retention. Different activities that enhance retention levels should be used in the teaching process when new items are presented in the class. Wang (2014) concluded that interactive web-based exercises, which are a field of technology, provided students with greater exposure to the language, which increased the retention level of learners. Özyaşar (2020) investigated the effect of technology on knowledge retention. The study was conducted on two groups of secondary school students. Quantitative data were collected through pre-tests, post-tests, retention tests, and a 5-point Likert scale questionnaire. As a result of the study, it was found that the post-test results of the experimental group increased their scores with the help of gamified applications and concluded that technology positively affected students' vocabulary retention. A study in science education by Saraç (2020) shows that the experimental group that used smartboards in their learning process had higher scores than the control group that used traditional methods in their science class. Also, Saraç (2020) stated that the test results that were applied to assess the students' retention of knowledge they have learned in science class showed that students who learned the topic with smart boards had better results in retaining information. It can be said that using smartboards positively affected the students' achievements and retention of knowledge level in science class.

Considering all these findings, it can be concluded that the use of smart boards, as a subset of technology, can impact the teaching process.

Several studies have investigated the effects of technology and smart board use on the language teaching process in the literature. A study by Patra et al. (2022) concluded that technology increased learners' retention levels on vocabulary achievement tests. Similarly, Al Farra et al. (2014) investigated the effect of smartboards on high school students' vocabulary retention and attitudes. It was seen that the experimental group that enhanced their learning process with interactive whiteboards (IWB) had higher grades in retention tests. Sometimes, students may encounter some vocabulary items they have never experienced before, and bringing these real materials to the classroom could be impossible or expensive. When students have a chance to watch or see it with the help of smartboards, they can remember the items easily. Thanks to technology, students can see the learning inputs in different formats like visuals, videos, or interactive games that could affect their learning retention. Widener et al.(1999) supported this idea as:

On the practical side, Smart Board offers an exciting option for bringing the Internet into every FL class. The Internet and its access to authentic documents have been the biggest revolution in foreign language teaching/learning in the last few years. Smart Board brings this interactive feature into the classroom without involving the cost of having one online computer for every student. (p.6)

The usage of technology could positively affect students' retention levels in the language teaching process thanks to the repetition via different sorts of activities it provides. Providing different kinds of activities regarding individual differences of learners and exposing students to the language outside of class could enhance the retention level of learners. Since the importance of the retention level of learners in the language teaching process, further studies are needed to confirm these findings.

Additionally, vocabulary learning, a component of language learning, is an important issue that should be addressed in language classes. One of the biggest mistakes made is assuming that teaching a language is just teaching grammar. If language teachers only focus on grammar in teaching the language, a successful teaching process will not occur. Harmer (1991) supported this view: "If language structures make up the skeleton of language, then it is vocabulary that provides the vital organs and the flesh"(p. 246). Students must improve their vocabulary knowledge

to communicate and improve in the language. One of the problems in language learning in Turkey is that students' vocabulary knowledge remains limited because the curriculum covers only a certain number of words. When students are only exposed to certain amount of vocabulary in class and they are not rehearsed via activities they could have little chance to expand their vocabulary knowledge so the vocabulary they have learned could not be permanent (Hashemzadeh, 2012). This can be considered another problem experienced in the language teaching process. Offering educational material that allows students to learn outside the classroom and reinforce the new words they learn with different and exciting activities may be a partial solution to this problem. More studies are needed to find the effect of smart boards on vocabulary teaching and learning.

Moreover, one of the main issues that significantly influences the learning process is the perception of learners toward the language and learning process. Zimbardo and Leippe (1991) defined attitude as an evaluative stance towards an object, formed by a combination of thoughts, emotional reactions, behavioral intentions, and past actions, which can impact future intentions and behaviors, as well as emotional responses and thoughts. Genç and Aydın (2017) stated that learners' attitudes are shaped by culture, the perception of the language speakers, and so on. All of these factors affect the learning process directly. If learners have a negative attitude toward the language or its components, the students could feel less motivated to learn the language. Bidin et al. (2009) stated that learners with higher marks had higher attitudes toward the language. İnal et al. (2005) also supported this view. They claimed that learners with a negative attitude toward the language could not be successful in that language, so there was a strong correlation between the learners' academic success and their attitudes toward the language. In Türkiye, studies conducted on learners' attitudes toward learning a language showed that generally, learners have positive attitudes toward the learning language. (Karahan, 2007; Görgün, 2013; Genç & Aydın, 2017; Kızıltan & Atlı, 2013). However, it needs to be considered that attitude can be affected by different factors. Learners could have a positive attitude toward the language, but this does not mean it will last the same during the teaching or learning process. Getie (2020) stated learners are aware of the significance and prestige of the English language, and learning it is favorable for them. They want to learn a language for the advantages it provides. However, it was concluded that the learning

environment can influence a learner's attitude toward the language. If the subject is not presented interestingly or the activities cannot catch the learners' attention, their perception of the learning process could be affected negatively. Teaching techniques, activities and materials used in class are other essential factors influencing learners' attitudes. While learners have a positive attitude toward the language, educational context could decrease the attitude. Nomass (2013) stated that a traditional teaching environment could be boring for learners, negatively affecting the teaching process. When students experience boredom in class, sustaining their attention and enthusiasm for learning could be difficult, and their attitude toward language learning could decrease. If a teacher plans their lesson more motivating and students can learn while having fun, their beliefs about language learning may also change. Al Farra et al. (2014) also supported the idea that smartboards increased students' motivation and attracted their attention during learning. When they analyzed the attitude scale results in their research, they stated that the experimental group had a higher level of interactivity and motivation in the classroom, which raised their enjoyment in class and positively affected their attitudes toward the English Language. Instead of listening to the teacher passively, learning while having fun may help students remember what they have learned (Al Farra et al., 2014). Considering the conducted research, if there is a relationship between language attitude and achievement, educational context should be arranged to sustain a positive attitude of learners. Using only traditional methods, keeping students passive in the learning process, and avoiding using different activities might negatively affect learning. Istifci et al. (2018) stated that using a smartboard efficiently in the classroom makes language classes enjoyable, and of course, this affects the students' perception of the class. Learning vocabulary in this environment is very effective, and developing other language skills is positively affected. Ateş et al. (2006) conducted a study with preparatory high school students, comparing pre- and post-attitude test results, which revealed a significant increase in students' attitudes toward English in Computer Assisted English Lesson classes. Students stated that computer-assisted language lessons were enjoyable and entertaining for them. As a result, changing the teaching environment and using the benefits of technology in class could positively affect students' attitudes toward language lessons. The issue of attitude, which can affect students' learning positively or negatively, is essential, and its relation with the smart boards needs to be researched more.

The usage of smartboards and technology has been investigated in different contexts. Gerard et al. (1999) researched the usage of smartboards in language classes. They concluded that smartboards positively affect teachers and students, by increasing students' motivation in language classes, and supporting their learning processes in terms of cognitive and oral skills. Furthermore, smartboards provide various visual aids that enhance teaching and learning. Research by Mun and Abdullah (2016) supported the idea that if students have a rich learning environment supported by visuals and videos, they will be more active in the classroom and learn and retain better what they have learned from the lecture. Moreover, sometimes students may encounter some vocabulary items they have never experienced before, and bringing these authentic materials to the classroom could be impossible or expensive. With the help of technology, teachers can overcome this problem. Farra (2014) found that the smartboards increased students' vocabulary retention levels in high school, and smartboards in language classes positively affected the attitudes of 10th-grade students in Gaza. Akar (2019) looked at the effect of smartboards on academic achievement and stated some advantages and disadvantages of smartboards in language classrooms. Bıçak (2018) explored teachers' views about the usage of smartboards. In his research, he concluded that teachers generally use smartboards insufficiently, and there should be some teacher training courses to take advantage of technology in the classroom. Gerard et al. (1999) also stated that smartboards and technology increase students' motivation and make language lessons enjoyable. Ateş et al. (2006) studied computer-assisted English instructions and their effect on students' attitudes toward English in a high school and it was found that the attitudes of learners toward language increased significantly thanks to the computers used during teaching process. When all these studies are considered it can be said that, although the effect of smartboard usage on different variables has been investigated, its impact on both vocabulary achievement & retention level and language attitude has not been studied together. That's why we believe that this kind of research about the effect of smartboards could be beneficial.

1.2 Purpose of the Study

This study aims to investigate the possible effects of using smartboards on students' vocabulary achievement & retention. Besides, the impact of using

smartboards on the language attitudes of Turkish EFL learners will be explored. In light of the collected data, it can be concluded whether the usage of smartboards affects vocabulary learning in targeted language and whether it helps remember vocabulary. Also, it can be determined whether language attitude, which is one of the essential elements in language learning, is affected by the activities used through technology in the learning environment.

Thus, the study aims to answer the following research questions,

1. Is there a significant difference between the experimental group and the control group in terms of
 - a. Vocabulary Achievement before the treatment?
 - b. Language Attitudes before the treatment?
2. Is there a significant difference between the experimental group and the control group in terms of Vocabulary achievement after treatment?
3. Is there a significant difference between the pre-and post-achievement test results of
 - a. the experimental group after treatment?
 - b. the control group after treatment?
4. Is there a significant difference between the pre-attitude and post-attitude results of
 - a) the experimental group?
 - b) the control group?
5. Is there a significant difference between the experimental and control groups in terms of Language Attitudes after the treatment?
6. Is there a significant difference between the Vocabulary retention level of the experimental group and the control group?

1.3 Significance of the Study

We are living in a technological era. Therefore, it may not be possible for teachers to teach something by separating technology from the teaching environment. Teachers can integrate the technology according to students' teaching goals and levels, needs, and interests. This study investigated the effects of using smartboards on

vocabulary achievement and retention of EFL learners and its impact on attitudes toward language learning. Looking at the effects of smartboards on vocabulary achievement and retention can contribute to the education field. Students may struggle to recall what they have learned when they lack opportunities to use the language in real-life contexts. Additionally, the topics they work on can sometimes be overly abstract, further hindering their retention. As a result, despite commencing language classes at a young age, students' language proficiency levels may not have advanced. The spiral teaching system in Türkiye suggests that forgetting can have a negative impact on student's achievement levels in language classes. If there is a relationship between the usage of smartboards and learners' vocabulary achievement and retention, this could affect the teachers' teaching methods and materials. It can be helpful for language teachers to see the importance of using smartboards to retain vocabulary knowledge and make some adjustments in their teaching process. Furthermore, it could benefit language learners because they can extend their vocabulary knowledge. The teaching process can be enriched with visuals, audio, videos, interactive games, and so on with the help of smartboards. Traditional paper, pen, and textbook classes could be insufficient for today's learners. They need a teaching environment in which they can actively participate. By using technology, teachers can achieve this learning environment. Actively participating in the learning process can make their learning process fruitful. Moreover, when students see the visuals or videos during the course or when the topic is supported with interactive games or activities, students could have a higher chance of remembering the things they have learned (Özyaşar, 2020).

Additionally, the language teachers may increase students' motivation level and make the language classes enjoyable by using various activities enhanced with technology. These may affect students' attitudes. When their negative thoughts about language change, their learning level and enthusiasm toward the lesson can increase (Bidin et. al., 2009) Investigating the relationship between the smartboards and learners' attitudes toward language learning can help English language teachers organize an effective teaching-learning environment by using smartboards.

If the usage of smartboards affects the language attitude, vocabulary achievement, and retention level of learners it can affect the perspectives about teaching language. Teachers who use only traditional teaching materials in their

classes can reevaluate their teaching habits and adjust using smartboards. All language teaching books can be designed to be compatible with smartboards. It can affect the education policy and this could encourage to use of technology in classes.

1.4 Assumptions of the Study:

This study was conducted with 41 secondary school students studying English as a Foreign Language in public schools. In this study, a quasi experimental research design was selected to obtain data. It was assumed that all the participants answered the vocabulary achievement test and attitude scale items honestly. It was also assumed that both the achievement test results and attitude scale ensure sufficient data to answer the research questions. Finally, it was assumed that the data collected from this experimental study reflected the actual situation.

1.5 Limitations of the Study:

This study has some limitations. The number of participants was limited because of the school population. Two classes were available in school, and one of these groups was chosen as an experimental and the other one was chosen as control group. Also, an earthquake disaster deeply affected the whole country during treatment. Some students did not attend school because attendance was not compulsory after the earthquake. This situation decreased the number of participants and could be considered a study limitation. Lastly, because of the earthquake disaster, the researcher could not research qualitative data by adding classroom observation forms or student interview questions after the treatment.

1.6 Definitions of terms:

Smartboard: “Smart Boards are a brand of interactive whiteboard (IWB), which displays the image from the computer monitor with the surface operating as a giant touch screen. They vary in size and can be mobile or wall mounted” (SMART Technologies, 2003, as cited in Preston & Mowbray, 2008, p. 50).

Language Attitude:

The attitudes that speakers of different languages or language varieties have towards each other's languages or to their language. Expressions of positive or negative feelings towards a language may reflect impressions of linguistic difficulty or simplicity, ease or difficulty of learning, degree of importance, elegance, social status, etc. Attitudes towards a language may also show what people feel about the speakers of that language. Language attitudes may affect second language or foreign language learning. The measurement of language attitudes provides useful information in language teaching and planning. (Richards & Schmidt, 2013, p.314)

ICT:

ICT stands for computing and communications facilities and features that variously support teaching, learning, and a range of activities in education." It includes hardware such as printers, digital cameras and audio, smartphones, software text editors, databases, e-mails, spreadsheets, internet, browsers, software, and applications of smartphones and tablet computers. (Demirekin, 2014, p.13)

Language retention: "The ability to recall or remember things after an interval of time. In language teaching, retention of what has been taught (e.g. grammar rules, vocabulary) may depend on the quality of teaching, the interest of the learners, or the meaningfulness of the materials." (Richards & Schmidt, 2013, p.498)

CHAPTER II

LITERATURE REVIEW

2.1. Introduction

This chapter presents information about the theoretical background knowledge of the study. The literature review begins with Technology and Language Education. Secondly, the term ICT will be discussed with its definition, integration of ICT into language teaching, some obstacles experienced, and the advantages and effects of ICT are the other headings that will be discussed in detail. Then, some new trends in Teaching will be presented. Following this, the concept of CALL and one of the subfields of CALL, Smartboards, and their effect will be explained in a detailed way. Then, Vocabulary Teaching and Learning, Retention of Vocabulary Knowledge, and Attitudes of Turkish EFL learners toward language will be discussed.

2.2. Technology and Language Education

The 21st century is widely known as the age of technology, with its significant role in shaping our lives. Technology has become a primary factor for economic development. In today's context, in countries that are behind in the technological era, economy is unlikely to thrive. This is because technology makes tasks more accessible, making them more efficient and less time-consuming. The effects of technology are seen in various fields, especially in the field of education. (Raja, Nagasubramani, 2018) Many teachers have to use the advantages of technology in their classes to make their teaching process effective. Raja and Nagasubramani (2018) confirmed that:

With the use of modern equipment, technology, and tools, the learning and interactivity of students increase. They also find it much more interactive and full of exciting areas when aided by technology. The transfer of knowledge becomes very easy and convenient, as well as effective. (p.33)

Today, the internet has become the source of every kind of information. It enables people to access information whenever and wherever they want. Using the Internet in classes offers a variety of resources, such as tutorials and supplementary resources, allowing them to enhance and enrich their academic knowledge. Besides, the usage of visuals, video recordings, presentations, and forums where learners and teachers can receive help for sources of information are some of the technological aids that can be used in education (Raja & Nagasubramani 2018).

Gilbertson (2007) explained technology integration involves incorporating technology resources such as computers, smartphones, tablets, digital cameras, social media platforms, software applications, and the Internet into daily classroom activities and school management. Successful integration is possible when materials are readily available, support curriculum goals, and help students effectively achieve their objectives.

Generally, most of the learners are accustomed to technological devices and using them in their daily lives. Bangert and Alshahri (2018) stated that for effective integration of technology in education, the question of 'how' must be answered successfully. The critical issue is the successful integration of these tools into the learning and teaching process. Bangert and Alshahri (2018) supported that it is necessary to provide readily accessible for students to make technology useful. Schools administrators should not only explain its benefits and usage but also ensure it is easily accessible. Technological tools are not cheap and easily accessible. Only having technological tools could not be enough for its effectiveness. Technological tools need to have the necessary software program for course content, and they need to have internet access. More importantly, educators need to develop and have specific knowledge to use these tools effectively in their classes. Sometimes, teachers could be resistant to change their accustomed teaching methods. According to Gilbertson (2007), teachers must be open and ready to embrace changes. When it is considered the constant and rapid evolution of technology, effective incorporation of technology is an ongoing and dynamic process that entails continuous learning.

The integration of technology in education has necessitated teachers to enhance their proficiency in utilizing technological devices. Consequently, some teachers have developed a negative attitude towards the adoption of technology in the educational domain. This negative attitude is generally because of limited access to tools and the internet, insufficient resources, a lack of expertise, and inadequate support for the teacher's development about using technological materials. (Raja, Nagasubramani, 2018). Young (1991) highlighted that teachers must realize the needs of their learners and teach them to find their answers independently in a changing world. Technology could be considered one of the most essential aids for this issue. Even though the necessities changed, some of the teachers' teaching methods remained the same. Teachers worldwide could come together via technology and create a collaborative teaching environment. It has been argued that while technology has made its way into classrooms, many teachers have not innovated their teaching methods, leading to the underutilization of the potential of technology. To solve these problems, Young (1991) suggested that educators need to start innovation in universities where pre-service teachers develop their teaching skills. University teachers should be role models. When the pre-service teachers learn with technology, it could be part of their teaching method. Teachers need the necessary time and access to technology to develop their teaching skills to explore and use it as a helpful teaching aid. Some teachers sometimes reject technology because of their lack of knowledge, but resisting the change, neglecting the improvements of the technological era, and following traditional class methods can make the teaching process boring and predictable. Conventional methods are also slower and more teacher-centered giving learners less chance to participate in their learning process when compared to modern technological methods. Instead of just relying upon traditional methods, the teachers can enhance the language teaching process with the help of technology by adding original activities. Raja and Nagasubramani (2018) summarized the advantages and disadvantages of technology in the education field and stated that the advantages of technology in education include increased student enthusiasm for learning, flexibility for students with busy schedules to work from home, and the opportunity to develop valuable technological skills for future workplaces. It also reduces paper and photocopying costs, supporting environmental sustainability. However, there are also disadvantages. Experts argue that technology may negatively impact students' imagination and thinking skills. It can be time-consuming for teachers and costly to upload some programs. Excessive usage

of technology can lead to health issues, and some students may not have access to modern computer technologies due to economic constraints. Considering all of these researches, it can be summarized that the integration of technology into the education field has both positive and negative effects on the teaching process. (Raja and Nagasubramani, 2018)

Teachers should try to benefit from the advantages to minimize the disadvantages. As in other classes, in language teaching, using technology as an educational aid can facilitate students' learning and bring diversity in language classes. It is possible to have students with different learning styles in the class. Teaching by adhering to a particular teaching method may cause some subjects not to be learned at the desired level. Diversity in class can make the language learning process meaningful and fruitful for most learners. Also, language learning does not mean knowing the grammar rules of a language. Learners need to develop themselves in language in terms of many skills. Nomass (2013) stated that technology can be used as an aid for developing skills. For example, using computers as a technological device allows learners to improve their listening skills by listening to the conversation with visually supported materials. Listening to TV channels and educational programs is also another valuable source for listening skills. Tap recorders are another technological source that can be used for listening skills. Learners can listen to the material repeatedly, recording their voices and listening to them several times. For reading skills, some software programs provide many sources like text graphics, videos, electronic dictionaries, news journals, encyclopedias, etc. Learners can use these programs to develop their reading and vocabulary skills. Moreover, through technology, learners can easily access any information they want and use web browsers. To develop speaking skills, learners can use Internet voice chatting. Thanks to this kind of application, learners can have conversations with the speakers of the targeted language. Speech Synthesis Programs are valuable tools for the development of speaking skills. Learners can speak with both real people and computer programs. Some programs and applications can act as humans and help learners to use the language. Lastly, for writing skills, learners can write e-mails or use internet chatting programs. One of the most significant advantages of using technology for writing skills is that learners can quickly receive immediate feedback and reach the correct answers or options. (Nomass 2013) Learning language requires focusing on more than one part, such as fostering learners' speaking, reading, writing, and listening skills. Learners can

improve necessary skills for language development in an environment enriched with the aid of technology.

Furthermore, a learning environment enriched with the help of technology may be preferred more by the learners. Nomass (2013) concluded in his research majority of students prefer using technology, particularly computers, to enhance their second language skills.

2.3. Definition of ICT (Information and Communication Technology)

In recent years, communication has been viewed as a key driver of progress for nations, with Information and Communication Technology (ICT) being regarded as crucial for the advancement of developing countries. This is because ICT tools enable individuals to communicate with others, including those from different nations, and swiftly access up-to-date information.. Skyle (2008) highlighted that ICTs, such as the internet, mobile phones, and radio, provide opportunities to connect people and share information quickly and across large distances, overcoming geographical barriers. Ratheeswari (2018) stated that different from Information Technology (IT), ICT primarily focuses on communication technologies. This encompasses the internet, wireless networks, cell phones, and other communication tools.

The impact of ICT tools on strengthening countries' communication globally is undebatable. Thanks to the internet, everyone can be informed and inform people worldwide. Individuals now have the capability to swiftly and effortlessly access information and communicate with one another. The rapid development of ICT tools necessitated making some changes in life. Reaching and sharing the information with other people takes only a few seconds. The demands and expectations of the learners are also affected by this rapid development. Technology usage in education increased the importance of ICT tools because learners expect to access information quickly and easily and want to use them to learn better. ICT includes information, communication, and technology. The learners could easily access the information whenever they want and share it or communicate with others. It is possible to say that one of the most effective methods of helping people acquire these skills is to integrate these skills into education because education can be one of the best ways of presenting and developing innovation. (Toprakçı, 2006)

2.3.1. Integration of ICT in Education and Language Teaching and Learning

With the ongoing development of technology, people's preferences, lifestyles, demands, and habits have changed. Nowadays, even young children can easily access and use technological devices. The widespread use of the internet has made it inevitable for the internet to enter education life. Realizing the impact of ICT on both working areas and daily activities, educational institutions are actively working to adjust their curriculum and classroom conditions in line with technological developments. These efforts aimed to narrow the technological gap in teaching and learning. Hew, Brush (2007) defined integration of technology as the utilization of computing devices such as desktop computers, laptops, handheld computers, software, and the Internet in schools for educational purposes. Children who grow up with technology are in an advantageous position to access, interpret, and share different information and evaluate this information. Growing up in this environment inevitably caused changes in learners' expectations (Andoh & Totimeh, 2012). In 21st century skills like analyzing information, creating and evaluating content, and communicating effectively with other people. One of the main ways to help students gain these skills is by using ICT in education (Toprakçı, 2006) Moreover, using ICT can alter the role of learners and teachers in class. Consequently, there is an increasing global demand for educational institutions to integrate ICT into teaching. They aim to educate their students with the essential skills and knowledge seen as demands of the 21st century (Andoh & Totimeh, 2012).

As mentioned before, with the change caused by ICT in social life, changing expectations have also occurred in education. The skills that students are expected to acquire, the role of students and teachers in the teaching process, and teaching methods and techniques are among those that are expected to change. Hew and Brush (2007) stated that teachers tried to use the benefits of technology to improve students learning. The usage of technology can foster creative thinking and problem-solving skills, and it can increase the motivation level of learners. Furthermore, technology could provide opportunities to solve challenging tasks, such as having a chance to communicate with people's of other contries. Yunus et al. (2009) researched the effect of using ICT, and they stated that the use of ICT changed the students' learning process and that students often learned in a more fun and exciting way. Additionally, the role of students has

changed from passive listeners to active participants. ICT has changed the learner's role and made the learning environment a learner-centered and collaborative learning environment. Learners could develop communication skills by communicating with the native people of other countries, and they can develop their global awareness. Besides, some skills demanded for future careers can be gained in the education process, such as digital-age literacy skills, creative thinking, effective communication, and higher-order skills, thanks to using ICT tools in the teaching process (Tinio, 2003). Grabe & Grabe (2005) highlighted that ICT can provide diverse instructional functions, including creating a relaxed learning environment for learners to engage with various topics and tasks. Moreover, it encourages active participation for learners to acquire knowledge by applying technology to functions rather than receiving direct instructions from the technology itself or the instructor (as cited in Yunus et al. 2009, p.1453).

Technology, which can be effective in almost all fields, can also be very effective in language learning and teaching. Especially in places where a foreign language is learned as a second language, ICT can make students' language learning processes more meaningful and enjoyable with the opportunities it provides. Demirekin (2014) emphasized that ICT tools offer many opportunities for modern technology but are also very effective when used to develop language skills. For example, receptive and productive skills can be produced better when the teacher uses the benefits of ICT in their classrooms. One of the biggest obstacles that learners face while learning the language is a lack of exposure to the language. Learners can listen to the target language several times before or during the class to be ready for the topic. Also, they can do some exercises after listening several times. Having a chance to listen to foreign people's conversations has benefits in terms of pronunciation. Learners have an opportunity to be aware of different pronunciations and expose the natural usage of the language. Furthermore, learners could record themselves, receive feedback from their peers or teachers, and develop their pronunciation. Secondly, e-books, news, and web pages are valuable sources for reading skills. The learners could read various texts and expand their vocabulary knowledge. Without technology and ICT, the accessibleness of the sources for receptive skills was limited. When we looked at the productive skills, the learners could improve their speaking skills at their own pace. They could speak with an artificial speaker and answer the questions that are

asked. Learners could feel more comfortable when learning become individualized. Also, talking about the picture or sharing their ideas about the video they have watched are other activities that could make the speaking activities more enjoyable. Lastly, for writing skills, learners could receive immediate feedback on their writing thanks to ICT tools. Teachers can use the benefits of technology to develop learners' language skills. About the same issue, Demirekin (2014) stated that one of the biggest problems experienced in Turkey is that productive skills (speaking and writing) and receptive skill listening are generally neglected in language classes. This problem may occur because of the curriculum and assessment system in education. Students answer the multiple choice questions to show their language success. Learning the language requires more than that. Students must develop the necessary skills in the language. In addition, integrating ICT tools into education is possible with teachers who graduated with this kind of training. The use of ICT tools should be ensured in universities, and pre-service teachers should be encouraged to use them. Demirekin (2014) suggested that ICT should be introduced to ELT students. In this way, pre-service teachers could raise their awareness about modern tools. They could expand their knowledge about teaching methods with the help of ICT and develop their students' skills in the future in light of this information. Demirekin (2014) summarized that the utilization of ICT provides numerous opportunities for students by providing them engaging and enhancing with interactive tools in their learning process. Teachers also could enrich their professional careers through innovative teaching methods and resources.

2.3.2. Some New Trends in Learning

The development of technology has made changing the role of the teacher inevitable. The teacher's role has quickly shifted from the traditional role of source of information to the role of assistant in accessing information. At the same time, the role of the students in the learning process has changed also thanks to the changing teaching techniques resulting from the integration of technology. Some of the new trends entering education through technology are explained below.

2.3.2.1 E-learning

Tinio (2002) defined e-learning as E-learning, synonymous with online learning, involves educational activities at all levels, including formal and informal settings, leveraging information networks such as the Internet, intranets (LAN), or extranets (WAN) (As cited in Ratheeswari, 2018). E-learning refers to using technology, particularly computers, for educational purposes, either with distance learning or in a traditional classroom setup with computer assistance. It differs from traditional teaching because e-learning provides ICT-based personalized, flexible, individualized, self-organized, and collaborative learning. It includes internet technologies to improve knowledge and acquisition of language. E-learning technologies offer students autonomy, the sequence and the pace of learning, timing, and the chance to choose the media (Vanve, Gaikwad& Shelar, 2016). The advantages of e-learning are its accessibility regardless of time and place, practicality in terms of cost and time, providing different types of activities, improving the ability of the internet and computer skills that are necessary for the digital age, and offering various materials for the learning process. In addition to its advantages, some disadvantages also have emerged. Having insufficient knowledge about the new system, some students' prejudices against innovations, and internet problems can be seen as disadvantages of this new trend, e-learning (Vanve, Gaikwad& Shelar, 2016).

2.3.2.2. Blended Learning

Blended learning is a kind of integration of face-to-face traditional practice and online learning. A teacher guides students to learn in a classroom environment using a method learners could use to learn outside the classroom (Ratheeswari, 2018). With the experiment conducted in higher Education, Banados (2006) defined blended learning as follows, “a combination of technology and classroom instruction in a flexible approach to learning that recognizes the benefits of delivering some training and assessment online but also uses other modes to make up a complete training program which can improve learning outcomes and/or save costs.” (p.534). In Blended learning, students spend a significant portion of their lesson time in computer rooms; they engage with the topic independently, progressing at their own pace through subject material delivered via adaptive learning software. When the students come to

class with specific knowledge, teachers try to discuss the topic and aim to develop higher skills like critical thinking and problem-solving instead of teaching the whole subject (Hockly and Dudeney, 2018).

Banados (2006) suggested that as a rationale for using Blended learning, some expectations of students were taken into account, and he reported that the students preferred face-to-face education rather than fully online education. Learners are expected to discuss the topic with their classmates and teachers in a classroom rather than a virtual environment. Secondly, the aim of language learning cannot be seen as learning grammar points anymore. The ability to communicate in a targeted language has become a necessity in this era. Technology could be seen as the primary source providing opportunities for language exposure. Learners can interact with the people of the targeted language at their own pace. Thirdly, in technology-integrated classrooms, learners can specialize in both learning and the ability to use ICT tools, which is seen as a necessary knowledge in a technology-driven world (Banados, 2006). Besides, thanks to Blended learning, some problems generally experienced in face-to-face education could be reduced, for example, crowded classroom environment, issues with the availability of classes, limited usage and exposure to language in real classrooms, and teachers' discontent about face-to-face teaching (Hockly and Dudeney, 2018). Banados (2006) concluded that the results of learners indicated a significant enhancement in language proficiency, and the satisfaction level of the students about the teaching process was favorable. From the results of this study, it can be concluded that the successful teaching and learning of the English process can be achieved through the effective integration of ICT and new teaching techniques which aroused through ICT, and the government's role should be to assist and encourage the teachers about usage of these teaching trends.

2.3.2.3. Flipped Learning

In a traditional classroom environment, the teacher presents the targeted theme and gives students some activities to complete. The students learn at school and do some activities in school again. The teachers are presenters on the topic. The development of technology also affects this traditional teaching method. In Flipped classes, the presentation of the topic and the role of teachers and the students are

changed. Bakshi (2015) explained that in a flipped classroom model, teachers offer instructional materials, often in the form of online videos and interactive learning platforms, for students to access and engage with outside of class time. During class, the teacher focuses on applying and reinforcing the knowledge and skills that students have learned independently, fostering a more interactive and collaborative learning environment. Hockly and Dudney (2018) supported flipped learning can serve as a valuable intersection where humans and machines collaborate offering students the most effective learning experiences possible.

Presenting the topic in limited lecture time could reduce the time for further practice and comprehension of the topic, so lecture time could leave the lecturer incapable of dealing with possible misunderstandings of the topic. Teachers could be more supported when they enable their students to learn and practice at home. Unlike traditional methods of presenting all details and activities in class, Flipped classes encourage students to work at home. This way, instruction could become self-paced for students because they can control the video lecture by stopping or rewinding. This method can enhance the efficacy of learners because learners could take responsibility for their learning based on their own learning pace and capability. In Flipped Classroom, learners are engaged with the topic by themselves. Taking responsibility for their learning could develop learners in different aspects. Brame (2012) stated the following about the process in Flipped Classes that In order to ensure diverse learning opportunities to their students the instructors implemented an inverted classroom approach. Students were provided with various tools to access course material outside of class, such as textbook readings, lecture videos, and Powerpoint presentations. To ensure student preparation, worksheets were assigned and occasionally collected and graded. Class time was then used for activities that engaged students in processing and applying economic principles, including mini-lectures, economic experiments, and group discussions. Both students and instructors reacted positively to the approach, noting increased student motivation compared to traditional teaching methods.

Students need to have an internet connection at home to use this method. However, the teacher could revise the topic before the lecture activities for students with limited Internet Access. During class time, teachers can provide scenarios to assess learners' comprehension levels and enhance their problem-solving skills. The teacher can also observe the learners while dealing with the assignment, and learners

can receive support immediately from their teacher or peers if they need it (Bakshi, 2015).

2.3.2.4. Massive Open Online Courses (MOOCs)

Massive open online courses are another technological innovation that offers students opportunities to learn outside the classroom and at their own pace. MOOCs give importance to students learning by themselves and create motivation through networks with digital sources. In the MOOCs model learning platform, the content is given to the students before the class via recorded videos, and learners learn the targeted items at their own pace. They also have a chance to assess their learning with regular quizzes. However, some critiques arose about the implementation of this platform. It was criticized that learners are evaluated on their achievement on this platform. This caused the emergence of the evaluation problem (Hockly and Dudeney, 2018). The MOOCs are open to everybody. Anyone who wants to participate is accepted to the program, which allows individuals to negotiate the level and nature of their involvement based on their needs and preferences, whether driven by personal interest or workplace obligations. Unlike traditional teaching, many learners can participate easily because the courses are conducted online rather than in a natural classroom environment (McAuley et al., 2010). In MOOCs, learners need to take responsibility for the learning process due to limited interaction with the teacher. Completing the course successfully requires using digital tools, efficient time management, and sustained self-motivation of the learners (Wulf, et al., 2014).

2.3.2.5. Mobile Learning

Due to advancing technologies and the development of mobile apps, education has evolved to be more authentic and widespread, specifically in a mobile context. This has enabled the development of personalized learning experiences and practical applications, allowing learners to have a learning process with individual abilities, interests, and preferences. Its distinction from CALL lies in its individualized usage and portability, facilitating learning across diverse contexts (Cakmak, 2019). Mobile devices enable users to access technology more quickly and cheaply. These devices are relatively affordable, easy, and cost-effective to recharge rapidly, and the Internet

connection is generally inexpensive. Most people have mobile devices, which can be utilized as educational tools rather than just being seen as entertaining gadgets. Hockly and Dudeney (2018) stated that thanks to the Bring Your Own Devices approach, learners can raise their awareness about these tools because most use them nearly daily. They claimed that it would be unavoidable that the phone, seen as an indispensable part of life, should not be included in the learning environment. When students realize the opportunities supplied by these tools, they could spend more time on these devices to develop their language skills, and there are many mobile applications that learners can utilize (Hockly and Dudeney, 2018).

In comparison, e-learning occurs outside traditional classroom settings, tying learners to static desktop learning. On the other hand, mobile learning occurs at flexible locations and times, emphasizing ubiquity and flexibility in access and scheduling. In e-learning, to attend the course, learners need to have a desktop and be in a location of home, office, and so on. However, m-learning removes this limitation and provides opportunities to learn everywhere, like waiting for the bus, traveling, walking, etc. (Cakmak, 2019).

Korlu and Mede (2018) investigated the effect of the Quizlet application, which is a mobile application, and it was observed that mobile learning enhances students' performance and autonomy in vocabulary learning. This was achieved by offering repetition, increased exposure to target words through diverse functions, and creating a game-like atmosphere for studying and acquiring the intended vocabulary. Importantly, students could engage with the application using their mobile devices inside and outside the classroom.

2.3.2.6. Machine Translation:

Clifford et al. (2013) explained this new trend as “Machine Translation (MT) and specifically free online programs such as Google Translate are transforming the way students engage with a second language.” (p.109). With the help of artificial intelligence, technological machines can understand, translate a language to another language, and comment on the writings. For example, thanks to a Skype translator, a French businesswoman could meet with her Japanese counterpart, where each speaker

communicates in their mother tongue, and the conversation is instantly translated for them to communicate without any problem (Hockey and Dudeney, 2018).

In education, for students, using MT has some benefits for learning vocabulary, and learners find its usage easier than traditional dictionaries. They contended that Machine Translation (MT) is swift and user-friendly and provides an initial draft for their writing (Clifford et al., 2013; Niño, 2009). Similarly, in their research result, Garcia and Pena (2011) concluded that using Machine Translation (MT) tools assists beginner learners in expressing themselves more effectively in the second language, enabling them to produce more relevant words in various situations. Also, it aided learners in developing their writing skills. Providing opportunities for easy accessibility, instant translation to the target language, different language options for translation, and correct translation can be seen as advantages of Machine translation tools. On the other hand, the inability to give the same meaning in the target language, grammar or spelling errors, and errors caused by not considering translating the cultural elements can be seen as weaknesses of these tools (Niño, 2009). Besides, ethical issues need to be considered while using these tools. Sometimes, learners can use these tools to complete their writing assignments, and the output quality may not always be satisfying. So, language usage should be checked, and they should not be used to complete tasks (Clifford et al., 2013)

2.3.3. Benefits of ICT and its Effect on Language Teaching and Learning

Language teachers should consider using a variety of teaching methods in their classes, as students often differ in terms of motivation levels, interests, needs, and other factors. Ahmad et al. (1985) supported that language teaching needs to be eclectic, meaning that a wide variety of paths and educational methods should be used to reach a specific goal. There is a diverse range of educational materials available to achieve diversity in language education.

ICT facilitates keeping up with the latest developments thanks to different technological tools. For example, www (World Wide Web) is one of the significant internet services that ensures quick and easy access to a variety of knowledge. (Ratheeswari, 2018). Moursund (2005) stated that, as a global library, the Internet houses a variety of primary source documents. Consequently, students can access

information directly from primary sources rather than relying on information filtered through the perspectives of textbook authors. People can easily share their information and update it if there are any changes, and students can obtain updated information. Besides, thanks to ICT, students can easily communicate with peers across the country and even international resources.

In language education, one of the problems that students develop in their language level is forgetting the previously learned language because of the lack of usage or exposure to language (Hashemzadeh, 2012). Demirekin (2014) asserted that ICT could provide permanent knowledge for students because when students work with modernized activities and are enriched in the learning environment with the help of ICT tools, When students have fun while learning and when they become active participants in the process, the acquisition of new skills level could be increased. Similarly, Moursund (2005) supported the idea that if learners learn in an environment that is reasonably responsible for their learning and keeping with the necessary equipment types, the learning pace is likely to accelerate. With the help of ICT tools, the learning environment can be enriched with songs, games, and software programs. A suitable environment can help learners be intrinsically motivated, and learners can use ICT for their academic development with fun. Moursund (2005) stated that intrinsic motivation enhances learning, and good teachers are successful at guiding students to uncover and cultivate their own intrinsic drive and enthusiasm. Teachers' creation of a motivation-increasing environment for students may contribute to the development of language learning. The other benefit of ICT in teaching and learning is allowing schools and colleges to address the specific needs of individuals instead of following the average requirements of the class. The usage of ICT tools can save money and time. Also, high-quality teaching materials can increase students' interest and engagement (Murphy, Greenwood, 1998).

2.3.4. Obstacles to Integration of ICT

In a short period, technology has become an essential tool in the education field. On the other hand, teachers and principals have experienced some obstacles to integrating tools into curriculum and classes. One of the main obstacles experienced was accessing the tools because of the economic problems (Hockly & Dudeney, 2018).

This problem leads to inadequate technological devices in schools and technical devices that are not updated and slow. Bringing these tools into the classroom is not enough to integrate them into education. For a practical ICT-supported class, necessary software needs to be installed on the technological devices in school, and they need to be updated every year. The budget of the schools could not afford the charge (Demirekin, 2014). Flanagan and Jacobsen (2003) stated a similar view: schools emphasize acquiring equipment, founding labs, and installing substructures, often neglecting the significant organizational and cultural changes required to use technology to enhance student learning appropriately. They stated that technological tools could be expensive and accessing them could be challenging for students living in poverty and rural areas. It could lead to a widening gap in inequality. It was also always neglected to upload required software and hardware programs. Murphy and Greenwood (1998) concluded in their research that having a sufficient quantity of computers is sometimes insufficient. They should be ready for convenience usage. For example, inappropriate software programs, lack of technical support, problems with printing, and slowness were some problems that can be experienced. As a result, the solution of having tools was not enough. It is necessary to ensure the accessibility of tools and the provision of necessary support.

An insufficient number of ICT tools is one of the challenges teachers have encountered; however, individual perspectives can also impact the integration of technology into learning. Despite the availability of digital technologies in class and infrastructure for educators, some teachers could be reluctant to adopt and utilize these tools to enhance their classes. This opposition contributes to a further divide in technology adoption in education (Hockly and Dudeney, 2008). Ratheeswari (2018) suggested that it is essential for both teachers to have clear access to digital tools and the Internet in their classes, and these tools need to be made ready with highly qualified and meaningful content that is compatible with the curriculum. The teachers also must have essential knowledge and skills to use these tools in their classes. Teachers should be ready with knowledge and motivation to use ICT tools, another obstacle they have experienced.

Another critical issue is the restricted availability of accessing ongoing professional development opportunities. A lack of knowledge could reduce the effectiveness of using ICT tools. Principals need to develop their technological

knowledge to be leaders in their institutions. They should have adequate knowledge to be a guide for both teachers and students. If principals demand integrating technology into the curriculum, they must provide professional development opportunities to help them improve their skills and dispositions (Flanagan, Jacobsen, 2003). Similarly, Toprakçı (2006) highlighted that ICT entered the educational system, and teachers were expected to integrate it into their classes; however, the teachers' teaching behaviors did not show significant change. Failure to achieve desired results is attributed to several factors. For instance, creating personal motivation in school administration is necessary for fostering a favorable ICT environment. The researcher also emphasized that inadequate technological support made the integration of ICT a challenging issue for teachers. Teachers had limited software knowledge they could use in their teaching process, and possible emerging technological matters could make it difficult. Moreover, sometimes the attempts related to ICT by the Ministry of Education could be neglected by school managers, personnel, and particularly by the staff of local education authorities in the city because teachers were dissatisfied with their low salary levels (Toprakçı, 2006).

Pelgrum (2001) conducted a worldwide survey about the obstacles experienced in implementing ICT in classes with the representative sample schools from 24 countries. It was concluded that an inadequate number of computers, teachers' lacking adequate knowledge and skills in ICT, and problems with the integration of ICT in classes are the most common problems that teachers experienced.

ICT introduced many challenges in education, such as issues of digital equity, the requirement for costly integration into the school's infrastructure, and the requirement to supply suitable ICT education for both pre-service and in-service teachers. Usage of ICT in education also required some potential alterations in curriculum content, instructional methods, and assessment to ensure an improved educational experience for students. Additionally, ICT is improving rapidly, which could shorten the duration usability of any software program by a few years. Catching this rapid development is another challenge in the education system. There is some progress in incorporating ICT tools as standard aids for representing and solving problems across different aspects of the curriculum. However, the pace of progress is notably weak compared to the continuous development of new ICT-based tools. Moursund (2005) argued that, unfortunately, the education system was not planned to

keep up with these innovations in curriculum content. As a result, there is an increasing inequality between the potential benefits and the current level of student learning in using ICT tools to address and resolve problems in the curriculum (Moursund, 2005).

To overcome all of these obstacles and effectively integrate ICT in classes, the views of administrators and teachers should be considered. In this way, a more comprehensible understanding can be supplied. To solve the problem of technological devices, an expert can be commissioned for each school. Enhancing the expertise of teachers and principals can be achieved through continuous training sessions, as opposed to a single meeting. Attempts should improve the quality and quantity of software to overcome possible problems. Improving a software program that is special to a particular lesson according to learning outcomes and increasing the number of technological devices in schools can help teachers and students access information quickly (Toprakçı, 2006). In Türkiye, by broadening the ICT tools in education, the Ministry of Education took steps like improving some projects (Catching the Epoch 2000 project) and supplying allowances for necessary tools like printers, computers, software, and hardware programs (Toprakçı, 2006).

Young (1991) stated that teachers must comprehensively understand how, when, and where to integrate technology into their teaching practices. This knowledge can be supplied with the help of education. Attempts should begin within colleges and universities, where educators receive their training. Both pre-service and in-service teachers benefit from observing their instructors employing technology; in this way, instructors could be good role models, and pre-service teachers could take advantage of technology in their learning process. Instead of simply offering standalone courses in educational technology, technology integration should be integrated content courses at both the undergraduate and graduate levels. The separation of content and process could be ineffective; they must be integrated for better results. It is also essential to inform all school staff, teachers, and administrators at the Ministry of Education about the ongoing changes. Furthermore, engaging them in systematic activities increases their interest and motivation (Toprakçı, 2006).

2.4. Computer-Assisted Language Learning (CALL)

To investigate the effects of technology, it must be considered that computers are entering human life and education. Development of the computers and their usage in different areas took some time. Owing to their technological capabilities, computers enable individuals to accomplish various tasks with minimal effort and cost. People can use computers to obtain, analyze, and evaluate information, and contribute to the vast world of information sources.

In general terms, computer-assisted language means using computers as a teaching aid. They have entered education and become widespread with the FATİH Project in Türkiye. With this development, it is an inevitable result that reaching the information and the way of presenting the information to the students has changed. Teachers must keep up with these changes to catch the technological era's developments. Jeong (2006) stated "In promoting learning environments which are meaningful and effectively supportive, the role of the teacher is crucial. Creating low-stress and non-threatening language learning environments should be the most important priority for the teacher." (p.59) Teachers need to create an appropriate environment for learning and use different types of activities because of the individual differences in class. Learners' expectations and learning characteristics could vary in the class. Ahmad et al. (1985) asserted that in language teaching, there is a tendency towards eclecticism. This means that there are numerous paths and educational methods available to achieve a specific learning objective. Additionally, a wide variety of educational materials can be utilized to reach that goal. Chappelle (2010) stated that the term Computer-assisted Language learning means the use of many technological approaches to language learning that include interactive multimedia, many different online activities, electronic dictionaries, and grammar checkers, and a chance to use language in communication via other online web pages like e-mails, blogs wikis. CALL can provide some opportunities for learners to have different paths and materials while learning the language. According to Lee (2000), thanks to the integration of computers, learners could have experiences with language usage, and they allow learners to acquire the language through practical application. They can reach and use the knowledge rather than just receiving it from the teachers. With the help of computers, learners could feel that they are not necessarily dependent on their teacher to learn. Learners can develop their self-learning strategies and gain autonomy.

They can learn at their own pace. They do not need to wait for their peers to progress. Learners utilizing computer-assisted learning tools can receive immediate feedback and correct their mistakes promptly after completing an activity. Besides, instead of just following a course book that can serve limited knowledge, in CALL classes, learners can gain a wide range of expertise and have a chance to practice communication with the native speakers of the target language. So, learners have an advantage in accessing the materials. Lee (2000) also stated that CALL provides a variety of sources for information, such as dictionaries, online activities, chat rooms, online games, quizzes for different language skills, or access to the latest events in the World. Students are actively involved in their learning process with the use of technology because they need to manage their learning process by selecting valuable learning items, so the role of the students has changed. The role of the teacher has also shifted to being a facilitator instead of the only source of information. The changing role of the learners and teachers highlighted by Ozfidan and Burlbaw (2020) as follows:

Learners, by gathering information and negotiating meaning themselves, could manage their own learning process in the technology-enhanced environment. The classroom became more learner-centered, that is, learners were able to make their own decisions and became responsible for their work more independently. On the other hand, the teachers became a facilitator.(p.11)

According to Chun (2011), CALL affects students in class not only their behaviors or roles in class but also it affects students mentally. The learners can hear the words more than once and access the items quickly. Also, it has advantages about the individual differences in class. Some students can learn better when they hear, and others can understand better when they see. As a technological tool, computers offer the opportunity to present input differently. On the other hand, the learners' storage capacity can be different from each other. Using computers can serve as a better option for these differences. Learners could proceed at their own pace and revise the things they have learned several times. Karaca (2007) supported the idea that some students, especially in language classes, prefer to be silent because they usually fear being criticized or mocked by their friends. Thanks to computers, the language learning process can be individualized. Learners can make progress in their self-paced, and they have a chance to have immediate feedback after the activity.

Ahmad and others (1985) also discussed its benefits through students. Similarly, they highlighted that learners can proceed at their own pace in an individualized learning process. Moreover, using computers allows students to learn without being bound by time and place. A student who falls behind due to absenteeism can only catch up with his peers with help from a teacher.

With the changing roles of teachers and students in class, the classroom atmosphere is another factor influenced by the use of CALL. Karaca (2007) stated in his research that computers can also change the class atmosphere. The learning environment can be more enjoyable and exciting because computers can bring authenticity, and learners have a chance to communicate with the people of the target language. Furthermore, computers offer remedial activities. Higgins (1988) stated that the integration of computers in the language classroom transforms the classroom environment into an experimental place. Here, students can explore different methods of communication and grammar points of language. They can observe the outcomes, gather authentic language samples, and derive principles and rules from the data they collect.

The studies showed that using CALL can develop language learners' communication and other skills necessary for language development. Demirekin (2014) concluded that pre-service teachers could perceive the reading text more easily with the role of CALL in their classes. In the same study, learners stated that using CALL supported their oral fluency and accuracy level in speaking. Also, most pre-service teachers expressed that CALL contributed to remembering the vocabulary items and using them in the correct order in sentences. Learners develop their language levels for several reasons, such as having access to knowledge after school, immediate feedback, and learning at their own pace. Furthermore, all participants agreed that using CALL made the learning environment fun, enjoyable, and exciting, facilitating their learning process. Chun (2011) researched the effect of CALL on language skills development and stated that conducted research indicated that computer-based dictionaries and multimedia glosses have a clear, positive influence on the acquisition of second language (L2) vocabulary. However, their impact on reading and listening comprehension is less pronounced and tends to vary. Furthermore, text chatting has been found to be a useful preparatory tool for oral production. About the benefits of vocabulary development, Demirekin (2014) stated that students had favorable views

on CALL because they believed that it enhanced their vocabulary acquisition and sentence construction skills. They also valued CALL for its ability to allow them to repeat classroom activities, learn new vocabulary, and engage in educational games.

Another study by Ozfidan & Burlbaw (2020) also revealed that using computers in class helped learners develop language skills like listening, reading, writing, listening, and vocabulary knowledge. The teaching process became more effective and motivating for learners than the traditional classroom environment because they learned in a stress-free environment with various activities. Studies showed that using CALL positively affected the development of different language skills. Similarly, Karaca (2007) investigated the possible effects of computers on students' language success in the Turkiye context. Hence it could be concluded that the usage of computers in language class positively affected students' success, and the experimental group had higher scores than the control group.

CALL has many positive effects on students as it enriches learning. Students can engage in various activities at their own pace, according to their interests. It benefits the instructional process, increases learners' motivation, and promotes learners' social instruction (Beatty, 2013). Besides its positive effects, Hani (2014) researched both the advantages and disadvantages of CALL and conducted a study with teachers. Hani (2014) concluded that CALL can be a suitable teaching aid to enhance the teaching environment. As an advantage of CALL, it was found that it can bring the outside world into the classroom, which is different from the traditional teaching setting so it could affect learners' motivation. Activities could turn more interesting and enjoyable so learners can easily engage in classroom activities. Computers can offer individualized learning processes and authentic teaching activities and foster active learners' participation in the learning process, following the learner-centered approach in contemporary pedagogical theory. They can be a helpful tool for integrating the four language skills, especially promoting more interaction. Using computers could ensure more participation and provide learners with immediate feedback. As a disadvantage of CALL, the following were listed: insufficient tools and requirements for their renovation make these tools disadvantageous because they require constant updating for practical usage. Lack of support and training for teachers to integrate these tools and teachers' lack of experience and knowledge about the usage of computers can be seen as other problems. When teachers have insufficient

knowledge, incorporating these tools could be challenging. Lastly, the high prices of these tools are seen as another disadvantage (Hani, 2014).

Similarly, Lee (2000) highlighted that devices need software and hardware to be efficient tools in the learning process and must be updated in some time intervals. Technological tools require an educated staff about the maintenance of devices. Teachers must also develop their knowledge about technology to integrate it into their classes. Lack of knowledge could be one of the biggest problems teachers have experienced in CALL classes. One of the main reasons for the deficiency in knowledge is some teachers' tendency to follow traditional methods and resist change. Using technology effectively in classes requires preparation and time. Teachers need to keep up with the time requirements and develop themselves. Teachers must be educated similarly to acquire the necessary skills for integrating CALL tools. In their study, Cesur et al. (2022) concluded that second language teachers can enhance their students' learning experiences by integrating CALL techniques and practices. Therefore, second language teacher education programs need to include CALL courses. These courses could equip future teachers with the necessary skills to effectively use computer technology and the Internet in their teaching practice. So, teacher CALL training should start during the university years of pre-service teachers, and teachers should graduate competently in this issue.

Another problem that Ahmad et al. highlighted was the sufficiency of artificial intelligence. Ahmad et al. (1985) stated that "What the computer is doing is matching, not understanding. A different problem arises with questions that have no specific right or wrong answer" (p.105). Ahmad et al. (1985) concluded that even though students can respond orally, computers currently cannot understand and respond in the same way. Research is ongoing in the field of speech recognition systems, but the complexity lies in the wide variety and richness of human speech. Such systems would need to be trained to 'understand' individual speakers, which would require significant human and computer resources. Additionally, even if the computer successfully recognizes the human utterance, understanding it still presents a major challenge. According to this point of view, it can be concluded that just using these tools is insufficient for learning. Teachers need to conduct the process efficiently.

Despite all the positive effects on the learning process of the use of CALL, it should not be assumed that all learners can use CALL materials effectively all the time.

Spatial students can use multimedia tools like visuals and graphics to boost their vocabulary knowledge. However, using visuals for students with low spatial ability can be useless. The exact process is possible for students who have the low verbal ability (Chun, 2011). While using the computers, students' learning characteristics, needs, and topics covered in class should be considered. The program should serve the expectations of learners and should be well organized. Otherwise, it could become an oversized handle for learning the language instead of a teaching aid and negatively affect the learners' views of the language learning process. Differently, Ozfidan and Burlbaw (2020) investigated CALL from teachers' perspectives. Ozfidan and Burlbaw (2020) stated that teachers, tutors, and learners can access various online resources to utilize in teaching. The results revealed a need for teaching professionals to participate in professional development to gain skills to effectively select, develop, and use these resources with students. A wide range of information resources may also provide inaccurate or inappropriate sources. Teachers must evaluate the source and select the best source for their students.

When integrating CALL into education, it should be considered whether the tool or program used serves the goal of the learning process and whether it is understood by the students clearly or not. Chapelle and Jamieson (1989) stated that when evaluating CALL, it is important to consider both general, observable features and how well the program aligns with the curriculum of a specific language program and the needs of its learners. Initially, teachers are advised to assess whether the programs are functional, have visually appealing interfaces, provide clear instructions, and assess answers correctly. However, as teachers become more familiar with CALL, they should also evaluate its suitability for their curriculum and learners. Choosing appropriate material for the teaching process is a critical issue. Materials should be reasonable in terms of both the type of subject that is aimed to be taught and the student's interests and levels. With properly chosen CALL tools, the teaching process could be more straightforward. Merrill and others (1986) supported that the design of a computer application can affect student attitudes toward the course. When a program is prepared to adapt to individual needs, students are more likely to experience success and have positive feelings about the course. However, if a program is either too easy or too difficult, students may become bored or frustrated, leading to negative attitudes. Integrating gaming elements into the course can motivate students to continue.

Additionally, when students have a choice, they tend to engage more with learning activities that are enjoyable and relevant to their interests (as cited in Karaca, 2007, p.28).

2.5. The Usage of Smartboards in Class

One of the primary aims of contemporary education systems is to develop individuals equipped with proficient problem-solving abilities, critical and creative thinking skills, and competencies in computer literacy. Learners must be progressive and have effective communication and collaboration skills within digital media and environments. They should support individual and cooperative learning, follow the latest developments in information, and engage in critical thinking, problem-solving, and decision-making through suitable digital resources. Typically, course books or blackboards in education have been seen as the primary tools for traditional teaching environments. In today's world, with the development of technology some changes should be done in the education field. Many countries have reviewed their education programs to educate students in the desired way (Kırbaş, 2018). Using relevant tools and equipment aligned with current educational advancements gained importance. This is crucial for assisting educators and fostering a more effective and enduring learning experience (Kırbaş, 2018). Jelyani et al. (2014) stated that the swift advancements in technology have opened up opportunities to transform the traditional nature of language classrooms by incorporating various innovative approaches. Kırbaş (2019) supported that the changes and advancements in technology have had a significant impact on the education process. Traditional tools like blackboards, overhead projectors, and tape recorders have been largely replaced by smart boards, which provide more advanced digital technologies. Smartboards offer interactive features that enhance classroom engagement and provide for more dynamic and multimedia-rich presentations.

Integration of technology into the teaching process Smartboards are one of the widespread ICT tools used in classes. It is a computer, but it has a giant screen and a touch-sensitive screen. The FATİH Project was introduced as an educational initiative to incorporate technology into schools in Turkey. Many classrooms nationwide were equipped with smartboards as part of this project. The aim was to modernize the

learning environment by facilitating interactive teaching methods. (Günaydın & Karamete, 2016).

According to Türel (2012):

One of the most important developments for utilizing technology is *smart boards*. Many schools have internet connected smart boards nearly in every class. With the smart boards, there has been a huge development in classroom setting which is designed with technological device. To keep pace with this development, Turkey aimed to develop teachers' knowledge and skills in order to get the most from this technology at the end of 2010 within the scope of application called FATİH project "Movement of Enhancing Opportunities and Improving Technology " hoping to improve the use of information technology in the classrooms. With this project, it has been planned to equip the classes with smart board in primary and secondary schools, administered by the Directorate of National Education within three years (MEB) (as cited in Kırbaş, 2019, p.157)

Widener et al. (1999) highlighted that the Smart Board enhances the teaching process of foreign languages through three primary means: 1) facilitating the presentation of new linguistic and cultural elements, 2) fostering interaction with the class, and 3) developing the teacher's organizational skills. This research has revealed that using smart boards can benefit the teaching process in the classroom from different perspectives. Similar studies conducted by Saraç (2020), Demir (2019), and Aktaş (2015) concluded that in science education, the experimental group that used smartboards in their learning process had higher scores in post-test results than the control group that used traditional methods in their science class. Furthermore, Saraç (2020), Demir (2019), and Akbaş (2015) concluded that the test results that were applied to assess the students' retention of knowledge they learned in science class showed that students who learned the topic with smartboards had better results in retaining information. So, using smartboards positively affected the students' achievements and retention of knowledge level in science class.

These results are consistent with the other results in the literature about the effect of smartboards on achievement. For example, Tunaboğlu and Demir (2017) examined the impact of using interactive whiteboards in the mathematics teaching process. According to research results, the experimental group's post-test scores surpassed those of the control group, and the results suggested that incorporating interactive whiteboards into the mathematics teaching process positively influenced

students' achievement. Likewise, Yorgancı and Terzioğlu (2016) investigated the effect of smartboards on mathematics achievement. When the experimental and control groups, which were at similar levels before the treatment, were compared, it was found that the mathematics achievement of the experimental group using smart boards increased more than that of the control group after the treatment. Similarly, Akgül (2013) investigated the effects of smartboards on art lesson success, and the results revealed that the success level of learners increased with the help of smartboards. Önder (2015) investigated the effect of smartboards on a biology class in Türkiye, and a significant difference in students' achievement was observed. The experimental group had higher grades than the control group. Then, Tayfa (2018) researched the effects of smartboards on students' Turkish class achievement levels. It was observed that the academic achievements of the experimental group students, who received lessons with the interactive whiteboard, showed a statistically significant increase compared to the academic achievements of the control group students, who were taught with the traditional whiteboard. Similarly, Akdemir (2009) investigated the effects of smartboards on geography class achievement. The study results indicated that delivering the Physical Geography course supported by smartboards led to higher student achievement than that taught with a blackboard-supported lecture method. Lastly, Aktas and Aydin (2016) investigated the effects of smartboards on students' science and technology class achievement, and it was observed that the experimental group, in which the lessons were taught using smartboards, had a significant advantage over the control group in terms of success. As a result, many research conducted about the effect of interactive white boards on achievement and it was concluded that smartboards and IWB increased learners' course achievement.

In another study Özyaşar (2020) investigated the effect of technology on the retention of knowledge and it was found that the teaching program enhanced with gamified applications caused some differences between the experimental and control groups' test results. It was seen that the post-test results of the experimental group increased their scores with the help of gamified applications. So, it affects students' vocabulary retention positively (Özyaşar, 2020). Such a link between the usage of smartboards and the retention level of learners was confirmed in other studies. Dikmen (2015) researched the effect of interactive whiteboards on academic achievement and its permanence. He concluded that the group exposed to lessons conducted with an

Interactive Board demonstrated greater academic achievement in post-test and retention tests compared to other groups. Similarly, Aktas and Aydin (2016) investigated the effects of smartboards on students' science and technology class retention levels, and the permanence test results showed that the experimental group had higher grades. Hence, the usage of smartboards increased the recall level of learners.

Research has indicated that using smart boards is an effective teaching tool in the instructional process. This impact can come out in various ways, positive or negative, and several studies with positive outcomes are presented below.

2.5.1. Advantages of Smartboards in Language Teaching

Before smartboards, the computer screen projected onto the whiteboard was among the technology-based materials used in teaching. However, Gérard and Widener (1999) supported the idea that the project from the whiteboard to the screen differs significantly from using interactive smart boards in class. In the first option, the teacher needs to control the screen from the computer, but smartboards are interactive. So, the teacher can quickly pay attention to the teaching process rather than trying to control the screen from the computer. This is an essential aspect of smartboards. Research about smartboards confirmed that interactivity and other improvements have entered the teaching and learning process using smartboards. Jelani et al. (2014) suggested that using smartboards in language teaching led teachers to have innovative ways to acquire the acquisition of language process for students. The students may have a more creative learning environment. It also helps students to improve their learning capacity, engagement level in class, and willingness to learn the language. Widener et al. (1999) explained that:

On the practical side, Smart Board offers a very interesting option for bringing the Internet into every FL class. The Internet, and the access it provides to authentic documents, is the biggest revolution in foreign language teaching/learning in the last few years. Smart Board brings this interactive feature into the classroom without involving the cost of having one online computer for every student in the classroom. (p.6)

Research by Mun and Abdullah (2016) supported that if students have a rich learning environment supported with visuals and videos, they can be more active in

the classroom, and they can learn and retain better what they have learned from the lecture. Furthermore, M. Hassankiadeh and S. Hassankiadeh (2013) stated that with smartboards, printed books can also be used more efficiently in the classroom because interactive things and electronic books catch the students' attention and stimulate their motivation. M. Hassankiadeh and S. Hassankiadeh (2013) supported that using engaging materials like films, games, music, and other media can enhance the classroom experience. These resources help catch students' interest and allow teachers to maintain control over the lesson, highlighting key points and monitoring student progress. Smart Boards facilitate this by enabling teachers to quickly display images and text with a simple touch, saving time compared to traditional methods. This immediate access to multimedia resources makes lessons more interactive and dynamic, enriching the learning process. As well as providing an interactive and rich learning environment, they can also offer a variety of sources of information thanks to the internet connection. Similarly, Mustafa (2018) stated that Smart Boards offer users a range of options by providing access to all computer applications and the World Wide Web. Users can interact with these applications by touching and clicking their fingers. In addition, they can use various writing and drawing tools. This versatility allows for dynamic and engaging presentations, as well as interactive activities that enhance the learning experience. Teachers and students are just a click away from countless educational materials and information resources they can access during the teaching process. As well as being a source of information, teachers can use these teaching aids as teaching material that helps them to make clear. Gérard and Widener (1999) stated that smart boards can also be used for overwriting, underlining, or highlighting during the lesson to make the points more visible to the students. Moreover, materials can be saved and used repeatedly whenever the teacher needs them. The same research results revealed that having a relaxed speaking environment in the target language is a tough topic for language teachers. Smartboards help to start a conversation because the students can see the documents they will discuss. They can focus them more so smart boards can stimulate students' speaking and create a stress-free environment for learners (Gérard and Widener, 1999) Widener et al. (1999) observed that the atmosphere created by smartboards and stated that students are enthusiastic about working on the Smart Board. They are excited about the interactive features that allow them to simply touch the board to use it. They particularly enjoy writing with their fingers, finding activities like quizzes to be fun on the electronic

board. Some students even request quizzes just for the enjoyment of writing on the board. They bring genuine excitement to the classroom. Similarly, According to Karadağ et al. (2017), using smart boards in the classroom made the lessons funnier and affected students' learning process and interest in the school. When students' interest increases, unwanted student behaviors are reduced, and classroom management could be easier for the teachers. In the same line, Tsayang et al. (2020) revealed that a student participant expressed, "The SMART boards make me easily see and understand the points that I read about. This is because they are shown in actual pictures" (p. 29). Analyzing this study's outcomes suggested that using smartboards influenced students' comprehension levels in the classroom. This impact stems from presenting learning content in various formats, enabling students to learn through visual and auditory means. Moreover, the interactive nature of smart boards engaged students actively in the learning process. Tsayang et al. (2020) supported their view following anecdote:

During class observations, in three of the classes that were effectively using SMART boards, there were power cuts during the lessons. Although unplanned, this was a welcome development in the study as it enabled the researchers to find out if the students would continue to be as actively engaged in the lessons as they were when using the Smart boards. Interestingly, the study found that as soon as the electricity went off, the dynamics of the classes changed. Students' participation was significantly reduced and the classes became more teacher-oriented. This made it clear that students' active participation could be attributed to the use of the Smart boards. (p.30)

Bıçak (2019) stated that most teachers expressed the necessity of having a smartboard to stay current with technology. Nearly all teachers highlighted that smartboards enhanced visualization, making the smartboards a valuable instructional tool that brings variety to the classroom in the teaching process. Istifçi et al. (2018) highlighted that the initial and most enthusiastic feedback highlighted the fun and diversity that Smart Boards bring to lessons. Students were satisfied with the enjoyable aspect of using interactive boards and the range of instructional approaches they facilitated. They emphasized not only the learning materials provided but also having a great time during lessons. The interactive nature of these tools, which encourages high levels of student engagement, boosts motivation and created a stimulating learning atmosphere. Furthermore, students found the audio and visual features of interactive boards interesting.

The advantages of smartboards were highlighted in different research and Mustafa (2018) summarized the benefits of using smartboards. Interactive whiteboards offer numerous advantages over traditional boards. Firstly, teachers no longer need to erase notes to make room for new information, which can be challenging for English language learners who struggle with copying and understanding simultaneously. Notes and visuals can be saved for later review. Secondly, teachers can save note files and share them on a website or print them out. Thirdly, they can easily navigate between different pages of notes to help students connect with previous lessons. Fourthly, teachers can easily use pictures, videos, and organizers, which can greatly assist English language learners in understanding concepts and learning new vocabulary. Lastly, interactive whiteboards can help improve learners' speaking skills by providing opportunities to watch and listen to video conversations. Similarly, Usher (2009) looked at the advantages of using smartboards in a different context and stated that using technology and smart boards has positive effects on disabled students. For example, if audio materials are used appropriately, they can enhance the learning of blind students, and also, when visuals are used appropriately, they can be beneficial for deaf learners. (as cited in Tsayang, Batane, & Majuta, 2020). Singh and Ramachandran (2014) found that, thanks to Smartboards teachers can enhance their verbal instructions by incorporating colorful text, video clips, animations, and images, which can facilitate understanding for students with learning disabilities. Interactive phonics activities on Smart Board can help students build awareness of letter sounds in words. Smartboards can allow teachers to administer tests and quizzes, as well as track student learning progress, identifying and revisiting areas that require further attention. Additionally, using classroom audio systems like the Smart Audio system via smartboards can improve students' ability to hear the teacher's voice clearly. Teachers can also record processes on the Smart Board and replay them ensuring that students can review the material as many times as necessary. Singh & Ramachandran (2014) concluded in their research the following: "Using Smart Board technology and combining the auditory, visual, and tactile/ kinesthetic senses, we can modify the learning environment and help learning disability students improve their psychological processes."

2.5.2. Smartboards and Effecton Language Skills

The primary goal of language teaching is now teaching for communication purposes. Developing countries' main goal is teaching language for communication because they aim for students to use it in their careers. Still, in reality, it is seen that most learners cannot use language communicatively, this could be seen as one of the problems in language teaching (Mustafa, 2018). One of the reasons behind the lack of improvement in communicative skills is that the internet and smartboard are not used efficiently in the classroom. Effectively utilizing a smartboard within the school offers substantial benefits, whether in enhancing students' speaking and listening skills through real-world context (Mustafa, 2018). Similarly, Istifci et al. (2018) stated that using smart boards efficiently in the classroom makes language classes enjoyable, and of course, this affects the students' perception of the class. Learning vocabulary in this environment could be more effective, and listening, grammar learning, and speaking skills are other skills that are affected positively; however, reading and writing skills are the least affected skills by using smart boards in the classroom. So, enjoyable classes with smart boards will help students develop their language skills. Mustafa (2018) highlighted that effectively utilizing the Smart Board in the classroom can greatly benefit teachers by enhancing students' speaking and listening skills through real-life contexts, as well as motivating and engaging them in a relaxed atmosphere. The Smart Board can increase the quality of education by breaking down barriers of time and place, enabling students to learn in new and profound ways. It is essential for improving students' achievement, preparing them for success in the global economy, and developing their oral communication skills.

Gérard and Widener (1999) stated that it is a difficult issue for language teachers to have a relaxed speaking environment in language classes. Using smartboards can help teachers with this issue. When students concentrate on the same item from the board it can be easier to create a speaking environment and this can stimulate the conversation. And lastly, Jelyani et al. (2014) emphasized that smart boards facilitate interaction in the classroom. When smartboards are used with software that helps students engage in the activity, they can increase the participation and interaction of the students.

2.5.3. Smartboards and the Effect on Motivation

Motivation is a desire for students to do or learn something. Dörnyei (1998) highlighted that achieving long-term goals is challenging without adequate motivation, as even individuals with exceptional abilities may struggle. Learners need to be motivated for a successful learning process. So, motivation can be seen as one of the requirements in the teaching process. Sarkmaz (2011) stated that some learners may exhibit a lack of willingness to actively engage in learning English, because their motivation levels are lower-than-expected. To address this, teachers can use a variety of teaching materials, incorporate interesting classroom activities, and create a positive learning atmosphere. These strategies can help increase students' motivation levels in a desired direction. Much research conducted about the effect of technology and smartboards revealed that smartboards can be a motivating teaching material for students in different aspects. Shyamlee (2012) stated that “With the advent of technology, the tradition of English teaching has been changed. It makes teaching interesting and more productive” (as cited in Jelyani et al., 2014, p.20). Inevitably, learning in an exciting environment can increase the motivation and willingness of the students. Kirbaş (2018) confirmed that traditional classroom lessons conducted in front of a blackboard can diminish student motivation. To hinder this, the integration of smart boards in classrooms is essential. Smart boards facilitate active student participation in the learning process, leading to the creation of an enjoyable learning environment. They also promote the practical application of learned information in both daily and academic life, as well as the achievement of effective learning outcomes. Additionally, the effective utilization of educational technologies in the classroom is closely linked with the implementation of smart boards. Similarly, Mathew and Alidmat (2013) supported that using visuals and videos in the teaching process facilitates the learning environment and prevents monotonous activities in the classroom. Students can have a more enjoyable learning process, and in this process, students can be more motivated. Mun and Abdullah (2016) summarized the effects of smartboards on motivation and different aspects. They stated that the versatility of the smart board can extend across all age groups and subjects in the curriculum. It facilitates enjoyment by catering to diverse learning styles, allowing teachers to tap into resources tailored to specific needs. This increases students' motivation to learn

and provides opportunities for active participation and collaboration, fostering the development of personal and social skills.

2.5.4. Smartboards and Effect on Language Attitude

The learners' attitude toward the language was discussed, and results showed that Turkish learners generally have a positive attitude toward the English language. Additionally, it was found that attitude is not a stable variable; the teaching method and learning environment affect and influence the attitude of learners. It can be deduced that when students learn with teaching material that can make the learning environment enjoyable, their attitude toward the language is positively affected. Alkaff (2013) confirmed in their research that some students attributed the positive attitude toward language learning to the atmosphere created with teaching methods and the entertaining learning environment created by the teacher. Educational materials and teachers' teaching methods are essential factors that attract students' attention and make learning more fun, and these are among the factors that affect learners' attitudes. The material used in class should arouse learners' attention, and smartboards can be seen as one of these teaching materials. Gurbuzturk (2018) researched elementary education students' attitudes toward using smartboards in classrooms in Malatya province. The sample included 4th to 8th-grade students from three schools. The results indicated that students in the elementary stages generally exhibited positive attitudes toward using smartboards. Similarly, in their research, Istifçi et al. (2018) stated that learners showed satisfaction with using interactive boards in their classes, demonstrating a positive attitude towards this technology, and they preferred adopting this technology in the classes.

Some studies in other fields investigated how the usage of smartboards affected the attitude of learners, and the results varied. For example, first, Tayfa (2018) researched the effects of smartboards on students' Turkish class attitude level, and the results showed that using an interactive board enhanced student attitudes toward Turkish lessons. However, this increase was not statistically significant. Secondly, in their research, Yorgancı and Terzioğlu (2016) investigated the effect of smartboards on the mathematical attitude of learners. Though they had similar attitudes before the

treatment, a significant difference was reached between the two groups in favor of the experimental group after the treatment.

Similarly, Önder (2015) investigated the effect of smartboards on a biology class student's attitude, and the results showed that the usage of smartboards did not cause a significant difference between the control and experimental group learners' attitudes. However, it was seen that interactive whiteboards increased the attitudes of experimental group learners when compared to the pre-treatment application.

When the effect of smartboards on language attitude was reviewed, it was seen that only a few studies were conducted on this issue. Dahlan (2014) studied the impact of smartboards on 7th grade students, categorized the students into two groups, namely the experimental and control groups, and administered an attitude scale. It was found that there were significant differences between the groups, with the outcome favoring the experimental group. So, the usage of these tools affected the attitudes of learners positively. (as cited in Hendawi & Nosair, 2020). Secondly, Adel and Abdelrahman (2019) researched the impact of using an interactive whiteboard on students' attitudes, and the results showed that the experimental group had a significantly more positive attitude than the control group. Similarly, Katwibun (2014) investigated the effect of interactive smartboards on the language attitude of 11th-grade learners, and the results revealed that IWB increased their attitude toward language. In his research, Al Farra (2014) researched the effect of Smartboards on the language attitude of language learners in Gaza. It was concluded that using smartboards positively affected learners' language attitudes. Another study supported the idea that using smartboards generated enthusiasm within the learning environment, fostering a favorable attitude among students. (Gerard, Green & Widener, 1999). Studies conducted on smartboards and language attitude have shown that using smartboards in teaching positively affects language attitude.

2.5.5. Disadvantages of Smart Boards in Language Teaching

There are also some opposing views besides these positive sides of smartboards. Kirbas (2018) highlighted some problems and stated that improvements in the physical classroom environment are essential to enhance the effective utilization of smartboards. Classroom organization should align with the integration of

smartboards. Moreover, assessing the challenges students face when using smartboards is crucial. Providing students with fundamental information and skills in computer literacy can address potential barriers to their successful engagement with the technology. İstifçi et al. (2018) categorized negative feedback from student participants into two primary categories: technical issues and time-related concerns. In the research, some participants expressed concerns about the possible disadvantages of using this technology, such as potential technical problems during the teaching process. Additionally, some participants believed that lessons conducted with interactive boards were time-consuming, particularly during electrical problems. They argued that such issues resulted in time wastage and boredom, expressing a preference for conventional lessons rather than involving the teaching process interactive boards. The teachers can experience similar problems. Mun and Abdullah (2016) supported the idea that teachers play a vital role in integrating smart boards into the classroom, using them either to enhance the dynamic nature of instruction or potentially worsen it. M. Hassankiadeh & S. Hassankiadeh (2013) concluded in their research that teachers had many problems using interactive smartboards in their classes because they did not have enough knowledge about how to use them effectively. Lack of knowledge forced some teachers to return to using traditional whiteboards in their classrooms. Similarly, Korkmaz and Çakıl (2013) supported that for educators, the primary obstacle hindering the effective utilization of smartboards is their lack of proficiency in operating these devices. Furthermore, challenges include the absence of appropriate presentations and instructional materials, teachers' incapacity to address technical issues independently, and inadequate preparation before classes.

In another study, Akar (2020) found three factors that emerged when exploring the disadvantages of utilizing smartboards. Firstly, the views of teachers' insufficient proficiency with smartboards, lead to time loss and lesson disruptions. Secondly, the potential overshadowing of the teacher by the smart board, and thirdly, the tendency for teachers and students to become lazy and accustomed to pre-prepared content. Here are direct comments conveying participants' perspectives on these identified themes and codes:

There are teachers who do not know how to use smart boards, so they lose time. When the teacher asks for help from the students for using the smart board, the teacher's image in the eyes of the students is damaged... (PT18), the smart board can overshadow the teacher because it is an attractive element in the classroom... (PT1), I

think that it limits the imagination of children. I think it reduces children's writing and drawing skills. It stops children from researching things in the library and from books and gets children used to ready content... (p.267)

Pourciau (2014) searched the barriers teachers experienced in integrating smartboards. The interview results showed three prominent themes: technical problems, insufficient professional development, and challenges in finding appropriate content for the effective usage of the smartboard. It can be concluded that for effective usage, both teachers and students need to be informed about the usage of these tools, and necessary support should be provided because İstifçi et al. (2018) stated despite taking into consideration technical problems and time constraints for lesson preparation, this study suggests that both teachers and students believe that using smart boards can enhance language learning. This is particularly true during vocabulary and grammar teaching, as well as in the instruction of listening and speaking skills. Smart boards are seen as a tool that can make language learning more enjoyable and effective by engaging students in interactive and dynamic activities. So, both positive and negative effects of smartboard use in the teaching process have been revealed as a result of research. These educational materials, which have become widespread within the scope of the projects implemented by the Ministry of Education and are ready for use in the classroom, should be used to make the educational process effective, and necessary steps should be taken to minimize possible disadvantages. Kırbaş (2019) argued that the FATİH Project in Turkey has allocated significant budgets to equip each classroom with smart boards and related tools, aiming to revolutionize the education system. To ensure the success of this large-scale project, careful planning, evaluation, and analysis of the process are essential. It is crucial to assess the impact of new technological tools and equipment on the learning environment, as well as to address any challenges encountered during implementation. This approach will enable the more effective use of technology and help achieve the desired educational outcomes.

2.6. Language Attitude of Turkish EFL Learners

English has become a global language widely used in diplomacy, international trade, tourism, international media, technology, and other domains. It is seen as one of the most commonly used languages, and this status did not come from only wide

language usage. It stems from its distinctive status in nearly every country across the globe. This status could be possible by countries giving the language a special place in their country. Countries could realize this attempt by making the language the official language in a particular field, such as education or law, or by integrating it into the school education system. (Crystal, 1997) Türkiye could be seen as one of these countries. Çetinkaya (2009) mentioned the role of English in Türkiye as follows:

English language has an undeniable role in Turkey. It is considered the most significant and functional language for the technological and scientific development of the country. It is a compulsory school subject that students start learning from the 4th grade and continue to study even after they graduate from the university. (p.111)

Although it is not assigned as a national or official language in Turkey, it is the most extensively taught foreign language throughout all levels of the education system. The students are exposed to this language throughout the years until they have graduated. Still, the learners' language level cannot reach the desired levels in terms of comprehension and productive skills, even though it has a crucial role in the competitive business world. Many researchers investigated the teaching methodologies that caused insufficient progress; however, apart from the teaching methodologies, there could be some contextual factors that could prevent progress in the language, like the language's familiarity with the mother language, the views of learners toward language, the learners' needs, goals and their role in the learning process (Karahana, 2007). The learners' opinions, in other words, their attitude toward the language, can be seen as the main factors that affect the learning process. Baker (1988) defined the attitude as “something an individual has, which defines or promotes certain behaviors. A person who has a positive attitude to Welsh may wish to learn the language fluently or engage in indigenous Welsh cultural forms. In this sense, attitude causes certain behaviors.” (p.112) Learners must have positive attitudes toward the language and other aspects to achieve the language. If students come to class with positive thoughts, the learning process can become more efficient. Chambers (1999) defined attitude as “attitude is taken to mean the set of values which a pupil brings to a foreign language learning experience” (p.27).

Attitude can be measured with attitude scales. Richards and Schmidt (2013) defined the ‘attitude scale’ in the Longman Dictionary of Applied Linguistics as follows:

a technique for measuring a person's reaction to something. A common scale is the Likertscale. With this a statement of belief or attitude is shown to someone, and he or she is asked to show how strongly he or she agrees or disagrees with the statement by marking a scale. (p.38)

Students are not born with an attitude towards language, or this attitude may not be a view that students develop during teaching sessions. Chambers (1999) argued that when students enter a foreign language classroom, they do not come as *tabulae rasae*. They bring with them attitudes shaped by conversations with family, and friends, exposure to the media, and personal experiences with the target language community. Language attitude may be developed due to many reasons. Brown (1994) explained that similar to the overall development of cognition in humans, attitudes emerge in early childhood and are shaped by the perspectives of parents and their peers, exposure to individuals with differences, and the interplay of emotional elements in human interactions. These attitudes contribute significantly to one's self-perception, views of others, and understanding of the prevailing culture. Several factors can shape attitude, such as the functionality provided by learning the language, the advantages it offers, experiences in the target language, the native people of that language, the views of family and community, and travel experiences (Chambers, 1999). Inal et al. (2005) stated that learners with university-graduated parents had higher attitudes than learners whose parents were illiterate or primary school graduates. It could be said that the environment in which a child grows and family attitude could affect the learners' view toward language. Also, it was seen that there were no differences in terms of language attitudes of learners who had experience abroad and learners who had not traveled abroad before. Brown (1994) highlighted that learners have either positive or negative attitudes toward language from an early age, and teachers need to be aware of the negative attitudes and try to change them for a better learning atmosphere in the classroom. The negative attitudes could be aroused from prior exposure to language via television, books, or media. Teachers must change these negative stereotypes and replace them with the fact that the culture of language could be different from their own but valuable and respected. The attitudes of learners, teachers, and parents play a vital role in specifying the overall success of the learning process. Notably, the attitude of learners towards the target language and its speakers is an essential factor. Having negative attitudes toward the language could demotivate the learners and cause learners to renounce learning the language. Conversely,

cultivating positive attitudes towards the target language can instill high motivation and facilitate learning. Therefore, examining learners' attitudes toward a foreign language is crucial, substantially impacting language learning and teaching processes (Genç & Aydın, 2017). Attitude is also related to motivation to learn in some contexts. Gardner (1895) associated the motivation and attitude as:

Motivation in the present context refers to the combination of effort plus desire to achieve the goal of learning in the language plus favorable attitudes towards learning to language. That is, motivation to learn a second language is seen as referring to the extent To which the individual works or strives To learn the language because of the desire to do so and the satisfaction experienced in this activity. (...) When the desire to achieve the goal and favorable attitudes toward the goal are linked with the effort or the drive then we have a motivated organism. (p. 10-11)

Gardner (1985) stated that while learning a language, the effects of parents' and learners' attitudes toward language have a crucial role, and he emphasized that positive attitudes are critical for any meaningful progress in language learning; without them, the effort becomes futile. Gardner and Lambert (1972) emphasized similar opinions on the same topic. They emphasized the crucial role of learners' attitudes toward the target language as the most influential factor in language acquisition. They stated that attitude could be a key determinant of learners' achievement levels. (as cited in Genç & Aydın, 2017, p.37)

In their research, Bidin et al. (2009) found a correlation between the language achievement of the learners and their views about the language. Bidin et al. (2009) concluded that a learner with higher marks has a better attitude than a learner who was unsuccessful in language. Also, it was seen that female learners had slightly better views of the language. Similarly, Inal et al. (2005) expressed that positive and negative thoughts play a significant role in the language learning process an individual's attitude can be influenced by different stimuli. They confirmed this statement in their research. It was concluded that female learners had a higher attitude toward the language, and there was a tight relationship between the achievement of learners and their attitudes toward language. They stated that learners who have opposing views about the language cannot be successful in that language. , (Inal et al., 2005)

It is an inevitable fact that attitude affects the learning process. In addition to research results supporting a significant connection between attitude and vocabulary achievement, research results oppose this view. Gardner (1985) stated in his research

“Attitude variable are important in that they serve to maintain the level of motivation and that are not implicated directly in achievement.” (p.158). Similarly, Genç and Aydın (2017) researched whether there is a relationship between attitudes and achievement and other variables such as motivation type, gender, parental involvement, learners’ fields of study, and academic achievement. The findings indicated no noteworthy correlation was observed between students' attitudes and the variables of "achievement." Similar results were addressed in other research. Görgün (2013) researched Turkish EFL learners' attitudes at Uludağ University and concluded that students showed a positive attitude toward the language. The results found no significant correlation between the achievement level and attitude and intrinsic motivation and attitude. Participants stated that English is substantial for them, and the underlying reasons for this include finding a good job and graduating. So, the reason for a positive attitude generally aroused external factors.

When the research results are examined, it has been revealed that attitude affects learning. Nevertheless, it can be concluded that attitude can be seen as an influential factor affecting the learning process. Some research has researched the attitudes of Turkish EFL learners. For example, Kızıltan and Atlı (2013) examined the attitudes of young language learners in primary school. It was concluded that young English learners had positive attitudes toward the language and its materials, activities, and books they worked on. On the other hand, it was seen that the language attitude did not show the difference according to gender. Genç and Aydın (2017) concluded that learners showed an overall positive attitude toward learning the English language among participants; female learners exhibited significantly more positive attitudes. Similarly, Görgün (2013) concluded in his research and concluded that students showed a positive attitude toward the language. Likewise, Sarıçoban and Üstündağ (2022) researched the attitudes of 8th-grade Turkish EFL learners toward the English language, and the attitude scale results showed that 8th-grade learners have positive thoughts toward the English language considering the English language both valuable and essential. They expressed that they eagerly attend the school on English course days, finding the language useful and enjoyable. When the course content was regarded, students conveyed a sense of ease in comprehending subjects, expressing that they found the material simple and easily understandable. In another study, Karahan (2007) researched the attitudes of Turkish EFL learners toward language in

primary school and concluded that Turkish students generally showed a mildly positive attitude toward English. They had positive perceptions about language and positive beliefs about language's importance. The students who started learning the language earlier had more positive views about language. They believed that English could help them have a better status and offer good options for occupation. However, these students do not exhibit highly positive attitudes towards the English language. Despite their moderately positive attitudes, these students are unwilling to take steps to learn the English language at the expected level. Additionally, they have little tolerance for the use of English among Turks because of their devotion to their language. Even though the students in this study were unwilling to learn more about language and were prejudiced against using it in daily life, it was revealed that they had a positive attitude due to the research.

On the other hand, some research results showed different results about the attitudes of Turkish EFL learners. For example, in her research, Çetinkaya (2009) concluded that university language learners linked English with power, economic prosperity, and technological progress. Learners had different views toward language. Although they desired to master English, they also expressed skepticism about its dominance. They showed a negative attitude toward learning the language, so they offered a multilayered attitude toward the language. In other studies, Abidin et al. (2012) and Alzahrani (2016) researched EFL learners' attitudes. They found that learners showed negative attitudes toward the language because of the traditional techniques used during the teaching process. It was recommended that teachers should have suitable teaching methods to make the teaching environment more enjoyable for learners, avoid using only old-fashioned techniques, and make learners aware of the importance of language. In this way, the attitudes of the learners could change.

2.7. Vocabulary Teaching and Learning

While learning a language, learning the vocabulary items of that language is a critical issue. Second language learners are often aware of how restrictions in their lack of vocabulary hinder their ability to communicate featly in the target language. This is because lexical items stand the fundamental point of conveying the meanings they aim to understand and express (Read, 2004). Vocabulary is an essential issue for

language teachers, and this importance was highlighted by researchers in many studies. Harmer (1991) claimed that “If language structures make up the skeleton of language, then it is vocabulary that provides the vital organs and the flesh”(p.246). He claimed that learning vocabulary is even more important than knowing the grammar of the language. Wilkins (1972) emphasized that “Without grammar, very little can be conveyed; without vocabulary, nothing can be conveyed” (p. 111)

Like other major languages, the English language contains many words. McCarten (2007) stated, “The Global Language Monitor, which tracks language trends, especially in the media, has counted up to almost a million at 988,968” (p.1). Having a vast vocabulary may be one of the factors that make learning the language challenging. In English, words are formed by combining two words to form a compound word or by adding prefixes or suffixes, but there are also words that learners cannot make this inference from and needs to be learnt (Nation & Meara, 2002). It is difficult to predict the exact number of words in a language; also, learners can't remember all these words. While teaching vocabulary, two factors need to be considered. Nation and Meara (2002) listed these two items as “the needs of the learners and the usefulness of the vocabulary items. “(p. 37). To determine the selection of words to be taught, one must look at how many words are frequently used in daily life and written and spoken language. It is essential to start with the most frequently used words; however, teaching all the vocabulary in the class is impossible. Teachers must teach students how and what they should learn outside class (McCarten, 2007).

It is impossible to teach all words to an individual. Students can learn the words in different ways with different techniques. Read (2004) explained that learners can gain vocabulary through incidental or intentional (explicit) learning. In the first concept, learners can learn new items inside or outside the class instead of engaging in activities primarily designed to boost their vocabulary knowledge. Most of the words known are the result of incidental learning. While high-frequency words are taught during the classroom process, less frequently used words result from incidental learning (Celce-Murcia, 2001).

Celce-Murcia (2001) defined implicit or incidental learning as “incidental vocabulary learning is learning occurs when the mind is focused elsewhere, such as on

understanding a text or using language for communicative purposes.” (p.289). To acquire incidental learning, Schmitt (2007) listed the following:

- (a) maximizing the amount of English used in the classroom; (b) using group work, where learners can learn new words from each other during their interactive discussions (c) encouraging communication with proficient English users whenever possible; and (d) spending time in an English-speaking country or environment. (p.751)

Many researchers acknowledged that exposing learners incidentally to words is one of the approaches to facilitate vocabulary acquisition. A well-designed vocabulary program can be effective when it includes explicit teaching activities that offer suitable contexts for incidental learning (Celce-Murcia, 2001). Also, explicitly taught elements must be supported by implicit exposure to become permanent. Learners exposed to targeted words in the learning environment will likely forget these items after some time. Learners need to be exposed to these items outside of the classroom. On the other side, incidental learning is not enough to reach the targeted words. The words given in the teaching environment that focused on specific items include highly used or target-oriented words. This kind of teaching is called explicit learning. Celce-Murcia (2001) defined explicit learning as “In explicit vocabulary learning, students engage in activities that focus attention on vocabulary.” (p.286). Activities like repetition, using vocabulary cards, creating associations with known words, and grouping the words can be used for deliberate or explicit learning (Nation & Meara, 2002). Schmitt (2007) stated that acquiring knowledge about pairs of words, in other words, their translation, learning words with their equivalents or antonyms, teaching different meanings of a word, and the formation of new words or word forms by adding affixes are other deliberate vocabulary learning ways. Learners can gain targeted vocabulary with many different techniques; however, in recent times, it has become essential for learners to gain independence in the learning process and make their learning last. Introducing new words in an isolated way and teaching vocabulary by rote memorization should be avoided. It's crucial to present new vocabulary items within rich contexts that offer clues to their meanings. Harmer (2001) suggested that “the best way, perhaps, of introducing new words is for students to read texts or listen to audio tracks and see or hear those words in action. A major reason for reading texts in class is to give students new language input.” (p.229). Learners can learn new vocabulary with the help of meaning-focused input activities like reading and listening. They can provide rich input for learners. In these activities, attention must be drawn

to unknown words, which should be used several times in the text. In meaning-focused output activities, learners must use new words in their speaking or writing. These kinds of productive activities allow learners to use the words. Showing pictures and talking about it can facilitate the usage of new vocabulary, or learners could try to negotiate meaning with their peers. In this way, learners can transform acquired knowledge into practical application (Nation & Meara, 2002). The teacher can introduce the new word with its definition or usage in the sentence. Using a dictionary, matching with their definition, learning pair words, and guessing the meaning of words are generally receptive activities. These kinds of activities help students to acquire knowledge of targeted vocabulary. For an effective learning process, learners should use these vocabulary items in productive activities such as writing exercises. Research supports that constructing a sentence may be a more efficient means of expanding vocabulary as a constructive learning activity than reading three sentences because it involves active engagement in choosing and employing words (Webb, 2005).

In addition to vocabulary activities, increasing students' consciousness of words is essential. Giving only listed words and translation of words could be insufficient. Learners need to know more about the targeted items. Carter and McCarthy (2014) stated that at the beginning of the language acquisition process, learners are often preoccupied with lists of paired words or 'paired associations.' These lists consist of a word from the target language accompanied by a synonym term in the same target language or its translation into the student's native language. However, this type of learning is lacking in the areas of making associations with words and being able to use words in different contexts. The more words are emphasized and associated with other words, their learning and recalling levels increase. Solely translation of the words needs to be improved. Another crucial consideration is that teachers can significantly enhance vocabulary by instructing word families rather than individual word forms. A word family comprises a set of words with a base word and its declination or derivations. When learners recognize the word's roots, they can deduce the meaning of some unknown words (Celce-Murcia, 2001). Meaning associations with other words are another critical issue for teaching vocabulary. In the mind, words seem to form organized sets with semantic connections, and consequently, the associations linked to a word play a crucial role in determining how it is stored in the brain. For example, for the word 'table', the chair word is the first thing that comes to

mind (Celce-Murcia, 2001). Learners need to be aware that they cannot learn everything in class. They can deduce the unknown word's meaning from context or its root. They can make some associations between the words to recall them quickly. Also, they need to be exposed to items in different contexts and exercises. Research on vocabulary teaching emphasizes that learners need to be independent in learning. Learners can utilize different vocabulary learning strategies. Learning strategies are important for students to continue learning outside the classroom. Facilitating the shift to independent learning becomes more manageable and effective when teachers assist students in developing the skill of recognizing contextual clues to infer word meanings. Mnemonic devices aid in connecting a word form with its meaning and reinforce this connection in memory. In this strategy, the learner chooses a word sharing a phonological or orthographic similarity with the targeted word. An association is set between two words, and upon encountering or hearing the target word, the learner promptly recalls the associated keyword. The teacher can support his learners in creating their vocabulary notebooks to encourage them to be independent learners. Repetition and rehearsal exercises are other strategies that can be utilized in vocabulary learning (Celce-Murcia, 2001). The acquisition of new vocabulary depends on the nature of the task, specifically the activities learners perform with the words, as well as the extent of exposure, denoting how frequently the words are encountered in the given input (Laufer, Rozovski-Roitblat, 2014). Laufer, Rozovski-Roitblat stated (2014), "Learning new vocabulary in a foreign language environment is determined by two major factors: how many times new words are encountered in the language input and what learners do with these words." (p.1). McCarten (2007) supported the importance of exposure and stated that one of the problems that students face while learning new vocabulary is forgetting what they have known before. Learners should repeat and engage in different activities, especially in productive activities like writing or speaking. Mere exposure to a word through hearing or seeing is insufficient for effective learning. Repetition is one of the effective methods in this regard. Learners can retrieve the word more quickly when exposed to newly learned vocabulary items several times. Celce Murcia (2001) supported this view as "exposure to words in various contexts is extremely important to a deeper understanding of a word's meaning." (p.286)

Besides productive activities like writing and speaking, student-centered activities can also be applied. Young students are more interested in learning by doing. Students who learn through active learning engage in many activities, such as games or internet-based activities. The student-centered education process can enable students to understand better. Games are an effective method to motivate students and make the teaching process fun (Shabaneh & Farrah, 2019). The activities and materials used in the teaching process are important in motivating students and making the process more fun. McCarten (2007) stated that materials can assist teachers in the vocabulary teaching process. They can provide delineated vocabulary lessons, emphasize the target vocabulary set, incorporate focused practice, and regularly review and supply lists of vocabulary to be learned for the lesson. Teachers can supply new vocabulary items to the learners in different ways, such as visuals, songs, and stories, with the help of web pages. Here, the critical issue is that the material should catch learners' attention, and they should provide variety in terms of activity types by considering individual differences in class. Some students can learn better by seeing, while others learn by doing or hearing. McCarten (2007) stated followings:

Materials can help students in two broad areas: First, they need to present and practice in natural contexts the vocabulary that is frequent, current, and appropriate to learners' needs. Second, materials should help students become better vocabulary learners by teaching different techniques and strategies they can use to continue learning outside the classroom. (p.19)

Moreover, in addition to flash cards, highlighting the words, vocabulary games, visuals, exercises about the vocabulary, and computer-aided materials, which are a result of technology, are also among the materials used for vocabulary teaching. The growing utilization of computers for language learning programs brings new possibilities to improve vocabulary acquisition. This enhancement can occur either directly through vocabulary learning activities that technological tools offer or more incidentally within the context of reading tasks. Learners can use online dictionaries that provide immediate responses for unknown words or programs that foster the retention of valuable words by presenting each word in various chosen sentences and brief texts. Some programs offer a variety of sources for text, which can be selected according to learners' interests, levels, or needs. So, technological tools can be seen as a valuable teaching aid for vocabulary acquisition (Read, 2004). Celce-Murcia (2001) emphasized that computer programs, which have recently been gaining significant

popularity, are among the resources that facilitate vocabulary teaching through visual aids and pronunciation support.

Some research was conducted to assess the efficacy of smartboards, which is a subfield of technology and computers in class on vocabulary teaching. The results showed that the usage of smartboards affected the vocabulary learning process. Hendawi and Nosair (2020) researched the efficacy of using smartboards on language achievement, and the results revealed that the experimental group that used interactive smartboards in their teaching process showed higher grades than the control group. They supported that the learners' success was affected by the enjoyable classroom environment and different activities provided thanks to smartboards. They also highlighted that smartboards assist learners in simplifying and explaining the given information, highlighting the connections between elements, and offering diverse applications for revision and examples (Hendawi & Nosair, 2020). Similarly, Dahlan (2014) studied the effect of smartboards on 7th-grade students, categorized the students into two groups, the experimental and control groups, and administered an achievement test. Results showed statistically significant differences between the experimental and the control groups, as indicated by the results with the outcome favoring the experimental group. (as cited in Hendawi & Nosair, 2020). In another study, Katwibun (2014) investigated the effect of interactive whiteboards on vocabulary achievements with 11th-grade language learners, and the results revealed that usage of IWB positively affected learners' vocabulary achievement. Similarly, Al Farra (2014) investigated the effect of using smartboards on the vocabulary achievement of 10th-grade students in Gaza. This experimental research result revealed notable differences in scores between the control and experimental groups. This difference favored the experimental group on the vocabulary post-test result and highlighted the effectiveness of the Smartboard as a contributing factor for vocabulary achievement.

2.8. Retention of Vocabulary Knowledge

Many theoretical and experimental studies have examined the process of second language learning. Learners begin to learn language and can forget the items they have learned. This is a natural fact of the learning process. When learners are

exposed to new items just receptively, they are likely to be forgotten; however, when learners use, engage in new items and productively use them, they are less prone to be forgotten. It could be focused on two types of memory to understand what's needed for knowledge retention. When learners encounter something, it initially goes to short-term storage in primary memory, and when it is rehearsed several times, the knowledge could be transferred to long-term memory (Koşar & Bedir, 2018). Schmitt (2000) explained that while learning new items, learners first keep them in short-term memory. The knowledge's lifespan is short here, and short-term memory has limited capacity. If knowledge is not transmitted into long-term memory that has unlimited capacity, that knowledge will inevitably be forgotten. In long-term memory, information is stored for usage at any time (Schmitt, 2000)

Wolman (1989) defined retention in the Dictionary of Behavioral Science as “the fact that a learned behavior will persist after some time has passed in which the behavior has not been performed.” (p.326). Reber (1985) defined this term in the Penguin Dictionary of Psychology as “The persisting trace left behind as an after-effect by any experience, forming the basis of learning, memory, habit, and skill, and of all development, so far as it is based upon experience.” (p.250).

It's essential to focus on retaining knowledge in English language learning, as it's easy to forget what the learners have learned. Creating a learning environment that fosters motivation and enhances language skills through engaging communication scenarios, social activities, and meaningful tasks is crucial. Besides, it needs to be maintained that learning should be an ongoing process, adding new knowledge to the existing ones. Prioritizing long-term learning is a critical factor for this aim. Hashemzadeh (2012) stated that when learners were assessed immediately after the new items were introduced, they had higher scores than the test that took place two weeks later. So learners could only remember newly learned items if they were rehearsed well. The greater the interaction a learner has with a new word, the higher the likelihood of learning it. If learners spend more time with newly discovered items and are exposed to them several times in activities such as games, reading activities, matching, and fill-in-the-blank activities, and if it is learned in a motivating environment, more retention could occur. In this way, the knowledge transfer to long-term memory can be provided. Also, students can retain knowledge effectively by participating in collaborative learning and actively engaging in the learning process

(Koşar & Bedir, 2018). Additionally, Schmitt (2008) highlighted that testing lexical items increases learners' retention. So, testing can be seen as one of the factors that influence retention.

As retention is a crucial issue for language development, some strategies have emerged to increase retention levels of learners. For example, arranging information smartly helps learners remember the items better. It could be thought of as grouping things or making connections between the items. Using chunks, connecting words, categorizing and placing this categorization, picking sound cues, using words and pictures, and using tricks like mnemonics can improve learners' memory by organizing, explaining more, and using images (Allison, 2014). Rodriguez and Sadowski (2000) explored the impacts of rote rehearsal, context, keyword, and context/keyword learning methods on immediate and long-term English vocabulary retention. It was concluded that the context/keyword strategy significantly improved students' retention of English vocabulary knowledge. In another study, Altalhab (2018) investigated one of the most essential retention strategies: repetition. It examined the effectiveness of repetition, either oral or written, or both of them. The findings indicated that all three types of repetition strategies successfully retained newly learned vocabulary; however, it was the most effective strategy for vocabulary retention when done orally and in written form.

As emphasized before, forgetting is one of the problems encountered in the language learning process. Iyer (2020) highlighted that “Empirical research depicts that the technology promotes students by challenging the barriers in education and creating blissful moments in different contexts and across various subjects.”(p.438) Technology, which has caused changes in the education process can be turned into a tool used for remembering and learning information with the opportunities it provides. In his research, Alsarayreh (2021) explained the usage of technology for the retention of language and emphasized that retention of knowledge is a critical issue for each field. In education, each teacher wants and aims for their students to remember the teaching outcomes for a while, not just until the exam week. It could be seen as a compelling issue; however, various methods can be employed to instruct relevant content and assist students in retaining essential knowledge. Alsarayreh (2021) highlighted the effect of some technological techniques like 3d printing, chat-box, virtual reality, and so on and concluded that these technological aids help learners

retain knowledge better. Students instructed using 21st-century technologies tend to retain knowledge for extended periods. Furthermore, it was suggested that teachers use these innovative and imagination-enhancing devices in their classrooms. Transforming the traditional classroom environment into a more innovative, self-directed, creative classroom atmosphere could affect students' level of retention of information (Alsarayreh, 2021). Egbodo et al. (2021) researched the effects of e-learning, which could be seen as a subfield of ICT. The research aimed to change the traditional education method and enable students to access information by thinking creatively, developing ICT skills, and actively participating in learning. For this aim, slides, videos, and audio were used in the experimental group. The researchers found that the experimental group taught with the help of technology demonstrated higher retention of knowledge than the control group by getting higher grades. They concluded that better retention could be due to the active participation of the learners with audio and visual-supported materials, and the technology-supported classroom was different from the traditional classroom environment, where facts and theoretical information were often taught in a single lesson without any concrete multimedia activities (Egbodo et al., 2021). Along the same lines, a study by Aghlara and Tamjid (2011) highlighted that acquiring and retaining vocabulary is crucial in learning a second language. The connection between language acquisition in early childhood and digital games is significant because children can easily comprehend language through online games. Introducing games in the classroom for young learners facilitates their learning experience by capturing their attention and fostering motivation. In their research, they studied the effect of the digital game SHAIEX, which includes images, sounds, and videos, on the retention of vocabulary knowledge of Iranian children. The results showed that the digital game positively affected the process of vocabulary teaching, and the scores of the experimental group, which was taught with a digital game, showed more success in vocabulary retention. Besides, it was seen that engaging children in such games made the learning process much more enjoyable and significantly reduced the stresses associated with it (Aghlara & Tamjid, 2011). Another study by Aslanabadi and Rasouli (2013) found that an online language-teaching game was used to teach vocabulary in the experimental group, while the control group used traditional teaching methods in their teaching process. It was found that besides the high-grade results, the experimental group's teaching environment was more motivating and entertaining. Mean scores on the vocabulary test demonstrated

statistically significant differences, favoring the experimental group in the post-application phase, so usage of online games positively affected the retention of vocabulary items (Aslanabadi & Rasouli, 2013). Similarly, Taheri (2014) found that the results of the post-retention test experimental group that used games during learning sessions did not forget most of the vocabulary items, while the control group experienced a significant decline in vocabulary knowledge. Additionally, it was seen that learning in a stress-free environment made learners engage in activities more willingly. This increased their self-confidence (Taheri, 2014). Similarly, Patra et al. (2022) conducted experimental research with EFL students. In the experimental group, vocabulary items were taught with the help of digital games, and in the control group, the teacher used traditional teaching materials to teach vocabulary in this study. In immediate and retention post-test results, the experimental group performed better than the control group. They stated that technology can enhance the retention level of vocabulary items, and teachers can improve their teaching quality. When students learn the teaching outcomes in a more motivated teaching environment, which is enhanced by the advantages of technology, their retention level could be affected, and their learning process could be more memorable. In the classroom, one of the most widespread technological materials is smartboards. Savio (2011:1) highlighted the importance of smartboards and stated as follows:

There is a magical component to doing this sort of activity on a Smart Board interactive whiteboard. The act of removing a virtual apple from the group and having it disappear into the virtual trash can is far more effective than an exercise using actual apples. The Smart Board interactive whiteboard makes the experience fun, and the children appreciate that they are playing a digital game.

Some research investigated directly the effect of smartboards on vocabulary retention. For example, Hosseini (2020) concluded that using audio, picture, and video explanations in language classes with the help of interactive whiteboards increased the retention level of learners. Furthermore, in the research, three groups were taught using different IWB materials. Firstly, the group utilizing video explanation performed significantly better than the other two groups; this indicated that incorporating video through interactive whiteboards (IWB) had the most significant impact on participants' performance compared to auditory and pictorial groups. Furthermore, the acoustic explanation group demonstrated superior performance compared to the visual group, highlighting that auditory explanations through the interactive whiteboard

significantly influence learning performance more than pictorial explanations through the same technology. It can be concluded that though using interactive smartboards is effective, the teaching material used through these devices may also affect students' retention levels differently. A similar study was by Al Farra (2014). The impact of Smartboards on vocabulary retention of language learners in Gaza was researched, and it was concluded that a significant difference in vocabulary retention was observed between the experimental and control groups in favor of the experimental group. Al Farra (2014) concluded that the knowledge acquired by students through the Smart Board was effectively transferred to long-term memory. This transfer could be attributed to the teacher's varied techniques, including using pictures, video clips, and sound files to introduce new vocabulary on the IWB. In contrast, the control group had significant limitations associated with the traditional learning approach. These findings showed that integrating such technology in schools enhances students' enthusiasm and motivation across all subjects, particularly impacting English learning (Al Farra, 2014). On the same line, Gray et al. (2005) concluded that using smart boards helps learners develop their memorization skills and increases their retention level. Lastly, Shams et al. (2016) conducted a study that investigated Iranian learners' perspectives on the impact of Smartboards on motivation, participation, interaction, and retention. It was concluded that technology can enhance student motivation and increase their involvement in the classroom. The results revealed that students engage more actively in classrooms where technology is employed effectively. Additionally, the study found that Smartboards contribute to improved retention of information and enhance the overall learning process in English as a Foreign Language (EFL) classrooms. Furthermore, classroom observations indicated that students were more prone to express attention to the course content, demonstrating a significant retention level, particularly in vocabulary. Students in the group with Smartboards exhibited easier vocabulary retrieval than those without Smartboards. This can be through visual tips such as videos and images or thanks to materials that attract students' attention and increase their interest in the class (Shams et al., 2016). All the research results showed that if the vocabulary is taught in an appropriate environment, attracts students' attention, and provides fun and active participation, students' retention levels can increase.

In addition to research revealing that games and technology-based classroom environments contribute to the retention level, another study claimed that, as one of the technology-based tools, the Internet does not affect learners' retention of knowledge. Saleh et al. (2011) investigated the effect of the Internet, one of the most comprehensive sources of information, on the knowledge retention level. The results showed that the results of learners who used the Internet as an aid had generally higher marks, so the Internet was used widely by the learners to obtain information; however, there was a low to moderate relationship between the Internet and its effect on the retention of knowledge. They suggested that teachers should pay attention to the usage of the internet as a source of information. Similarly, Norouzi and Mohammadi (2014) stated that "interactive whiteboard isn't effective in improving students' vocabulary retention in the experimental group" (p.104). They concluded that the post-test results indicated no significant difference in vocabulary retention between the control and experimental groups.

CHAPTER III

METHODOLOGY

3.1 Presentation

This chapter presents information about the context and research design, participants of the study, data collection tools, and their reliability and validity results. Also, the data collection procedure and data analysis were presented in detail.

3.2 Context and Research Design

The study was conducted in a public secondary school in Gaziantep city. Students had four hours of English class in a week. The research was about the possible effects of smart boards on the language attitude of Turkish EFL learners, their vocabulary achievement, and retention level. For this reason, a quasi experimental research design was used. According to Fraenkel, Wallen, and Hyun (2012), Experimental research stands out as a highly effective research methodology employed by researchers. It has dependent and independent variables, making establishing cause-and-effect relationships easier. The research had two groups: a control group and an experimental group. In the experimental group, the teaching session was conducted with the help of smartboards. In the control group, the teacher used traditional teaching methods in the language teaching process. The study has three dependent variables and an independent variable. The Independent variable was smartboards, and the dependent variables were vocabulary achievement, retention, and

students' attitudes toward language. The duration of the experiment lasted for 12 weeks.

A quantitative method research design was chosen to obtain data. Quantitative research systematically investigates quantifiable data with statistical techniques (Fraenkel, Wallen, and Hyun, 2012). Fraenkel, Wallen, and Hyun (2012) stated that “quantitative researchers seek to establish relationships between variables and look for and sometimes explain the causes of such relationships.” (p.10). Dörnyei (2007) explains quantitative research design as: “Quantitative researchers define the variables they work with well in advance and assign a logical scale of values to them, which can be expressed in numbers.”(p.26). Dörnyei (2007) suggested that quantitative research involves numerical data results and then analyze these results through statistical methods. In this study, the vocabulary achievement test scores of the students were assessed quantitatively with number-based results. The retention test results were used to evaluate students' vocabulary retention and the scale for attitude that the students completed before and after the experiment was evaluated with number-based values.

3.3 The participants of the study

The study was conducted with seventh-grade students for eight weeks in the spring term of the 2022-2023 academic year. The sample of the study was composed of 41 students in the same secondary school in the district of Şahinbey/ Gaziantep. The students had four hours of English class in a week. The students live in an area considered moderate in terms of socioeconomic level. The students' vocabulary levels were assessed before the experiment with the help of a pre-test, and it was seen that they were approximately at the same vocabulary level. They were elementary level. In the school, there were only two groups for 7th grade, so one of them was chosen as an experimental group, and the other was selected as a control group. The control group consisted of 20 students, and the experimental group consisted of 21 students. The experimental group was the group that used smartboards in class, and the control group was taught through traditional methods. The students were between 11-12 years old.

The participants of the study consisted of both female and male learners. The distribution of participants according to gender groups is shown in the table 1;

Table 1:*Gender Distribution Of Groups*

Group	Experimental Group	Control Group
Female	13	12
Male	8	8
Total	21	20

To choose the population of the study Convenience Sampling Method was used because the convenience Sampling Method is practical and feasible. Convenience sampling is defined as “A convenience sample is a group of individuals who (conveniently) are available for study” (Fraenkel, Wallen, and Hyun, 2012, p.99). The available students for the research were chosen for the study. The study participants were the 7th-grade students, and two groups in the same school were selected. Their curriculum, vocabulary items, and teacher, were similar so that they could be seen as constant variables.

3.4 Data Collection Instruments

Since the research aimed to investigate the possible effects of smart boards on specific variables, in the experimental group, the teacher conducted the teaching process with the help of smartboard techniques and some software programs. It contained songs, online games about the units, videos, visuals, and an enriched e-book version of the book that the Ministry of Education supplied. In the control group, the researcher used traditional MEB books, worksheets about the units, and flashcards. In the research, three different data were analyzed: the students' vocabulary achievement and retention level and the students' attitudes toward language learning. A vocabulary achievement test and a language attitude scale were used to collect the data.

Vocabulary Achievement test

As a first data collection tool, an achievement test was prepared, developed, tested, and applied to the students to assess its reliability before the experiment. The researcher developed the vocabulary achievement test, which included some vocabulary questions and useful phrases that need to be covered by students in units.

The reliability of the achievement test was evaluated before the experiment with the pilot application. The test's content validity was addressed by comparing the questions with the units' objectives in an annual plan, which the Ministry of Education decided. The pilot test included 33 multiple-choice questions and was applied to 100 students from 2 different public schools considered to have equal language-level students. The reliability results found that the Cronbach's Alpha value of the test was .69. This value represents the internal consistency reliability of the scale. In this case, the coefficient is 0.69, which suggests a moderate level of internal consistency. Typically, higher values (closer to 1) indicate better internal consistency. To evaluate the results, the scale has a moderate level of internal consistency, as indicated by Cronbach's Alpha, which is around 0.69. To ensure reliability, the expert opinion was taken also.

Table 2.

Vocabulary Achievement Test Application Process

Vocabulary Achievement test	Experimental Group	Control Group
1st Week	Pre-test	Pre-test
8th Week	Post-test	Post-test
12nd Week	Retention test	Retention test
Total	3	3

As seen in Table 2, the vocabulary achievement test was applied in the first week of the teaching process to see whether there was any difference between the groups regarding vocabulary achievement and to compare their progress after the treatment. The test had 33 multiple-choice questions, and the students completed them in a class hour. Secondly, it was applied in the 8th week of the teaching process as a post-test to see whether there was any difference between the control and experimental groups regarding vocabulary achievement after the treatment and to compare students' results with their pre-test results. Thirdly, it was applied to students four weeks later in the teaching process to assess their retention level.

Language Attitude Scale

A scale about attitudes toward language learning developed by Aydoslu (2015) was used to assess the students' attitudes toward language classes. Before administering the survey, students were asked to choose a number as an identity. In this way, they did not use their real names for the scale. The instructions were read clearly to the students, and they took a class hour. The attitude scale was applied twice in the first and last weeks of the teaching process. The first application was to see whether there were any differences between the groups before the treatment. The second application was to compare the groups' attitude results with pre-attitude scale results and compare the attitude differences between the groups. The scale had 30 items. It was structured on a five-point Likert-type scale and 15 of these items were positive sentences (1., 2., 3., 6., 7., 10., 11., 15., 16., 19., 21., 24., 27., 28. and 29. Items). On the other side, 15 of these items were negative sentences (5., 8., 9., 12., 13., 14., 17., 18., 20., 22., 23., 25., 26. and 30.) the degree of agreement with the sentences constituted as '1' represents strongly disagree, and '5' represents strongly agree. For the scale, the deficiencies were corrected and a 30-item attitude scale was prepared. The reliability coefficient was found to be as $\alpha = 0.9364$ in the application of the developed 30-item scale. In another study for the same scale Sarkmaz (2011) stated, "The coefficient of reliability (Cronbach Alpha) of the attitude scale was found as 0.92." (p.35)

3.5 Data Collection Procedures

In the 2023-2024 Academic Year, the second-semester data started to be collected. The data was collected in two different groups, which were selected as experimental groups and control groups for the 7th-grade level, in Gaziantep/Şahinbey district. There were only two available groups in the school. One of the classes was identified as a control group, and the other was an experimental group. For the research, necessary permissions were obtained from the affiliated institution. The students and their parents were informed about the process before the treatment. Then, both students and parents filled out the treatment and consent forms.

Pre-test

The vocabulary achievement test and an attitude scale were applied in the first week of the teaching session as a pre-test to collect the data. Learners were asked to choose a particular number as an identity and not write their names on paper. In that way, students were convinced that these tests were not applied to grade them. 2 class hours were spent applying each group's pre-achievement test and pre-attitude scale. The pre-achievement test results gave information about the nature of Turkish EFL students' vocabulary achievement, and the pre-attitude scale results showed information about Turkish EFL students' attitudes toward language learning before the treatment.

Treatment

The units in the experimental group were introduced and completed using smartboards. In the experimental group, the teacher used software programs like Quizlet, the enriched e-book version of the MEB book, visuals, videos, and some interactive games with the help of smartboards. In the control group, the teacher used traditional teaching methods and materials like a textbook provided by the Ministry of Education, a whiteboard, hands-on activities prepared by a teacher, flashcards, etc. The teaching session was about eight weeks, and during this period, two different units were presented in the classrooms. The teacher introduced the units, and the students did some activities either with the help of a smart board or worksheet exercises.

Post-test

When the teacher had completed the units in the 8th week, the teacher applied an achievement test to assess the learning level of groups. The achievement test results were compared to see whether there was any difference between the experimental and control groups. Then, the teacher completed the lack of learning items, if any, by looking at the achievement test results. This could ensure that the learning process was productive and that the students got nearly all the necessary points about the units in both groups (the control and the experimental groups). In the 8th week of the teaching session, the post-attitude scale was also applied in both groups to see the effect of smartboards on students' attitudes toward language learning.

Retention Test

After completion of the units, there were no activities used in the classes about the units in 4 weeks. 30 days after the completing teaching of the units, a delayed test was applied to the students, and the results gave information about the effect of smartboards on the vocabulary retention level of students.

3.5 Data Analysis

This study aimed to investigate the effects of smartboard usage on students' vocabulary achievement, attitudes towards the English language, and language retention. To achieve this goal, a pre-achievement test and pre-attitude scale were conducted and examined whether there was a significant difference between the vocabulary achievements and attitudes of the students in the control and experimental groups before the treatment.

For that purpose, an independent samples t-test was applied. The data set did not meet the t-test assumptions for independent groups, the non-parametric equivalent "Mann-Whitney U" test was conducted. Additionally, after the experiment, a two-way analysis of variance was applied to determine whether there was a significant difference between the experimental and control groups regarding vocabulary achievement and attitudes towards a language for mixed measures. The data set did not meet the assumptions of this analysis, an independent samples t-test was conducted based on the difference scores.

In addition, the attitudes towards language and achievements of both the control and experimental groups were analyzed using a dependent samples t-test to determine if there was a significant difference between pre-test and post-test measures. A follow-up vocabulary achievement test was administered to students four weeks after the treatment to assess whether there was a considerable difference in the retention level of vocabulary items between the experimental and control groups. To achieve this, a one-way analysis of variance (ANOVA) was employed for repeated measures. If the assumptions for this analysis were not met, the non-parametric equivalent, the "Friedman" test, would be performed.

The research questions and data analysis procedures for each question are explained in detail. To analyze the difference between the experimental and control groups in terms of Language Attitudes and Vocabulary Achievement before the treatment, an Independent t-test was used. After the treatment, the differences between the experimental and control groups in terms of vocabulary achievement were examined using a Two-way analysis of variance (ANOVA) for mixed measures. Additionally, to assess the differences between the pre-test and post-test results of the experimental and control groups, a dependent t-test was employed. For evaluating the pre-attitude and post-attitude results of both groups, another Dependent T-test was conducted. To explore the differences in Language Attitudes after treatment, a Two-way analysis of variance (ANOVA) for mixed measures was utilized. Lastly, to determine the difference in vocabulary retention levels between the experimental group and the control group, a One-way analysis of variance (ANOVA) for repeated measures was used.

CHAPTER IV

FINDINGS

4.1. Presentation:

This chapter presents data from vocabulary achievement tests and an attitude scale. The findings related to the research questions were presented sequentially in this section.

4.2 The Normality of the Data:

Before submitting the findings, the dataset's normality assumptions were addressed. For this purpose, outliers in the dataset were first examined using a box plot, and no outliers were detected. The normality of the data for each variable was then investigated using Skewness, Kurtosis, and Quantile-Quantile plots (Q-Q plots). To achieve this, the Skewness and Kurtosis coefficients of the data were initially examined, and the associated results are presented in Table 3.

Table 3:

Skewness And Kurtosis Coefficients For Variables

	Experimental Group		Control Group	
	Skewness	Kurtosis	Skewness	Kurtosis
Pre Achievement Test	.278	-1.032	.227	-1.241
Post Achievement Test	-.503	-1.253	1.084	.439

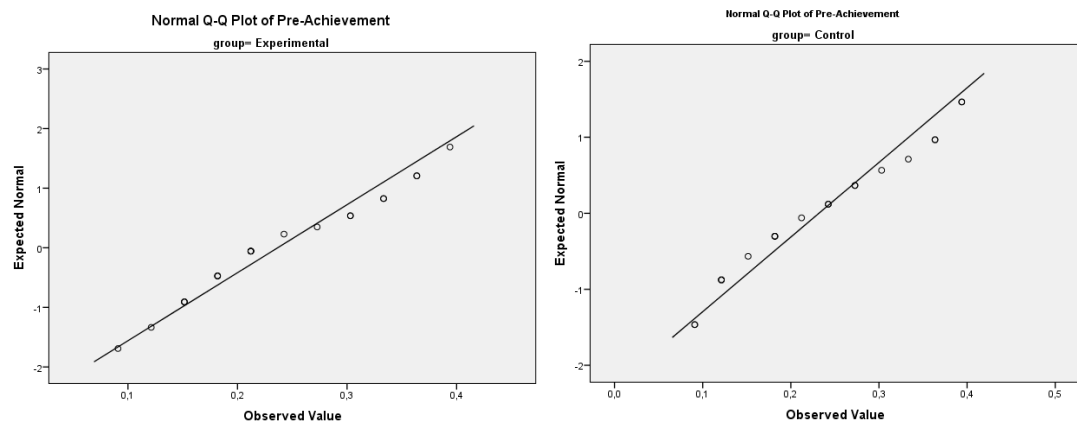
Achievement Test		-0.821	.353	1.145	1.139
Pre Attitude Scale	Attitude	-.121	-.711	.089	-.408
	Post	1.343	2.723	.068	-1.104
Attitude Scale					

Note: Skewness and kurtosis coefficients were obtained using Quantile-Quantile plots (Q-Q plots)

Table 3 (continued)

Table 3 displays the Skewness and Kurtosis coefficients for various variables in a research study. These coefficients are statistical measures that help assess how symmetric or asymmetric the distribution of each variable is, as well as how concentrated or dispersed the data points are. The skewness values of the dataset range from -0.821 to 1.343, while the kurtosis values range from -1.253 to 2.723. Since the skewness values fall within the range of ± 3 and the kurtosis values are within ± 3 , it is assumed that the data distribution is close to normal (Kline, 2015; Tabachnick & Fidell, 2007).

Additionally, Q-Q plots were examined to examine whether the data is normally distributed. The Q-Q plot graphs obtained are presented in Figure 1.



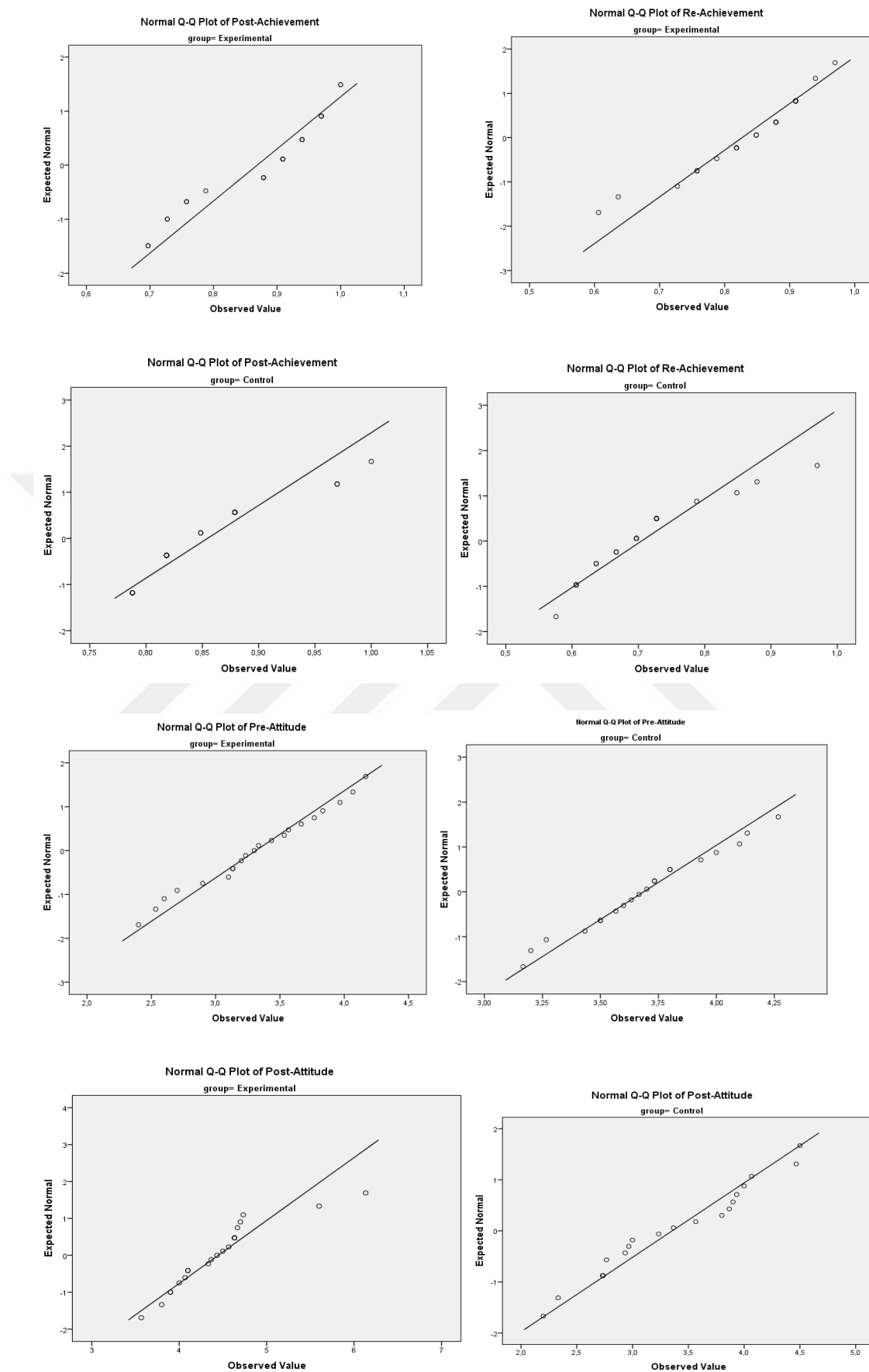


Figure 1. Q-Q Plot Graphs For Variables

The Q-Q plots revealed a close alignment between the actual and theoretical distribution values, resulting in a line approximating a 45-degree angle. This indicates that the data is normally distributed (Can, 2017).

4.2. Findings regarding the 1st Research Question:

Is there a significant difference between the experimental and control groups in terms of

a. Language Attitudes before the treatment?

b. Vocabulary Achievement before the treatment?

The first research question of the study aimed to investigate whether there was a significant difference between the pre-test scores of the experimental and control groups in terms of their attitudes toward language and vocabulary achievements before the treatment. In order to assess the significance of this difference, an independent samples t-test was conducted. This test is performed to decide whether a statistically significant difference is between the means of data values obtained from different groups (Can, 2017). Before conducting the independent samples t-test, the data's normal distribution characteristics were examined graphically (Figure 1) and statistically (Table 1). The results indicated that the dataset exhibited a normal distribution. Another assumption for performing the independent samples t-test is that each data point must be independent of the others, and the sample groups should be randomly chosen. Since the sample groups were detected as an experimental and control group randomly, this assumption was met. Another assumption for the independent samples t-test is the equality of variances between the groups, meaning there is no statistically significant difference between the two groups. The Levene test was used to assess the equality of variances. The result of the Levene test for academic achievement ($p = .412$) was more significant than 0.05, indicating that this assumption was met (Can, 2017). Because all assumptions were satisfied, the independent samples t-test was conducted, and the obtained results are presented in Table 4.

Table 4.

Results Of The T-Test For The Difference In Pre-Test Scores On Vocabulary Achievement Between Experimental And Control Groups

		N	$\bar{x}$	S	sd	t	p
Vocabulary Achievement	Experimental Group	21	.236	.087	39	.163	.412
	Control Group	20	.231	.101			

As seen in Table 4 in the scope of the study, based on the results of the independent samples t-test conducted to examine whether there is a significant difference in Vocabulary Achievement between the experimental and control groups before the treatment, any significant difference was not detected between the mean scores of the experimental group ($\bar{x}$ = .236) and the control group ($\bar{x}$ = .231) on the vocabulary achievement test [$t(39)$ =.163, $p>.05$]. Consequently, it can be stated that there is no significant difference in the pre-treatment vocabulary achievements of the experimental and control groups.

Within the scope of the study, to assess whether there was a significant difference in Language Attitude between the experimental and control groups before the treatment, the equality of variances was first examined using the Levene test. The result of the Levene test ($p=0.036$) was smaller than 0.05, and therefore, this assumption was not accepted (Can, 2017). Consequently, the non-parametric alternative to this test, the Mann-Whitney U test, was conducted. The results of the analysis are presented in Table 5.

Table 5.

Mann-Whitney U Test Results For The Difference Between Pre-Attitude Scores On Language Attitudes Between Experimental And Control Groups

		N	Mean Rank	Sum of Ranks	U	p
Attitude	Experimental Group	21	16.48	346.00	0	.013
	Control Group	20	25.75	515.00		

Note: If $p < 0.05$, the difference is statistically significant.

According to the results of the Mann-Whitney U test, a statistically significant difference was observed between the experimental group's attitudes toward language

and the control group's attitudes towards language ($U=115$, $p<.05$). Therefore, it can be stated that there is a statistically significant difference in language attitudes between the experimental and control groups before the treatment. The mean attitude score for the experimental group is $\bar{x}=2.40$, whereas the mean for the control group is 3.17. Hence, the experimental group's attitude towards language is significantly lower than the control group's.

4.3. Findings regarding the 2nd Research Question:

Is there a significant difference between the experimental group and the control group in terms of Vocabulary achievement after treatment?

The second research question focused on whether there is a significant difference between the groups concerning Vocabulary achievement after the treatment. A two-way analysis of variance (ANOVA) was conducted to test the significance of this difference for mixed measures. There are certain assumptions to ensure the reliability of the analysis. The first assumption is that the scores of the experimental and control groups should demonstrate a normal distribution. Both graphical (Figure 1) and statistical (Table 3) analyses showed that the data set satisfied the conditions of normal distribution. Another assumption for two-way ANOVA with mixed measures is that the variances of the groups should be homogeneous. To test this assumption, the Levene test was performed, and the results were .41 for the pre-test and .08 for the post-test. The obtained values are more significant than 0.05, indicating that the variances of the groups are homogeneous (Can, 2017). Another precondition for conducting the test is that there should be no significant difference in the covariance between the groups for binary combinations of measurement groups. The "Box's Test of Equality of Covariance Matrices" was conducted to assess this. The analysis yielded a p-value greater than 0.05 ($p = 0.114$), satisfying this condition. Since all assumptions have been met, a two-way analysis of variance for mixed measures was applied. The results are presented in Table 6 and Table 7.

Table 6.

Descriptive Statistics Results For Pre-Test And Post-Test Scores Of The Experimental And Control Groups.

Groups	Pre-test			Post-test		
	N	$\bar{x}$	s	N	$\bar{x}$	s
Experimental Group	21	.24	.08	21	.86	.10
Control Group	20	.23	.10	20	.85	.06

Table 7.

Two-way analysis of variance results for mixed measures on pre-test and post-test scores of the experimental and control groups.

Source	Sum of Squares	df	Mean Squares	F	p
Within Group					
Measurement	8.064	1	8.064	2041.551	.000
Measurement*Group	.000	1	.000	.112	.739
Error	.154	39	.004		
Total					

An analysis of variance for mixed measures was conducted to examine whether being in the experimental group using smart boards had a significant effect on achievement test scores. As seen in Table 7, no significant interaction effect between the group and measurement, suggesting that the increase in scores in the smart board group was not significantly greater than that of the other group [$F_{(1-39)}=.112$, $p>.01$]. Consequently, it can be concluded that using smart boards in English classes does not significantly impact students' Vocabulary achievements. This finding is further supported by the group-time graph obtained (Figure 2).

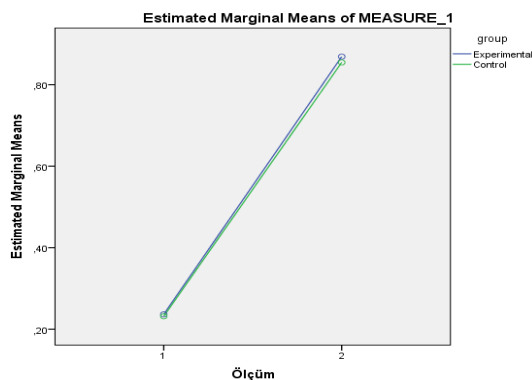


Figure 2. *Changes In Pre-Test And Post-Test Scores Of The Experimental And Control Groups.*

4.4. Findings regarding the 3rd Research Question:

Is there a significant difference between the pre-and post-achievement test results of

a. the experimental group after treatment?

b. the control group after treatment?

The third research question of the study aimed to investigate whether there is a significant difference between the pre-test and post-test scores of the experimental and control groups in terms of vocabulary achievement after treatment. To test whether this difference is statistically significant, a dependent samples t-test was conducted. Before performing the dependent samples t-test, outliers were examined using a Box-Plot, and it was observed that there were no outliers. Subsequently, the normal distribution characteristics of the differences between pre-test and post-test scores were examined using Skewness, Kurtosis, and Quantile-Quantile plots (Q-Q plots). For this purpose, the skewness and kurtosis coefficients of the data were initially considered, and the associated results are presented in Table 8.

Table 8.

Skewness And Kurtosis Coefficients For Difference Scores.

	Experimental Group		Control Group	
	Skewness Coefficient	Kurtosis Coefficient	Skewness Coefficient	Kurtosis Coefficient
Difference Scores in Achievement	.558	-.269	-.572	1.365

The skewness values are 0.558 and -0.572, and the dataset's kurtosis values are -0.269 and 1.365. Kılıç (2007) mentioned skewness values between -1 and +1 indicate a normal distribution and Can (2017) stated kurtosis values between +196 and -196 indicate a normal distribution. The obtained data align with this criterion, suggesting that the data follows a normal distribution.

A Q-Q Plot was examined to assess the normality of the data. The Q-Q Plot results indicated a close alignment between the actual and theoretical distribution values, forming a line close to a 45-degree angle. This suggests that the data is normally distributed (Figure 3).

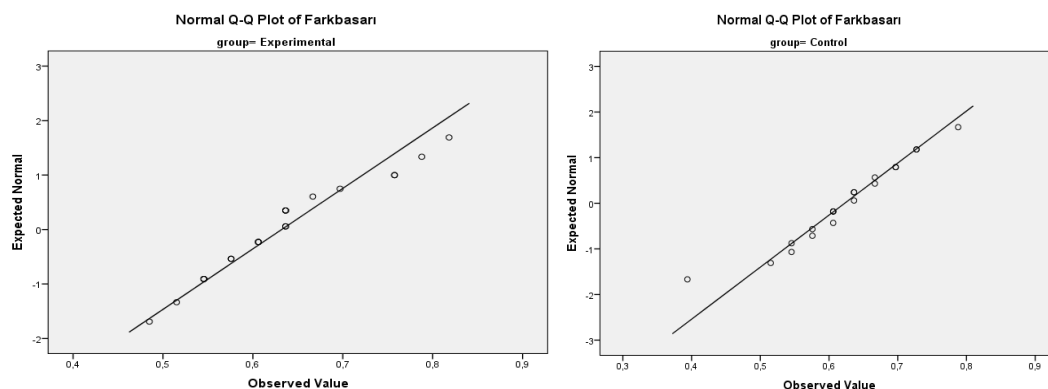


Figure 3. Q-Q Plot Graphs For The Difference Scores In Achievement.

The dependent samples t-test was conducted as the normality conditions for the datasets were met. The results are presented in Table 9.

Table 9.

T-Test Results For The Effect Of Smartboard-Supported Instruction On The Vocabulary Achievements Of The Experimental And Control Groups

		Measurement	n	$\bar{x}$	s	sd	t	p	Effect size(d)
Experimental group	English	Pre-test	21	.24	.09	20	-	.000*	6.62
	Vocabulary Achievement	Post-test	21	.86	.10		32.16		
Control Group	English	Pre-test	20	.23	.10	19	-	.000*	7.40
	Vocabulary Achievement	Post-test	20	.85	.06		31.77		

*p<.05

Table 9 presents that the results indicated a significant difference in the pre-test to post-test English Vocabulary achievement scores of the experimental group, $t(20) = -32.16$, $p < .05$. Before the treatment, the mean English achievement score of the students was 0.24, and it increased to 0.86 after the treatment. The effect size value of 6.62 indicates a high level of impact (Taşpınar, 2017). These findings suggested

that the experimental study conducted in this group significantly affected students' English Vocabulary achievements.

The research results demonstrated a significant difference in the pre-test to post-test English Vocabulary achievement scores of the control group, $t(19) = -31.77$, $p < .05$. The mean pre-test English achievement score of the students was 0.23, and it increased to 0.85 in the post-test. The effect size value of 7.40 indicates a high level of impact (Taşpınar, 2017). These findings suggested that the instructional intervention conducted in this group significantly affected students' English vocabulary achievements.

4.5. Findings regarding the 4th Research Question:

Is there a significant difference between the pre-attitude and post-attitude results of the

a) experimental group after treatment?

b) control group after Treatment?

The fourth research question of the study aims to determine whether there is a significant difference between the attitudes of the experimental and control groups regarding pre-attitude and post-attitude scale scores. To assess whether this difference is statistically significant or not, a paired samples t-test was conducted. Before conducting the paired samples t-test, outliers were examined using a box plot, and it was observed that there were no outliers. Subsequently, the normal distribution properties of the difference between pre-test and post-test scores were analyzed using measures of skewness and kurtosis and Quantile-Quantile plots (Q-Q plots). For this purpose, the skewness and kurtosis coefficients of the data were initially examined. The relevant results are tabled in Table 10.

Table 10.

Skewness And Kurtosis Coefficients For Difference Scores

Experimental Group		Control Group	
Skewness Coefficient	Kurtosis Coefficient	Skewness Coefficient	Kurtosis Coefficient

Difference in Attitude Scores	.762	1.144	-.136	-1.638
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Table 10 (continued)

The Skewness values of the dataset are -.136 to .762, and the Kurtosis values are -1.638 and 1.144, respectively. Can (2017) indicated that skewness and kurtosis values within the range of +1.96 to -1.96 are indicative of a normal distribution. The obtained data suggested that the distribution of the data is expected.

A Q-Q Plot was examined to assess the normality of the data. The Q-Q Plot results showed a close alignment between the actual and theoretical distribution values, forming a line close to a 45-degree angle. This indicates that the data shows a normal distribution (Figure 4).

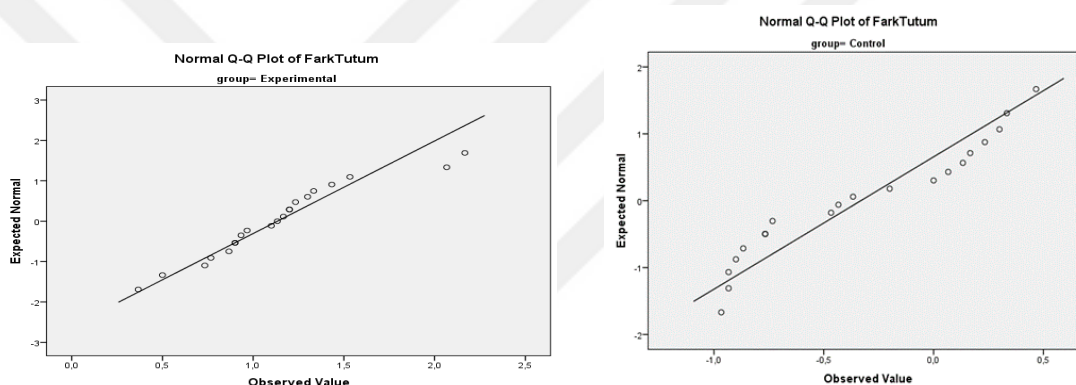


Figure 4. Q-Q Plot Graphs For Difference In Attitude Scores

Since the normality assumptions of the datasets were met, a paired samples t-test was conducted. The results detected are presented in Table 11.

Table 11.

T-Test Results On The Effect Of Smart Board-Supported Treatment On The Vocabulary Achievements Of Experimental And Control Groups.

		Measurement	n	$\bar{x}$	s	sd	t	p	Effect Size (d)
Experimental group	Attitude	Pre-Attitude	21	3.31	.50	20	-11.90	.000*	2.08
		Post-Attitude	21	4.44	.59				
Control Group	Attitude	Pre-Attitude	20	3.68	.30	19	2.934	.009*	0.62
		Post-Attitude	20	3.35	.69				

*p<.05

As seen in Table 11, the research finding revealed a significant difference between the experimental group's pre-test and post-test English attitude scores, $t_{(20)} = -32.168$, $p < .05$. The mean English attitude scores of the students increased from 3.31 before the treatment to 4.44 after the treatment. The effect size value of 2.08 indicates a high level of impact (Taşpınar, 2017). These findings suggested that the experimental study conducted in this group significantly affected the students' English attitudes.

The research findings indicated a significant difference between the pre-test and post-test English attitude scores of the control group $t_{(19)} = -31.77$, $p < .05$. The students' mean pre-test English attitude scores decreased from 3.68 to 3.35 in the post-test. The effect size value of 0.62 indicates a moderately high level of impact (Taşpınar, 2017). These findings suggested that the instructional intervention conducted in this group had a moderately negative effect on the student's English attitudes.

4.6. Findings Regarding the 5th Research Question:

Is there a significant difference between the experimental group and the control group in terms of Language Attitudes after treatment?

The fifth research question of the study aims to determine whether there is a significant difference between the experimental and control groups in terms of attitude towards English after the treatment. A two-way analysis of variance was applied to test the significance of this difference for mixed measures. There are some assumptions for the analysis to produce reliable results. The first assumption is that the scores of the experimental and control groups should follow a normal distribution. Both graphical (Figure 1) and statistical (Table 3) analyses indicated that the data set satisfies the conditions of normal distribution. Another assumption for two-way analysis of variance for mixed measures is that the variances of the groups should be homogeneous. For this, the Levene test was conducted, and the values were found to be .036 for the pretest and .128 for the posttest. Since the pre-test value is less than .05, it is observed that the group variances are not homogeneous for the pretest, but they are homogeneous for the post-test (Can, 2017). Another precondition for conducting the test is that there should be no significant difference in the covariance between the measurement groups for binary combinations of groups. The "Box's Test

of Equality of Covariance Matrices" was applied for this purpose. The obtained p-value was less than .05 ($p=.027$), indicating that this condition was not met.

In such a situation, the difference between the post-test and pre-test score averages of students in the experimental and control groups can be calculated. Progress score distributions can be created, and the difference score means of the experimental and control groups can be compared using an independent samples t-test. To do this, first, difference scores were calculated, and the normal distribution properties of these scores were examined using skewness, kurtosis, and a Q-Q plot. Initially, box plots were used to examine outliers, and no outliers were found. Skewness and kurtosis results for the dataset are presented in Table 12.

Table 12.

Skewness And Kurtosis Coefficients For Difference Scores

	Experimental Group		Control Group	
	Skewness Coefficient	Kurtosis Coefficient	Skewness Coefficient	Kurtosis Coefficient
Difference in Attitude Scores	.762	1.144	-.136	-1.638

The skewness values of the dataset range between -0.136 and 0.762, while the kurtosis values range from -1.638 to 1.144. Can (2017) stated that skewness and kurtosis values falling within the range of +1.96 to -1.96 indicates a normal distribution. The obtained data suggests that the distribution is normal.

A Q-Q Plot was examined to assess the normality of the data. The results of the Q-Q Plot indicate a close alignment between the actual values and the theoretical distribution values, forming a line with an angle close to 45 degrees (Figure 5). This confirms that the data is normally distributed.

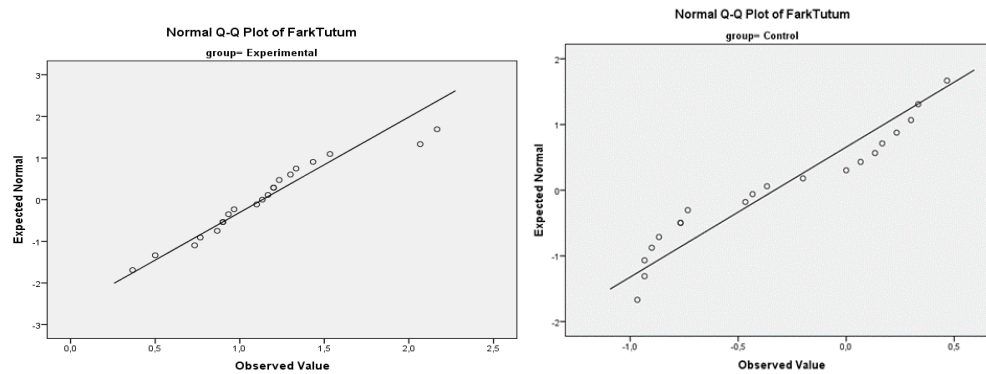


Figure 5. *Q-Q Plot Graphs For The Difference In Attitude Scores.*

Since the normality assumptions for the datasets were met, an independent samples t-test was conducted. The results that were found are presented in Table 13.

Table 13.

Results Of The T-Test For The Difference Scores In Attitudes Between The Experimental And Control Groups.

		N	$\bar{x}$	S	sd	t	p
Attitude	Experimental Group	21	1.13	.436	39	9.949	.000
	Control Group	20	-.33	.505			

Table 13 presents that an independent samples t-test was conducted to determine whether there was a significant difference in attitudes towards the English course between the experimental and the control groups. According to the results of the t-test, a significant difference was observed between the mean attitude scores of the experimental group ($\bar{x}= 1.13$) and the control group ($\bar{x}= -.33$) [$t_{(39)}=9.949$, $p<.05$]. Therefore, a significant difference in favor of the experimental group was found in the English attitudes resulting from the conducted study. The attitudes of the experimental group are statistically significantly higher than those of the control group (Figure 6).

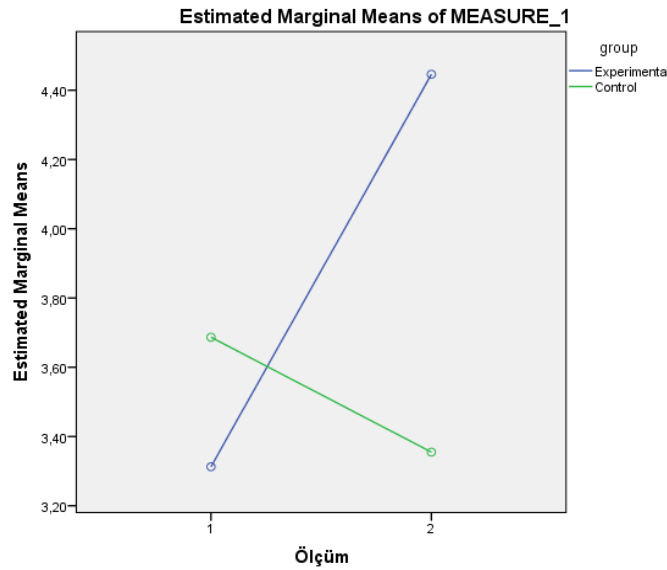


Figure 6. *Changes In Pre-Attitude And Post-Attitude Scores Of The Experimental And Control Groups.*

4.7. Findings regarding the 6th Research Question:

Is there a significant difference between the vocabulary retention level of the experimental group and the control group?

The sixth research question of the study aims to determine whether there is a significant difference in the levels of word retention between the experimental and control groups. Four weeks after the treatment, an achievement test was administered again, and the student's ability to remember words was examined to determine if there was a significant difference between pre-and post-experiment levels. For this purpose, one-way analysis of variance (ANOVA) for repeated measures was employed. One-way ANOVA for repeated measures tests whether there is a significant difference among the means of data obtained consecutively from the same dataset (Can, 2017).

Before proceeding to the analysis, the dataset must meet the conditions of normal distribution for repeated measures analysis of variance (ANOVA) to be applicable. The results obtained through statistical (Table 1) and graphical (Figure 1) methods indicated that the dataset satisfies the conditions of normal distribution. Another assumption for repeated measures is that the data points, in terms of measurement, should be obtained from the same data source in sequence. This

assumption was also met since the repeated measurements were taken from the same group. Another assumption is that when there are more than two measurements, the variances of the differences between any two measurements should be equal. This characteristic is referred to as the "sphericity" assumption. This assumption is verified using "Mauchly's Test of Sphericity" (Can, 2017). The test result being greater than 0.05 is an indicator that the assumption was met. Mauchly's Test of Sphericity result for the experimental group ($p=0.01$) is less than 0.05, confirming that this assumption was satisfied. However, Mauchly's Test of Sphericity ($p=0.44$) was greater than 0.05 for the control group, indicating that this assumption was not met. Therefore, a one-way analysis of variance (ANOVA) for repeated measures was applied to the experimental group. In contrast, for the control group, the non-parametric equivalent of this test, the Friedman test, was applied.

This study aimed to investigate smartboards' potential effects on students' vocabulary retention. A pre-test, post-test, and retention test were conducted four weeks after the experiment to achieve this goal. The average scores obtained from these achievement tests were compared using a one-way analysis of variance for repeated measures. Considering the results of the variance analysis, a significant difference was observed in students' grades on retention of vocabulary [$F_{(1-19)}=955,957$, $p<.01$]. Based on the calculated effect size (partial $\eta^2 = .97$), 97% of the observed difference can be explained. When comparing the averages of the measurement results of the pre-test ($\bar{x}=.24$), post-test ($\bar{x}=.87$), and retention test ($\bar{x}=.83$), the post-test and retention test mean scores were higher than the pre-test mean score. The average score obtained four weeks after the treatment (retention test) showed a slight decrease compared to the post-test scores. In this case, it can be stated that the applied experimental study had a significant and lasting impact on students' vocabulary even four weeks after the treatment ended for the experimental group. The usage of Smartboard in Language class can be considered statistically effective in enhancing students' vocabulary retention.

For the control group, however, the result of Mauchly's Test of Sphericity ($p=0.44$) is greater than 0.05, indicating that this assumption was not met. Therefore, the "Friedman" test was conducted for the control group. When comparing the scores obtained from the vocabulary achievement tests conducted at three different intervals by students in the control group, the results indicated significant differences in the

three points of instruction [$\bar{x}_{(2-20)} = 40.000$, $p < .01$]. In comparisons based on the ranking scale, significant differences were found between pre-test and post-test ($p < .01$), pre-test and retention test ($p < .01$), and post-test and retention test scores. When comparing the averages of the measurement results of the pre-test ($\bar{x} = .23$), post-test ($\bar{x} = .85$), and retention test ($\bar{x} = .70$), the post-test results which were applied after the treatment and retention test mean scores which were applied four weeks later the treatment were higher than the pre-test mean score. However, the average score obtained four weeks after the treatment in the control group decreased compared to the post-test score. In this case, it can be stated that the instructional intervention applied in the control group had a lasting and significant impact on students' vocabulary even four weeks after the experiment ended.

However, when considering the average scores of the experimental and control groups in the vocabulary achievement test conducted four weeks after the experiment, it was observed that the average of the experimental group had dropped less compared to the post-test average of the control group. From this perspective, it can be said that although not statistically significant, using Smartboard in language classes was more effective in helping students remember words. This difference is also evident in the graph depicting the averages obtained from the three vocabulary achievement tests conducted for the experimental and control groups (Figure 7).

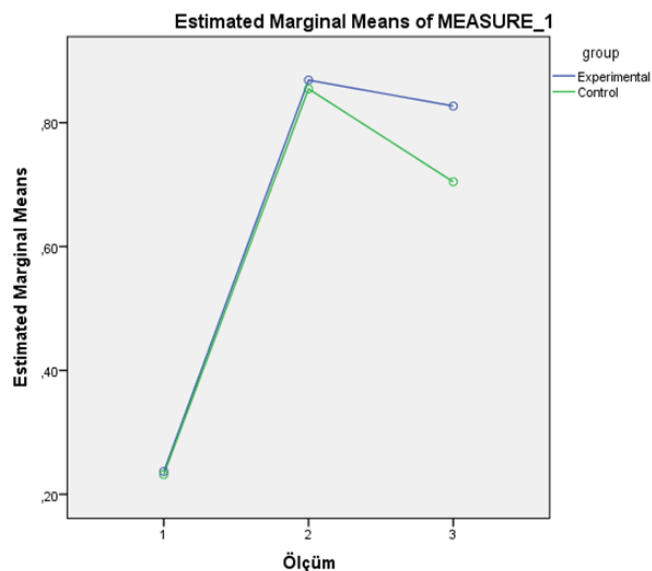


Figure 7. *Changes In The Average Scores Of The Experimental And Control Groups Over Time.*

CHAPTER V

DISCUSSION

5.1. Presentation

In this chapter, the current study's findings are interpreted and evaluated in the context of relevant literature. The quantitative data findings were discussed by providing data from other relevant studies.

5.2. Discussion of Findings for Research Question 1:

Is there a significant difference between the experimental group and the control group in terms of

a) Vocabulary Achievement before the treatment?

b) Language Attitudes before the treatment?

The data regarding the first research question collected from the participants in the preliminary stage of the current study is about whether there is a difference between the groups in terms of language attitude and vocabulary achievement. The results from the pre-stage of the present study were compared with relevant literature.

In this research, to reach the vocabulary achievement difference results, an independent sample t-test was used. No significant difference was found between the control and the experimental groups regarding vocabulary achievement before the

treatment. So, it can be concluded that both groups exhibited comparable levels of pre-existing vocabulary knowledge.

Vocabularies of any language are fundamental items that enable effective communication and understanding in language, and they have great importance while learning a language (Harmer, 1991; Wilkin, 1972). Nation and Meara (2002) claimed that teaching all the items is nearly impossible, and they suggested that the items introduced can be chosen according to the usefulness of the items or the needs of the learners. In the class, during the teaching process, generally explicit teaching, which can be seen as one of the teaching techniques to the learners, is used. Nation and Meara (2002) explained that repetition, fill-in-the-blank activities, or flashcards used to teach a specific word list in the classroom are some example activities used for explicit teaching. There are many ways to introduce new items to language learners that language teachers can utilize during the teaching process; however, in recent times, the advancements in the technology field have affected the teaching ways of the teachers, and technology and technology-supported tools have begun to be used for vocabulary teaching. McCarten (2007) highlighted that materials used in the teaching process are one of the most effective tools to enhance this process. The presentation and practice of the vocabulary should be supported with well-designed materials. Read (2004) supported that flashcards, highlighting the words, vocabulary games, visual aids, vocabulary exercises, and computer-aided materials, all stemming from technological advancements, constitute various resources used in vocabulary teaching. In addition to these materials, Celce-Murcia (2001) highlighted the important effect of computer programs that help learners achieve new vocabulary and pronunciations. Moreover, Shabaneh and Farrah (2019) stated that learners learn better when actively engaging in various activities, including games and internet-based tasks. The student-centered educational teaching method, supported by games, is an effective tool to motivate students and increase enjoyment in the teaching process. Celce-Murcia (2001), Read (2004), Celce-Murcia (2001), and McCarten (2007) supported that the usage of technology-supported materials enhances vocabulary learning. Assessing the vocabulary knowledge before the treatment provided information about students' current vocabulary achievement, and the results showed that the groups had similar vocabulary levels according to pre-test results. The fact that there is no significant difference between the control and experimental groups could be because their

previous teaching process was conducted by the same teacher and with similar teaching materials.

In the second stage of the first research question, the difference in language attitudes of the experimental and control groups before the treatment was examined. Karahan (2007) highlighted that attitude is an influential factor affecting language learning. Genç and Aydın (2017) supported that negative attitudes toward a language can potentially demotivate learners, leading them to abandon the language-learning process. Conversely, fostering positive attitudes toward the language can increase learning motivation and ease the learning journey. According to the t-test results, it was seen that the control group's attitude toward the English language was higher than the experimental group. The experimental group has a mean attitude score of $\bar{x}=2.40$, while the control group has a mean of 3.17. So, it can be concluded that the participants in the control group exhibit a slightly higher or more positive attitude than the experimental group. When the research about Turkish EFL learners' attitudes was examined, it was seen that the attitudes of the Turkish EFL learners were positive. The research results conducted by Kızıltan and Atılı (2013), Genç and Aydın (2017), Görgün (2013), Karahan (2007), and Sarıçoban & Üstündağ (2022) confirmed that Turkish EFL learners had a positive attitude toward the English language.

Despite the same teaching environment and classroom atmosphere, the experimental group participants exhibited slightly lower or less positive attitudes than the control group. Çetinkaya (2009) reached similar results: learners in the same study have different attitudes toward language. While some students showed positive attitudes, some showed negative attitudes toward language learning, so multilayered results were found. Similarly, Karahan (2007) confirmed that despite the positive attitude of learners in his research, the mean attitude score of learners was not so high. Unlike the students who have positive attitudes, some were unwilling to develop their language level, and they went against the usage of a foreign language among themselves to avoid devotion to their language. This difference can be because of external factors that can not attributed to the teaching environment, like parental issues or exposure to the language outside of the class. (Brown, 1994). Brown (1994) stated that several reasons contribute to learners' attitudes, like parental and peer perspectives, diversity exposure, and the role of emotions in human interactions. Attitude plays a substantial role in shaping one's self-perception and learning process.

Inal et al. (2005) supported the idea that the parents' education level of the learners has a crucial role in shaping their attitude toward language. Moreover, Brown (1994) highlighted that background exposure to the language via social media or television and their current contact are other key factors for shaping attitudes. In the class, teachers must create an environment where learners can have positive attitudes or replace negative thoughts about the language for an effective teaching process. Gardner (1985), Gardner and Lambert (1972), Bidin et al. (2009), and Inal et al. (2005) supported the idea that achievement in a particular language is strongly tied to the learners' attitudes.

The aim of assessing students' attitudes with a pre-attitude scale before the treatment was to see their current attitude toward the language and whether the treatment affected the learners' attitudes. After the treatment, the change in attitude was discussed in the fourth research question.

5.3. Discussion of Findings for Research Question 2:

Is there a significant difference between the experimental and control groups regarding Vocabulary achievement after treatment?

The study's second research question centered on determining if there was a notable distinction in Vocabulary achievement between the experimental and control groups after the treatment. Two-way ANOVA for mixed measurements was used to reach the results, and the results showed no noteworthy interaction effect between the groups and measurement variables. This implies that the rise in scores within the experimental group was not significantly more pronounced than that observed in the control group. In other words, using smartboards does not considerably affect the vocabulary achievement of Turkish EFL learners.

Contrary to the results of this study, some research about the usage of smartboards claimed that achievement is significantly and positively affected by the usage of technology and smartboards. For example, Tunaboğlu and Demir (2017) and Yorgancı and Terzioğlu (2016) searched the effect of smartboards on mathematic achievement, and the results showed that using smartboards increased learners' achievement levels. Similarly, Öztan (2012), Aktaş (2015), Demir (2019), Saraç

(2020), and Özenç & Özmen (2014) researched the effect of using smartboards on scientific achievement in the Turkey context. It was concluded that the achievement level of the experimental learners was higher than that of the control group, which used traditional methods instead of smartboards. Similarly, Dikmen (2015) researched the effect of interactive whiteboards on academic achievement and its permanence. He concluded that the group exposed to lessons conducted with an Interactive Board demonstrated greater academic achievement than other groups. These results are consistent with other studies in the literature. Tunaboğlu and Demir (2017) detected that using interactive whiteboards in the mathematics teaching process increased learners' achievement. In another study, Akgül (2013) investigated the effects of smartboards on art lesson success, and the results revealed that the success level of learners increased with the help of smartboards. Önder (2015) confirmed that using smartboards also increased learners' achievement levels in biology classes. This was also in line with the findings of Tayfa (2018), who found that using smartboards increased learners' Turkish course achievement in his research. Akdemir (2009) found similar results about the effect of smartboards on achievement and concluded that in geography class, the grades of learners in the experimental group that used smartboards were higher. Lastly, Aktas and Aydin (2016) investigated the effects of smartboards on students' achievement in science and technology classes, and similarly, the results favored the experimental group.

It can be concluded that research found a link between the achievement and the usage of smartboards. Gündüz and Kutluca (2019) confirmed in their meta-analysis study that using smartboards positively influences enhancing students' mathematics and science achievement. Although the effect size on academic achievement may differ according to sample groups, it remained consistent irrespective of publication type, publication year, sample size, and disciplinary areas in their research results. Moreover, Batdi (2017) concluded that thanks to the smartboards, a significant distinction was observed in the academic achievement scores between the experimental group and the control group in favor of the experimental group. Similarly, studies investigating the effect of smart boards on English achievement concluded that smartboards also positively affect English language achievement (Şen, 2013). In another research, Karaca (2007) investigated the possible effects of using computers on students' language achievement. It was seen that although any significant

difference was not detected between the pre-test results of the experimental and control groups after the treatment classroom, which was taught with computer tools, showed higher results than a control group that was introduced with traditional methods in the post-achievement test. Lopez (2010) confirmed these findings in his research and strongly suggested that Interactive Whiteboards (IWBs) played a crucial role in promoting learners' performance, effectively narrowing the achievement gap between English Language Learners and regular students and leading to notable advancements in the academic achievement of ELL students. Moreover, Saraç (2019) stated that smart boards in the educational process can be affirmed as facilitators for efficient learning and act as sources of motivation. Consequently, this positively influences students' achievement and overall attitude toward the subject. Through extensive research, Akar (2020) conducted a meta-analysis of the effect of smartboards on academic achievement and reviewed the literature between 2000 and 2019. The results showed that smartboards had a positive and significant impact on learners' academic achievement, regardless of factors such as sample size, school types, year, and experiment duration.

In addition to studies concluding that there is a strong link between achievement and the use of smartboards, there are also studies that focus on the link between vocabulary achievement and smartboards. According to Read (2004) and Celce-Murcia (2001), using computers and computer programs facilitates vocabulary learning. Istifçi et al. (2018) confirmed that using smartboards improves the teaching process and increases the vocabulary learning level of learners. Students stated that teaching vocabulary is the most influential skill using smartboards among the skills intended to be gained by language learners. Contrary to the results of this research, Hendawi and Nosair (2020), Katwibun (2014), and Al Farra (2014) found that the usage of smartboards positively affected the vocabulary achievement process of learners. In these research it was concluded that experimental groups that used smartboards in their teaching process had higher grades than the control groups that used traditional teaching techniques during the teaching process. Since there was no connection found between vocabulary achievement and smart board in this study, it was observed that none of these studies coincided with the research conducted. This difference could be because of the teaching method provided for the control groups. In this research, the researcher, who was also the teacher of the teaching process, tried

to provide similar activities and materials supplied to the experimental group via smartboards with hand-out worksheet activities to the control group. Secondly, the topic taught could be the other reason for not being different in research results. Wuerzer and Elementary (2008) highlighted that the smartboard could be used when students were curious about practically any topic that could be addressed using the internet. For instance, students could see the appearance of chosen rainforest animals by accessing Wikipedia. There could be some vocabulary that learners are unfamiliar with before, and they need to see it as a visual or watch it to learn better. In this study, the vocabulary lists of the units can be taught without the visual support of the smartboards. That is to say, most of the vocabulary items were concrete objects, and there were no items that learners would not heard before. Thirdly, the activities presented to the experimental group with the help of a smart board were provided with worksheets given to the students in the control group. Since students had the chance to take these worksheets home, they had the opportunity to repeat the words they had learned at home. Lastly, the teaching manner of the teacher could be another reason. The teacher can make the learning atmosphere entertaining or boring. The teacher can ensure the same entertaining learning environment in the control group. All of these things may have effectively closed the possible achievement gap of the control group.

As a similar result to this research results, Akbaş and Pektaş (2011) searched the effect of interactive whiteboards on academic achievement in laboratory classes, and according to the results, the experimental group exhibited lower post-test standard deviation values compared to the control group. So, interactive whiteboard use did not significantly impact students' academic achievement. However, it was seen that it promoted participation, fostered an engaging and enthusiastic classroom atmosphere, and resulted in more enjoyable lessons. Additionally, many students in the experimental group expressed that they preferred interactive simulations and virtual experiments to real experiments because these tools enhanced their ability to visualize and understand the subject matter. Although no academic difference was found quantitatively in achievement test scores in this study, the researcher and the teacher of the teaching process observed that the participation of the students in the experimental group increased thanks to the smart boards, and the learning atmosphere became more fun.

5.4. Discussion of Findings for Research Question 3:

Is there a significant difference between the pre-and post-achievement test results of

a. the experimental group after treatment?

b. the control group after treatment?

The third research question investigated whether the teaching process was effective for the experimental and control groups by comparing the students' pre and post-test results. To assess the statistical significance of this discrimination, a dependent samples t-test was carried out.

The research findings revealed a notable difference in the experimental group's pre-test to post-test vocabulary achievement scores. Before the treatment, the students' mean vocabulary achievement score was 0.24; after that, it rose to 0.86. The effect size, registering at 6.62, mean usage of smartboards in this group caused a considerable and high-level impact. During the teaching sessions in the experimental group, in addition to the enriched version of the MEB book, computer-aided activities, visuals, videos, and digital games related to the units were used with the help of a smart board. So, it can be concluded that using smartboards as a treatment facilitated the vocabulary learning process of students. The results of some research were consistent with the results of this study and revealed that the usage of smartboards directly facilitated the vocabulary achievement process. Firstly, Karaca (2007) investigated the impact of computer technology on the effectiveness of teaching English as a foreign language. The findings revealed that the utilization of computer technology positively affected learners' achievement. This was in line with Wuerzer and Elementary's study result. Wuerzer and Elementary (2008) explored the effects of smartboards on teaching new words to learners. The results showed that the difference between the two groups was statistically significant, indicating a more substantial improvement for those utilizing the smartboard. Moreover, the studies' results conducted by Hendawi and Nosair (2020), Katwibun (2014), and Al Farra (2014) showed consistency with the result of the third research question. In the group that used smartboards in their vocabulary teaching process, the smartboard treatment caused a significant difference in the

vocabulary achievement process. Learners develop their vocabulary knowledge better by using the benefits of these tools.

There may be many reasons why the use of smart boards positively affects the vocabulary teaching process. Lee (2000) stated that computer-aided materials offer learners practical applications. While using these materials, learners have a role that is more than just receiving the information passively in the learning process. Using computer-assisted tools offers a variety of sources of information about the course goals and provides a wide range of activities that learners engage in. It was concluded that these things help learners improve their learning process. Likewise, Karaca (2007) confirmed that using computers in the teaching process could alter the classroom atmosphere, making the learning environment more enjoyable and attractive, thanks to its authenticity, causing a better learning environment for learners. In another study, Saleh et al. (2011) investigated the effect of the Internet on learners learning and retention levels. The research results showed that learners who utilized the Internet as a resource generally achieved higher marks, indicating that widespread use of the Internet facilitated their learning process. Similarly, Jelyani et al. (2014) proposed that incorporating smart boards in language instruction encourages teachers to adopt innovative approaches to the language acquisition process for students. This can result in a more creative learning environment for students, enhancing their learning capacity, increasing engagement in class, and fostering willingness to learn the language. Ozfidan and Burlbaw (2020) and Karaca (2007) concluded in their research that the teaching process has become more effective and motivational for learners compared to the traditional classroom setting, and their language and vocabulary achievement improved more. In other research, Mustafa (2018) and Gérard and Widener (1999) highlighted that smart boards are a source of information and aid material in teaching; besides offering students easy access to a wealth of information, they provide students with various activities to practice what they have learned, making it easier for students to learn the targeted words. Another likely positive effect of smartboards was detected by Karadağ et al. (2017). They claimed that presenting learning content in various formats like visuals, videos, and audio enables students to learn the targeted items better and brings diversity to the classroom setting. Similarly, Tsayang et al. (2020) stated that learners were contented with the opportunity of visual support provided by smartboards. Such a link between the rich learning environment

and the use of smartboards was emphasized by Mun and Abdullah (2016) and Hassankiadeh and Hassankiadeh (2013). They confirmed that using smartboards facilitates learners' learning by providing various sources for exercises and increasing learners' attention, which inevitably results in achievement. Some other studies also emphasized that smart boards increase student participation, bring diversity to the classroom environment, make the learning environment fun, and increase learners' motivation (Bıçak,2019; Istifçi et al.,2018; Tssayang et al.,2020).

Moreover, another reason behind the increase in the achievement level of the experimental group after the treatment could be the increase in the attitudes of experimental learners toward the language. The findings of the fifth research question revealed that the attitudes of experimental group learners showed a significant increment in their attitude toward language. Such a link between achievement and language attitude was highlighted by Bidin et al. (2009) and Inal et al. (2005). They claimed that the learners' success highly depends on their attitudes toward language, and to achieve the things, learners need to have a positive attitude toward them.

In the second stage of the third research question, the pre-and post-tests of the control group were compared. The research findings also revealed a notable difference in the control group's pre-test to post-test vocabulary achievement scores. The initial average of the student's English vocabulary achievement score was 0.23 on the pre-test but increased to 0.85 on the post-test. With an effect size of 7.40, this result indicated a high level of impact and suggested that the instructional intervention implemented in the control group significantly impacted students' vocabulary achievement. In the control group, print-out visuals, fill-in-the-blank, matching, true-false activities, and games not supported by technology or computers were used in addition to the textbook. Although much research has found that groups taught with technology-supported or use of smart boards in their teaching process were more successful than classes using traditional methods. The results of this study contradict the findings of other studies. (Hendawi & Nosair, 2020; Dahlan, 2014; Katwibun, 2014, and Al Farra, 2014). This difference could be attributed to the traditional yet effective educational materials utilized by the teacher throughout the teaching process. According to McCarten (2007), instructional materials play a crucial role in the vocabulary teaching process. Thanks to the materials, well-designed language classes can be planned by highlighting the specific vocabulary set, integrating focused

practice, ensuring regular review, and providing lists of vocabulary to be covered in the lesson. Also, he emphasized using different techniques and materials that learners can use and continue to learn outside of the class.

Repetition also one of the most important strategies for vocabulary learning, is possible with various activities (Altalhab, 2018). Learners must be involved in different vocabulary learning activities, so teachers must provide practice opportunities. Goerss (1999) highlighted that learners must actively learn to acquire and retain new vocabulary effectively. This active involvement enables learners to establish meaningful connections between their experiences and the vocabulary being targeted. Mohd Tahir and Mohtar (2016) investigated the effect of different vocabulary activities on learners' vocabulary achievement. In this research, materials like pictorial vocabulary handouts and exercises like matching, fill-in-the-blank activities, and puzzles were used in teaching vocabulary instead of technology-aided materials. The results showed that the scores of the experimental group that used vocabulary exercises showed greater progress than the control group. According to the results, the preferred types of vocabulary exercises included matching, crossword puzzles, unscrambling letters, and spelling activities.

Hashemzadeh (2012) stated that learners can forget newly learned items after learning takes place and added that if learners spend more time with newly discovered items and are exposed to them several times in activities such as games, reading activities, matching, and fill-in-the-blank activities, and if it is learned in a motivating environment, more achievement and retention could take place. According to study results, fill-in-the-blank activities were highly effective for vocabulary teaching. It was suggested that involving diverse exercises in the teaching process is crucial and advantageous for learning and retaining vocabulary. The effectiveness of the fill-in-the-blank activity result was in line with the results of Folse (2006). Folse (2006) stated that the fill-in-the-blank activities played an important role in teaching new vocabulary to learners.

In addition, using traditional methods prevents the disadvantages that may arise from using technology or smart boards. İstifçi et al. (2018) reported some disadvantages of using technology in teaching. It included possible technical issues that could arise during the teaching process. Furthermore, some students expressed concerns about the time-consuming nature of interactive board lessons, especially

when electrical problems occurred. In another similar study, the importance of teacher competency in integrating interactive smartboards was highlighted in other studies. It was stated that incompetent teachers can worsen the teaching process with the help of technology instead of facilitating it (Mun & Abdullah, 2016; Hassankiadeh & S. Hassankiadeh, 2013). Similarly, Pourciau (2014) investigated the obstacles teachers face when using smartboards in the teaching process, revealing three key themes from interview results: technical issues, inadequate professional development of teachers, and difficulties in identifying suitable content for optimal smartboard utilization. Since the teaching process using traditional methods was not affected by all these possible disadvantages, the post-achievement test results of the control group could be high.

5.5. Discussion of Findings for Research Question 4:

Is there a significant difference between the pre-attitude and post-attitude results of the

a) experimental group after treatment?

b) control group after treatment?

The fourth research question attempted to investigate whether the treatment applied in the experimental and the control groups affected their attitude toward the language. The results were reached by comparing the students' pre and post-attitude scale results. To assess the statistical significance of this differentiation, a paired samples t-test was applied, and according to the results, it was seen that there was a noteworthy difference in the English attitude scores between the pre and post-attitude scale phases for the experimental group. The average English attitude scores for the students rose from 3.31 before the treatment to 4.44 after the treatment. An effect size of 2.08 signified a substantial impact, meaning that the treatment applied in the experimental group significantly influenced the students' English attitudes. In other words, the usage of smartboards positively affected the attitude of learners, which is consistent with the results of some further research. For example, Dahlan (2014), Adel and Abdelrahman (2019), Katwibun (2014), and Al Farra (2014) found that the usage of smart boards positively affected the students' English language attitudes.

In the investigation by Gurbuzturk (2018), the perspectives on integrating smartboards in classrooms were analyzed. The outcomes revealed that, on the whole, students in the elementary stages displayed favorable attitudes toward using smartboards in their classes. This implied a positive approval of smartboard technology among students. Using teaching material in which students have positive attitudes during their teaching process may also develop a positive attitude toward the course. The link between the use of smartboards and the increase in learners' attitudes toward the course was confirmed in some other research. For example, in their study, Yorgancı and Terzioğlu (2016), Özenç and Özmen (2014), and Tayfa (2018) proved that using smartboards increased the attitudes of learners in different course types. As a result, it can be deduced that regardless of the course, using smartboards positively affects learners' attitudes.

The increment in positive attitude may be because using smart boards innovatively changes the classroom atmosphere and creates an enjoyable and active learning environment. The advantageous classroom environment created by smart boards has been found in many studies. Gerard (1999) asserted that incorporating smartboards into the learning environment aroused enthusiasm and cultivated a positive attitude among students. Shyamlee (2012) supported the idea that technology integration has significantly altered the process of English teaching, replacing traditional methods with innovative techniques and making the educational process more engaging and effective (as cited in Jelyani et al., 2014). Similarly, Mathew and Alidmat (2013) highlighted the enjoyable learning environment aroused by using smart boards instead of monotonous traditional teaching settings. Gérard and Widener et al. (1999), Karadağ et al. (2017), and Istifçi et al. (2018) emphasized the fun learning environment created in the classroom thanks to smart boards. As was detected in other studies, Fun and positive classroom atmospheres created by smartboards could be the reason behind the increment in attitudes in the experimental group.

Unlike this, Karaca (2007) investigated the impact of computer technology on teaching English as a foreign language. In the research, it was concluded that the usage of computer technology during the teaching process did not cause any significant difference or rise in the results of learners' attitudes toward the language (Karaca, 2007). Although their attitudes were measured at the same grade level and towards the same language, the reason for this difference may be the computer-assisted activities

used in the experimental group, the teacher's attitude, or the students' different views on the use of technology in class.

In the second stage of the fourth research question, it was found that there was a noteworthy difference in the English attitude scores between the pre and post-attitude scale results for the control group. The average pre-attitude scores for the students decreased from 3.68 to 3.35 in the post-attitude results. The size value effect was found to be 0.62. This finding suggested that the instructional treatment in the control group moderately negatively affected the student's English attitudes.

The traditional teaching method used in the control group caused a decrease in the attitudes of learners. Students growing up in the age of technology may not find traditional methods and activities interesting, and they could see the teaching process as boring. It is inevitable for students to develop negative attitudes towards a course that does not interest them. So, the teaching environment and the methods used in the teaching process could be among the main factors that affect learners' attitudes. When the research results were examined, some of the studies revealed similar results and suggested that using traditional methods caused the development of negative attitudes toward the course. Abidin et al. (2012) researched the attitudes of EFL learners toward language learning. It was concluded in the control group that the reason behind the negative attitudes toward language learning was caused by using traditional techniques in class, and it can be recommended that teaching materials and methods that increase the student's interest should be used for an effective teaching process. Another study proved the link between the reason for negative attitudes and the usage of traditional methods in class. Alzahrani (2016) reported that the reason behind the negative attitudes of the participant students was attributed to being bound to traditional techniques and the lack of creativity activities in class, so the usage of traditional methods was detected as one of the reasons behind the negative attitude. Similarly, Alkaff (2013) reported that certain students associated their favorable attitude toward language learning with the instructional method employed and the engaging learning environment fostered by the teacher. Lastly, Jelyani et al. (2014) conversely addressed the same view. Jelani et al. (2014) confirmed that using innovative methods contributes to the acquisition of language and stated that utilization of interactive boards could create a more innovative learning environment for students and can enhance their

learning capacity, increase their level of participation in the classroom, and encourage a greater willingness to learn the language.

According to this research results, another conclusion to be drawn is the disconnection between achievement and learners' attitudes toward language. Results showed that though lower attitude results in the control group, the vocabulary achievement of control groups' learners was high, so the learners' negative attitudes did not cause success to decline. Some findings confirmed that there is no link between achievement and attitude. For example, Gardner (1985) asserted in his study that attitude variables play a crucial role in motivation. However, attitude is not directly implicated in achievement. Similarly, Genç and Aydın (2017) examined the potential relationship between attitudes and achievement. The results revealed no significant correlation between students' attitudes and the variable of "achievement." Similarly, in another study, Görgün (2013) conducted research to reveal Turkish EFL learners' attitudes. The results showed that there was no significant correlation between the achievement level of learners and their attitudes and intrinsic motivation.

5.6. Discussion of Findings for Research Question 5:

Is there a significant difference between the experimental and control groups regarding Language Attitudes after treatment?

The fifth research question aimed to explore whether the treatment administered in both the experimental and the control groups caused differences in the language attitude of learners. Two-way ANOVA was applied to reach the results. A remarkable difference in favor of the experimental group was detected in the English attitudes resulting from the conducted study. The attitudes of the experimental group were statistically higher than those of the control group, so the usage of smartboards positively affected the learners' attitudes. In contrast, using traditional methods negatively affected learners' attitudes.

The results of this study confirmed the findings of other studies like Dahlan (2014), Adel and Abdelrahman (2019), Katwibun (2014), Gerard, Green & Widener (1999), and Al Farra (2014). All of these researchers concluded that as a result of the post-attitude scale, it was confirmed that the attitudes of experimental group learners

who used smartboards in their learning process were higher than those of the control group learners who used traditional methods. Similarly, Akar and Çelik (2020) conducted a meta-analysis study about the effect of interactive whiteboards on learners' attitudes; the results concluded that the utilization of smart boards had a moderate and noteworthy influence on student's attitudes toward the course. Considering the results, it can be asserted that incorporating smart boards in lessons has a more pronounced impact on student's attitudes toward the subject than traditional methods and tools. Similar results were found in other fields except for the language teaching process. Tayfa (2018) searched the effects of smartboards on students' Turkish class attitudes. The results showed that using an interactive board enhanced student attitudes toward the Turkish lesson compared to the control group. In another study, Özenç and Özmen (2014) proved that using smartboards caused higher attitude scale points in the experimental group and increased learners' attitudes toward science classes. Likewise, Yorgancı and Terzioğlu (2016) concluded that though learners had similar attitudes before the treatment, smartboards caused a significant difference between the two groups in favor of the experimental group after the treatment.

All the findings prove that learners' attitudes have been positively affected by the usage of smartboards. It can also be concluded that the learners have a positive attitude toward integrating smartboards or technology into the learning process. This inference is in line with the findings of Gurbuzturk (2018). Gurbuzturk (2018) concluded that learners have a positive attitude toward using smartboards during teaching. In the same line, Istifçi et al. (2018) stated in their research that learners showed satisfaction with the usage of interactive boards in their classes, demonstrating a positive attitude towards this technology, and they showed a preference for the adoption of this technology in the classes.

The possible reasons behind the development of positive attitudes due to the usage of smartboards could be the learning environment generated by the usage of smartboards in a teaching environment. It was confirmed in other studies that the learning environment is enriched, and the teaching process is facilitated by the opportunities provided by the smart board. Alkaff (2013) detected that certain students associated their favorable attitude toward language learning with the instructional method employed and the engaging learning environment fostered by the teacher. Likewise, M. Hassankiadeh and S. Hassankiadeh (2013) confirmed that incorporating

materials like films, games, music, or other media into teaching can benefit the classroom. Class management could be easier, the teacher could highlight the important parts easily, and time management could be easier thanks to easy access to pictures by just touching the screen. Gérard and Widener (1999) stated that thanks to the visibility opportunities it provides, they can help teachers create a stress-free environment for the language learning process, especially for speaking activities. Widener et al. (1999), Karadağ et al. (2017), Istifçi et al. (2018), and Mun & Abdullah (2016) confirmed the positive atmosphere created by smartboards, and it was detected that the usage of smartboards brings the learning environment fun with the diversity it provides. Kirbaş (2018) claimed that instead of learning in the traditional learning environment, a learning environment enriched with smartboards could make the learners more active and create an enjoyable learning atmosphere. Mathew and Alidmat (2013) stated that the materials used, such as videos and pictures, broke the monotony and provided a more fun and motivating learning environment in the classroom rather than the traditional boring learning environment.

All of these findings prove that the usage of smartboards has a positive impact on the classroom atmosphere. Inevitably, this positive learning atmosphere also positively impacts student attitudes toward language learning.

Despite its being detected in many research studies, different results also existed. Differently, Önder (2015) investigated the effect of smartboards on a biology class student attitude. The results showed that using smartboards did not cause any significant difference between the experimental and control groups. However, the findings revealed no significant difference in attitude between the control and experimental groups when using smartboards. Nevertheless, it was observed that interactive whiteboards improved the attitudes of the experimental group students, particularly in comparison to their attitudes before the treatment application. The reason for the difference could be the course itself or the teaching method and material required by the course or subject.

5.7. Discussion of Findings for Research Question 6:

Is there a significant difference between the vocabulary retention level of the experimental group and the control group?

The sixth research question aimed to explore whether the treatment administered in both the experimental and the control groups impacted learners' vocabulary retention levels. The retention test applied four weeks after the treatment was compared with the pre and post-test results of the groups, and a one-way ANOVA was used to compare the results. Firstly, when comparing the means of the measurement results of the pre-test ($\bar{x}=0.24$), post-test ($\bar{x}=0.87$), and retention test ($\bar{x}=0.83$) of the experimental group, it was seen that the post-test and retention test mean scores were higher than the pre-test mean score. The mean scores obtained in the retention test demonstrated only a minor decrease compared to the post-test scores. Consequently, it can be asserted that the implemented experimental study exerted a significant and lasting influence on students' vocabulary, even four weeks after the conclusion of the treatment for the experimental group. From this result, it can be said that utilizing smartboard technology in the language class effectively enhances students' vocabulary retention.

Secondly, when comparing the means of the measurement results of the pre-test ($\bar{x}=0.23$), post-test ($\bar{x}=0.85$), and retention test ($\bar{x}=0.70$) of the control group, the post-test results which were applied after the treatment and retention test mean scores which were used four weeks later the treatment was higher than the pre-test mean score. Nevertheless, the average score in the control group, applied four weeks after the treatment, exhibited a decline compared to the post-test score, even though it was slight. In this case, it can be asserted that the treatment, in other words, using traditional methods in the teaching process conducted in the control group, has yielded effective results in terms of students' retention levels when compared to pre-test results. However, when the mean scores of the experimental and control groups were compared, it was detected that the experimental group's mean score showed a smaller decrease compared to the post-test mean scores of the control group. Hence, it can be stated that, while not statistically significant, using smartboards in language classes proved more effective in enhancing students' vocabulary retention. Such a link

between the usage of smartboards and the retention of knowledge was confirmed by other studies as Akar (2020) conducted a meta-analysis study about the effect of smartboards and qualitative results that learners highlight assured that smartboards provide permanent learning that is enhanced by visuals and auditory materials and concretize the subjects. In this way, learners' retention level is affected positively. Similarly, Akar and Çelik (2020) conducted another meta-analysis study about the effect of interactive whiteboards on permanent learning, and according to the first findings obtained from the research, the use of smart boards in lessons significantly affected the permanence of what was learned. The study's results suggested that education conducted using smart boards was characterized by greater permanence and resilience against forgetting compared to learning conducted through traditional methods, so it positively affected the retention level.

Also, other studies showed similar results about how the use of smart boards and technology-supported materials affected the retention level of learners. For example, Alsarayreh (2021) aimed to help the students retain teaching outcomes for more than a week and used technology-aided materials to ensure better retention. At the end of the research, it was found that learners who received instruction incorporating 21st-century technologies showed a greater tendency to retain knowledge over an extended period, and an innovative and motivating learning atmosphere that was ensured with the help of technology was one of the factors that increased retention. Similarly, Egbodo et al. (2021) investigated a technology-supported program which is called the e-learning effect on the retention level of learners, and the experimental group that was taught with the help of technology demonstrated their retention of knowledge higher than the control group by getting higher grades in the retention test. They also detected that improved retention levels in experimental group students exposed to 21st-century technologies were likely due to their active interaction with audio and visual materials. Also, the technology-enhanced classroom differs from the traditional setting, where facts and theoretical information are often presented in a single lesson without concrete multimedia activities.

The link between the smartboards and their effect on the retention level of learners was investigated in different fields. Saraç (2020), Demir (2019), and Aktaş (2015) investigated the effects of smartboards on science achievement and retention of knowledge. They found that the test results that were applied to assess the students'

retention of knowledge they learned in science class showed that students who learned the topic with smart boards had better results in retaining information. Likewise, Aktas and Aydin (2016) investigated the effects of smartboards on students' science and technology class retention levels, and the permanence test results showed that the experimental group had higher grades. Hence, the usage of smartboards increased the recall level of learners. So studies claimed that the usage of smartboards positively affected the students' retention of knowledge level. Similar results were addressed by Dikmen (2015). Dikmen (2015) researched the effect of interactive whiteboards on academic knowledge permanence. He concluded that the group exposed to lessons conducted with an Interactive Board demonstrated higher grades on a retention test administered to assess the durability of learning, revealing that permanent learning occurred with the interactive whiteboard.

The results of previously mentioned studies are consistent with other studies about vocabulary retention. The studies of Aslanabadi and Rasouli (2013), Taheri (2014), Patra et al. (2022), and Aghlara and Tamjid (2011) reached similar results about the usage of digital games. They found that digital games used in teaching vocabulary processes have a positive impact. They asserted that the experimental group, exposed to the digital game, exhibited higher success in vocabulary retention tests. It was found that the control group that used traditional methods instead of digital games showed a decline in their vocabulary knowledge in the retention test. Another investigation into the impact of technology on vocabulary retention revealed that a teaching program enriched with gamified applications led to differences between the test results of the experimental group and the control group. The post-test results of the experimental group indicated an increase in scores, indicating that the incorporation of gamified applications positively influenced students' vocabulary retention (Özyaşar, 2020). Moreover, it was claimed that involving children in such games not only made the learning process more enjoyable but also significantly decreased the stress level of learners, and when learners learn in a more enjoyable learning environment, their motivation and retention increased (Aslanabadi & Rasouli, 2013; Taheri, 2014; Patra et al., 2022; Aghlara & Tamjid, 2011).

In addition to the effect of digital games on the retention of vocabulary knowledge, some studies directly focused on the effect of smart board use on vocabulary retention and reached similar results. Firstly, Al Farra (2014) researched

the effect of Smartboards on vocabulary retention of language learners in Gaza, and results indicated that the experimental group that used smartboards in their teaching process had higher grades and their retention level was better than the control group. The high retention level was attributed to the varied techniques employed by the teacher, like using pictures, video clips, and sound files to introduce new vocabulary on the Interactive Whiteboard (IWB). Secondly, on the same line, Gray et al. (2005) found that using smart boards aided learners in enhancing their memorization skills and increased the overall retention level of learners. Lastly, the research by Shams et al. (2016) revealed that smartboards contribute to increased retention of information and enhance the overall learning experience in English as a Foreign Language (EFL) classrooms. The higher retention level was attributed to smart boards increasing learners' motivation and ensuring an active participation atmosphere for students.

In this research, in the experimental group, some videos about the units were used to introduce the unit's vocabulary. Learning words in a visually and auditory-supported version can effectively improve students' retention levels. One research confirmed that video-supported teaching could be superior to other materials in the teaching process. Hosseini (2020) investigated the effect of audio, visual, and video-supported teaching processes with the help of interactive whiteboards and concluded that using video explanations is the most effective teaching material for facilitating retention. Additionally, the slightly better retention level of experimental group learners with the help of smart boards may be because of seeing words in different formats like audio, visual, and video and the other exercise opportunities provided by smartboards. Mun and Abdullah (2016) conducted research that affirmed that learners can easily retain what they have learned when they learn in a rich environment supported with visuals and videos and are active in the learning process. Also, as was detected in previous research, using smartboards can make the learning environment entertaining and motivating. Learners have a chance to participate actively in the learning process. All of these things can facilitate the retention level of learners.

The result of this study contradicts the findings of Saleh et al. (2011), who investigated the effect of the use of the Internet on retention levels and detected a low to moderate relationship between the Internet and its effect on retention of knowledge. Similarly, a link between the retention level and usage of interactive whiteboards was not detected in Norouzi and Mohammadi's (2014) study. Norouzi and Mohammadi

(2014) found no significant differences between the experimental and control groups' scores of the experimental group and the control groups, so the treatment applied in the experimental group did not affect learners' retention levels. The reason it did not cause any difference could be the perspectives of learners toward the use of smartboards and the use of traditional teaching materials. Some students could feel more comfortable and learn better with the traditional materials. Secondly, the educational materials provided in the control group may have been effective, made the educational process entertaining, and created an atmosphere in which learners actively participated.

A slight decrease in the retention level is also notable for the control group. This could be because of the activity types ensured for the control group. Koşar and Bedir (2018) confirmed that increased exposure to newly learned items through activities like games, reading exercises, matching tasks, and fill-in-the-blank activities, coupled with a motivating learning environment, can enhance the retention level of learners. Additionally, Schmitt (2008) highlighted that testing is an important factor affecting retention. In this study, the students were exposed to tests several times, such as pre-post and retention tests. Testing and activity types could be the main reasons for the high retention level for the control group.

CHAPTER VI

CONCLUSION

6.1. Presentation

This study aimed to examine The Effect of the Use of ICT through Smart Boards on Language Attitude, Vocabulary Achievement, & Retention of Turkish EFL Learners. In this chapter, the summary of the current study is presented. Moreover, the study's conclusion, suggestions for future research, and some implications experienced during the study are provided.

6.2. Summary of the Study

This study aimed to investigate the effect of using Information Communication Technology via Smartboards on vocabulary achievement and retention of Turkish EFL learners. Moreover, it aimed to unearth the impact of the use of smartboards on the language attitude of learners. The study was carried out with 41 secondary school students in a state school in Türkiye. To reach the results, a quasi experimental research design was applied. There were only two groups for 7th grade in the school so one of them was chosen as an experimental group, and the other was selected as a control group. The requisite permissions were secured from the affiliated institution. Before the treatment, both the students and their parents were apprised of the process, and both students and parents duly completed permission documents. In the experimental group, the learning process was conducted with smartboards, while traditional teaching techniques were used in the control group. In the experimental group, the z-

version of the MEB book, interactive worksheets, online games, and visual, video-supported vocabulary introduction activities were applied. The control group used a traditional MEB book, printed worksheets, visuals, and non-technology-supported games. The researcher prepared, tested, and applied a vocabulary achievement test to collect the data. a language attitude scale was used to measure their attitude. The vocabulary achievement test included some vocabulary questions and useful phrases that need to be covered by students in units, and it has 33 multiple-choice questions. It was applied to 100 students from 2 different public schools to determine its reliability. With the result of Cronbach's Alpha (around 0.69.) and an expert opinion, the reliability of the achievement test was confirmed. It was applied three times: as a pre-test before the treatment, a post-test after completing units, and a retention test applied to students four weeks later in the teaching process. Secondly, the attitude scale developed by Aydoslu (2015) was used to reach the language attitude data. The attitude scale had 30 items. Fifteen of these items were positive sentences, and 15 were negative sentences. It was structured on a five-point Likert-type scale, and learners chose numbers from 1 to 5 according to their opinions about the statement. It was applied twice as pre-and-post. A quantitative method research design was selected to obtain data because, in this study, the vocabulary achievement test scores of the students, the retention test results which were used to evaluate the vocabulary retention level of students, and the scale for attitude scale that the students completed before and after the experiment was assessed with number-based values. The 20.0 version of SPSS was used to evaluate the data. With the help of this program, an independent samples t-test was applied before the treatment to determine learners' vocabulary achievement and language attitude. Secondly, to determine the difference between the experimental and the control groups regarding vocabulary achievement and language attitude, a Two-way analysis of variance (ANOVA) was used. Also, a dependent t-test was applied to assess the differences between pre- and post-applications regarding vocabulary achievement and language attitude. Lastly, to search for the difference between the experimental and control groups' vocabulary retention levels, One-way analysis of variance (ANOVA) for repeated measures was used.

The present study's findings suggest no significant difference in Vocabulary achievements between the experimental and control groups before the treatment. In contrast, a statistically significant difference in language attitude was obtained

between the groups. According to the results, the experimental group's attitude towards language is relatively significantly lower than the control group. Secondly, after the treatment, it was observed that as there was no significant difference between the two groups in terms of vocabulary achievement before the treatment, no significant difference was found after the treatment. So, using smartboards or traditional techniques did not cause any difference between the groups regarding vocabulary achievement. Moreover, when comparing the pre and post-vocabulary achievements of the groups, it was detected that the treatments applied in both groups were effective because both the experimental and the control groups demonstrated significant increases in vocabulary achievement. However, when it was analyzed the attitude scale results before and after the treatment while higher attitude results before the treatment, it was concluded that the treatment applied in the control group affected the learners' attitudes negatively. At the same time, the process caused different results for the experimental group. The experimental group that used smartboards in their learning process significantly increased their English attitudes. Apart from that, when the differences between the groups regarding language attitudes after the treatment were compared, a significant difference in favor of the experimental group was found in the English attitudes resulting from the study. The attitudes of the experimental group were statistically significantly higher than those of the control group. Lastly, according to the results of the sixth research question, the treatment applied in the experimental group had a notable and enduring influence on students' vocabulary, persisting even four weeks after the conclusion of the treatment. Using Smartboard in Language class can be statistically effective in enhancing students' vocabulary retention. On the other hand, for the control group, the instructional treatment applied in the control group had a lasting and significant impact on students' vocabulary retention levels; however, when the retention levels of the experimental and the control groups were compared, it was found that the average of the experimental group exhibited a smaller decline in comparison to the post-test average of the control group. That's to say, it can be asserted that, while not reaching statistical significance, the use of Smartboard in language classes proved to be more effective in helping students retain the vocabulary.

6.3. Conclusion

Technology development has led to innovations in the education field, and in this respect, some projects have been held. Smartboards can be seen as one of the most important examples of technology in the education field. The significance of incorporating smartboards into classroom instruction has increased due to the implementation of the FATİH project, which has made smart boards accessible as valuable teaching tools within educational settings (Kırbaş, 2019). In this regard, various research studies have been conducted regarding the effect of smartboards on the educational process. The current study aimed to research The Effect of the Use of ICT through Smart Boards on the Vocabulary Achievement and Retention and Language Attitude of Turkish EFL Learners. To reach the results vocabulary achievement tests and language attitude scales were applied to the groups. Firstly, According to the results, it was detected that before the treatment the groups had similar vocabulary levels in pre-test results. It was also detected that after the treatment the difference between the groups about the vocabulary achievement level of the learners did not show any difference. Hence it can be concluded that using smartboards in the experimental group did not cause any significant difference in vocabulary achievement between the control groups that used traditional techniques in their classes. The reason there is no difference between the groups in post-test results could be the functions of smartboards in the teaching process. In this research, the smarboard was used to use an e-version of the book and provide online exercises and games to students in the experimental group. In the control group, similar activities applied to the experimental group via the smartboard were tried to be implemented with traditional methods. In other words, although the control group did not use technology, it tried to minimize its disadvantage by ensuring similar activities. Moreover, the targeted vocabulary covered in the teaching process could be another reason for similar post-test results. Sometimes, learners need to see the visuals or video versions of things they have never experienced. The advantage of smart boards is that they can visualize and concretize, which could be more effective when the targeted vocabulary list includes more abstract or difficult vocabulary. The units covered during the teaching process generally had concrete and familiar items that students did not necessarily need to see to understand better. Lastly, the teaching materials used in the control group

could cause an effective teaching environment and may have compensated for the lack of advantage provided by the smartboards.

Secondly, as was detected in the first research question the pre-test results of the groups had a similar vocabulary achievement level before the treatment. Although no difference was detected between the groups it was concluded that the treatment applied in both groups caused fruitful consequences, and the vocabulary achievement level of learners increased significantly. So both the use of smartboards in the experimental group and the traditional teaching materials used in the control group increased the vocabulary achievement level of learners significantly. By looking at the significant increase in the control groups' vocabulary achievement it can be concluded that when it was planned, the traditional methods used in class could produce effective results.

Thirdly, pre-attitude scale results showed that before the treatment there was a difference between the groups in favor of the control group. The attitudes of the experimental group were lower when it was compared to the control group before the treatment. However, it was concluded that despite having lower attitude results before the treatment, the experimental group increased their attitude significantly after the treatment. In contrast, a significant decrease in the attitude of the control group was shown. The use of smartboards increased the language attitudes of learners in the experimental group while using traditional materials during the teaching session affected the language attitudes of the control group negatively. The increase in attitude could be bound to the learning environment created by smartboards. Although it does not make a difference in vocabulary achievement level in this research, it is a fact that smart boards affect the education process and learning environment. The learning environment becomes fun and creative thanks to the teaching materials it provides such as games, videos, and visuals. On the other hand, despite its effectiveness in achievement, traditional hard-copy exercises and following a book could make the learning process boring and monotonous. For that reason, the attitudes of the control group were affected negatively.

Lastly, retention test results showed that there is only a slight difference between the control and experimental groups. The fact that there is a slight difference in terms of vocabulary retention level may be due to the fact that the vocabularies were supported with videos and visuals in the experimental group. In this research, the

reason why this difference is not significant may depend on the type of targeted vocabulary and the time interval in which the retention test was given.

In conclusion, this study revealed that the use of smartboards has a significant effect on the language attitude of learners and an impact on the retention level of learners, even if it is not statistically significant. However, it was detected that smartboards did not significantly affect learners' vocabulary achievement levels. In this regard, it is reasonable to suggest that teachers integrate smartboards into their teaching processes to have a better learning environment, a higher attitude toward the language, and a better retention level.

6.4. Suggestions for Further Studies

According to the data gathered from the research on the effect of using smartboards on students' language attitude and vocabulary achievement and retention of learners, some suggestions are presented for future research.

First of all, considering the study's limitations, it was conducted with students in one of the secondary schools in a state school. Further research can be conducted with more participants and in different contexts. This way, a study with more language learners and other grade levels would expand the acquired data. Moreover, with more time, a similar study can be conducted. In this research, the earthquake in the region affected the population and the time the study was conducted. Further research can be conducted to investigate how sustained implementation impacts student learning outcomes over extended periods. Another suggestion could be adding a student observation form by a teacher or student interviews to the research. In this way, clearer results can be obtained about students' attitudes in the teaching process. In addition, this study focused on the effects on vocabulary achievement and retention; other language skills can be investigated in the following studies. Moreover, a further study can be conducted for specific software used through smart boards and ICT. Lastly, further research can be carried out to examine how effectively smartboards can be used in language classes.

Lastly, in this study, no difference was found between the control and experimental groups regarding vocabulary achievement depending on the use of smartboards. This result showed a difference from the other studies conducted about

the effect of smartboards on vocabulary achievement. Considering this, further studies can be conducted on the effective use of smart boards to reach more in-depth results because smartboards are ready-made educational materials in classroom settings to ensure a fruitful teaching and learning process.

6.5. Implications

With the widespread use of technology, smart boards have become one of the important materials used during education. As a result, many studies have been conducted on using smartboards and their effect on different variables. This research provided data on the impact of using smartboards on vocabulary achievement, retention level, and language attitude. The results of this study emerged some implications for language teachers, teacher educators, students, parents, curriculum designers, administrators, and tool developers. According to the research results, however, there was no significant difference in terms of achievement; it was seen that the use of smartboards significantly affected students' language attitudes. It can also be said that it positively impacts the retention levels of students, even if it is not statistically significant. Using only traditional teaching materials during language teaching negatively affected students' attitudes toward language, and this research showed the positive effect of smartboards on language attitude and retention levels. According to the findings, the classroom environment can be organized to change the attitudes of students who have negative thoughts towards the language learning process or who find language learning boring. They can be used as a tool to help students develop positive attitudes towards the language by integrating online games, visuals, videos that help teachers to enrich teaching process. Considering its effect on vocabulary retention, its effectiveness was detected even slightly. Teachers can use these tools in their vocabulary teaching classes. In this way, a better retention level and better teaching environment with higher attitudes can be provided in the teaching process. Teachers who rely solely on traditional teaching materials can also reconsider their teaching approach and adapt by considering the benefits of smartboards. Making teachers and students aware of the effect of smartboards on language attitude and retention allows them to view this material as important to enrich the teaching period. Thus, this study's findings can encourage teachers to use smartboards in teaching and learning. Furthermore, using a technological tool can decrease teachers' workload and

photocopy waste because the teachers can access the online material easily whenever they want. So they can save money, time and effort. On the other hand, language teachers' educators can also make some adjustments in their teacher training program to train language teachers about the use of technology. In this way, pre-service teachers can be more conscious about the integration of technology into the education process. Considering their benefits and readiness in class for effective integration of this material, a training program that can increase teachers' knowledge should be ensured because lack of knowledge can be seen as one of the problems teachers experienced. Furthermore, technical support and necessary knowledge should be supplied. In this regard, school administrators should be responsible for the possible problems with technology, updates, and internet connection, considering their benefits for teachers and students. The implications drawn from this study suggest that tool developers can develop software programs for better teaching processes. Such tools can help teachers create a positive atmosphere in the teaching process and make the targeted language items more recallable. These findings may also guide the English teaching process with a technology-supported curriculum and textbook.

Another implication based on the current study's finding is that parents who realize the effect of technology-supported material on attitude and retention may be encouraged to use such materials outside of the classroom to affect their children's vocabulary development and attitude positively.

CHAPTER VII

REFERENCES

- Abidin, M. J. Z., Pour-Mohammadi, M., & Alzwari, H. (2012). EFL students' attitudes towards learning English language: The case of Libyan secondary school students. *Asian Social Science*, 8(2), 119.
- Adel, M. A., & Abdelrahman, M. A. (2019). The effects of using an electronic interactive whiteboard in developing students' attitude, cognitive motivation and academic achievement. *Journal of Education and Practice*, 10(10), 124-129.
- Aghlara, L., & Tamjid, N. H. (2011). The effect of digital games on Iranian children's vocabulary retention in foreign language acquisition. *Procedia-social and behavioral sciences*, 29, 552-560.
- Ahmad, K., Corbett, G., Rogers, M. and Sussex, R. (1985). *Computers, language and language teaching*. Cambridge: Cambridge University Press
- Akar, H. (2020). The effect of smart board use on academic achievement: A meta-analytical and thematic study. *International Journal of Education in Mathematics, Science and Technology*, 8(3), 261- 273.
- Akar, H. & Çelik, O.T. (2020). Akıllı tahta kullanımının kalıcılığa ve derse yönelik tutuma etkisi. *EKEV Akademi Dergisi*, 81, 171-188.
- Akbaş, O., & Pektaş, H. M. (2011, December). The effects of using an interactive whiteboard on the academic achievement of university students. In *Asia-Pacific Forum on Science Learning and Teaching* (Vol. 12, No. 2, pp. 1-19). The Education University of Hong Kong, Department of Science and Environmental Studies.
- Akdemir, E. (2009). Akıllı tahta uygulamalarının öğrencilerin coğrafya ders başarıları üzerine etkisinin incelenmesi. Yayınlanmamış yüksek lisans tezi, Zonguldak Karaelmas Üniversitesi Sosyal Bilimleri Enstitüsü, Zonguldak.
- Akgül, B. (2013). İlköğretim görsel sanatlar dersinde akıllı tahta kullanımının öğrenci başarısına etkisi. Yayınlanmamış yüksek lisans tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

- Aktaş, S. (2015). Fen ve teknoloji dersinde akıllı tahta kullanımının öğrencilerin akademik başarısına ve bilgilerin kalıcılığına etkisi. Yayınlanmamış yüksek lisans tezi, Kastamonu Üniversitesi Fen Bilimleri Enstitüsü, Kastamonu.
- Aktas, S., & Aydin, A. (2016). The effect of the smart board usage in science and technology lessons. *Eurasian Journal of Educational Research*, 64, 125-138 <http://dx.doi.org/10.14689/ejer.2016.64.7>
- Al Farra, R. (2014). The Effectiveness of Using Smart Boards in Developing Tenth Graders' Vocabulary Achievement, Retention, and Attitudes towards English in Gaza. (Unpublished Master Thesis). The Islamic University of Gaza, Palestine.
- Alkaff, A. A. (2013). Students' Attitudes and Perceptions towards Learning English. *Arab World English Journal*, 4, 106-121.
- Allison E S, 2014. Memory retention in second language acquisition and instruction: Insights from literature and research. *The IAFOR Journal of Language Learning*, 1(1), 1-13.
- Alsarayreh, S. (2021). The impact of technology on knowledge retention: A systematic review. *International Journal of Information Technology and Language Studies*, 5(2), 38-46
- Altalhab, S. (2018). Short-and long-term effects of repetition strategies on vocabulary retention. *Advances in Language and Literary Studies*, 9(2), 146-149.
- Alzahrani, N. A. (2016). *Saudi students' experiences of learning English in English as a foreign and second language setting* (Doctoral dissertation, Faculty of Education, Mount Saint Vincent University).
- American Heritage® Dictionary of the English Language, Fifth Edition*. (2011). Retrieved May 19, 2022 from <https://www.thefreedictionary.com/retention>
- Andoh, C. B., & Totimeh, F. (2012). Teachers' innovative use of computer technologies in classroom: A case of selected Ghanaian schools. *International Journal of Education and Development using Information and Communication Technology*, 8, 22-34.
- Aslanabadi, H., & Rasouli, G. (2013). The effect of games on improvement of Iranian EFL vocabulary knowledge in kindergartens. *International Review of Social Sciences and Humanities*, 6(1), 186-195.
- Atasoy, B., Özdemir, S. and Somyürek, S. (2009). Board's IQ: What Makes a Board Smart? *Computers and Education*, 53(2), 368-374.
- Ates, A., Altunay, U., & Altun, E. (2006). The Effects of Computer Assisted English Instruction on High School Preparatory Students' Attitudes towards Computers and English. *Online Submission*, 2(2), 97-112.
- Aydoslu, U. (2005). Öğretmen adaylarının yabancı dil olarak İngilizce dersine ilişkin tutumlarının incelenmesi (B.E.F. Örneği).Yayınlanmamış yüksek lisans tezi, Süleyman Demirel Üniversitesi, Isparta.
- Baker, C. (2001). Foundations of bilingual education and bilingualism (3rd ed.). Clevedon, England: Multilingual Matters.
- Bakshi, S. (2015). Flipped classrooms. *Teacher (India)*, 9(3), 12-13.

- Banados, E.A. (2006) Blended-Learning Pedagogical Model for Teaching and Learning Successfully through an Online Interactive Multimedia Environment. *CALICO Journal*, 23, 533-550. <https://doi.org/10.1558/cj.v23i3.533-550>
- Bangert, A. and Alshahri, M.F. (2018) 'A comparison of Saudi and United States faculty use of information and communication technology tools', *Teacher Training and Professional Development: Concepts, Methodologies, Tools, and Applications*. Doi: 10.4018/978-1-52255631-2.ch076.
- Batdi, V. (2017). Smart board and academic achievement in terms of the process of integrating technology into instruction: A study on the McA. *Croatian Journal of Education: Hrvatski časopis za odgoj i obrazovanje*, 19(3), 763-801.
- Beatty, K. (2010). Teaching & Researching: Computer-Assisted Language Learning (2nd ed.). Routledge. <https://doi.org/10.4324/9781315833774>
- Bıçak, F. (2019). Investigation of the views of teachers toward the use of smart boards in the teaching and learning process. *Journal of Pedagogical Research*, 3(1), 15-23.
- Bidin, S., Jusoff, K., Aziz, N. A., Salleh, M. M., & Tajudin, T. (2009). Motivation and attitude in learning English among UiTM students in the northern region of Malaysia. *English Language Teaching*, 2(2), 16-20.
- Brame, C. (2013). Flipping the classroom. Vanderbilt University Center for Teaching. Retrieved December 2, 2023, from <http://cft.vanderbilt.edu/guides-sub-pages/flipping-the-classroom/>.
- Brown H. D. (1994). *Principles of language learning and teaching* (3rd ed.). Prentice Hall Regents.
- Cakmak, F. (2019). Mobile learning and mobile assisted language learning in focus. *Language and Technology*, 1(1), 30-48.
- Can, A. (2017). *SPSS ile bilimsel araştırma sürecinde nicel veri analizi*. Pegem Akademi Yayıncılık.
- Carter, R., & McCarthy, M. (2014). *Vocabulary and language teaching*. Routledge.
- Chapelle, C. A. (2010). The spread of computer-assisted language learning. *Language teaching*, 43(1), 66-74.
- Celce-Murcia, M. (2001). Language teaching approaches: An overview. *Teaching English as a Second or Foreign Language*, 2(1), 3-10.
- Cesur, K., Yilmaz, T. S., Börekci, R., & Can, E. (2022). Suggested syllabus content for computer assisted language learning course in English language teaching programs. *Turkish Journal of Social Research/Turkiye Sosyal Arastirmalar Dergisi*, 26(3).
- Çetinkaya, Y. B. (2009). Language of others: EFL students' perception of and attitude towards English. *Journal of the Cukurova University Institute of Social Sciences*, 18(1).
- Chambers, G. N. (1999). *Motivating language learners*. Clevedon: Multilingual Matters.

- Chapelle, C. & Jamieson, J. (1989). Research trends in computer assisted language learning. In M. C. Pennington (Ed.), *Teaching languages with computers: The state of art* (pp. 45-59). Houston: Athelstan.
- Chun, D. (2011). Computer-assisted language learning. In E. Hinkel (Ed.), *The handbook of research in second language teaching and learning* (pp. 663-680). Routledge: New York.
- Clifford, J., Merschel, L., & Munné, J. (2013). Surveying the landscape: What is the role of machine translation in language learning?. @ tic. revista d'innovació educativa, (10), 108-121.
- Cohen, A. D. (1986). Forgetting foreign language vocabulary. *Language attrition in progress*, 143-158.
- Crystal, D. (2003). *English as a global language*. Cambridge university press.
- Demir, M. (2019). *Fen bilimleri dersinde akıllı tahta kullanımının köy okullarında öğrencilerin akademik başarılarına, öğrendikleri bilgilerin kalıcılığına ve derse yönelik tutumlarına etkisi* [Unpublished master's thesis, Niğde Ömer Halis Demir Üniversitesi Eğitim Bilimleri Enstitüsü]. Niğde.
- Demirekin, M. (2014). *Integration of ICT into ELT in Terms of Receptive and Productive Skills* (Master's thesis, Eğitim Bilimleri Enstitüsü).
- Dikmen, S. (2015). Akıllı tahtaların ders başarısına etkisi. Yayınlanmamış yüksek lisans tezi, Fırat Üniversitesi Fen Bilimleri Enstitüsü, Elazığ.
- Dörnyei, Z. (1998). Motivation in second and foreign language learning. *Language teaching*, 31(3), 117-135.
- Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative and mixed Methodologies*. Oxford University Press.
- Dunn, A., & Inglis, A. (2010). Smart Inclusion for the 21st Century Classroom. *Closing the Gap Solutions*, 29(5), 6-11.
- Egbodo, B. A., Odoh, C., & Achor, E. E. (2021). Use of e-learning strategies and students' retention of knowledge in basic science and technology. *British Journal of Education*, 9(12), 48-62.
- Rubinstein-Avila, E., & Lee, E. H. (2014). Secondary teachers and English language learners (ELLs): Attitudes, preparation and implications. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 87(5), 187-191. <https://doi.org/10.1080/00098655.2014.910162>
- Farra, R.S.A. (2014). *The effectiveness of using smart boards in developing tenth graders' vocabulary achievement, retention, and attitudes towards English in Gaza*. (Master's theses Theses and Dissertations Master). Islamic University, Palestine (Gaza Strip)
- Flanagan, L., & Jacobsen, M. (2003). Technology leadership for the twenty-first century principal. *Journal of Educational Administration*, 41(2). <https://doi.org/10.1108/09578230310464648>
- Folse, K. S. (2006). The effect of type of written exercise on L2 vocabulary retention. *TESOL quarterly*, 40(2), 273-293.

- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York: McGraw-Hill.
- Frankova, E. (2011). The use of interactive whiteboards in primary English language classrooms. *Practice and Theory in Systems of Education*, 6(3), 221-228.
- Frise, M. (2018). Forgetting. In *New directions in the philosophy of memory* (pp. 223-240). Routledge.
- Garcia, I., & Pena, M. I. (2011). Machine translation-assisted language learning: writing for beginners. *Computer Assisted Language Learning*, 24(5), 471-487.
- Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. London: Edward Arnold.
- Genc, Z. S., & Aydin, F. (2017). An Analysis of Learners' Motivation and Attitudes toward Learning English Language at Tertiary Level in Turkish EFL Context. *English Language Teaching*, 10(4), 35-44.
- Gérard, F., & Widener, J. (1999). A SMARTer way to teach foreign language: The SMART board interactive whiteboard as a language learning tool. Retrieved August, 23, 2010.
- Gerard, F., Greene, M. and Widener, J. (1999). Using Smart Board in foreign language classes. *Society for Information Technology and Teacher Education International Conference*, 150, 2-7.
- Getie, A. S. (2020). Factors affecting the attitudes of students towards learning English as a foreign language. *Cogent Education*, 7(1), 1738184.
- Gilbertson, N. (2007, November 5). What Is Successful Technology Integration? *Edutopia*. Retrieved from <http://www.edutopia.org/technology-integration-guide-description>.
- Goerss, B. L., Beck, I. L., & McKeown, M. G. (1999). Increasing remedial students' ability to derive word meaning from context. *Reading Psychology*, 20(2), 151-175.
- Görgün, F. (2013). An analysis of factors that influence Turkish EFL learners' attitudes toward English language. [Unpublished master's thesis, Uludağ Üniversitesi Eğitim Bilimleri Enstitüsü].
- Gray, C., Hagger-Vaughan, L., Pilkington, R., & Tomkins, S. A. (2005). The pros and cons of interactive whiteboards in relation to the key stage 3 strategy and framework. *Language Learning Journal*, 32(1), 38-44.
- Günaydin, S., & Karamete, A. (2016). Material development to raise awareness of using smart boards: An example design and development research. *European Journal of Contemporary Education*, 15(1), 114-122.
- Gündüz, S. & Kutluca, T. (2019). Matematik ve fen bilimleri öğretiminde akıllı tahta kullanımının öğrencilerin akademik başarılarına etkisi üzerine bir meta-analiz çalışması. *Journal of Computer and Education Research*, 7 (13), 183-204.
- Gurbuzturk, O. (2018). Investigation of Elementary Education Students' Attitudes towards the Use of Smartboards. *International Electronic Journal of Elementary Education*, 11(1), 55-61. <https://doi.org/10.26822/iejee.2018143961>

- Gursoy, F., & Celikoz, N. (2017). The Effects of Smart Board Applications on Students' Attitudes in Pattern-Making Teaching. *The European Journal of Social & Behavioural Sciences*, 19(2), 2405-2422.
- Gursul, F., & Tozmaz, G. B. (2010). Which one is smarter? Teacher or board. *Procedia-Social and Behavioral Sciences*, 2(2), 5731-5737.
- Hani, N. A. B. (2014). Benefits and barriers of computer assisted language learning and teaching in the Arab world: Jordan as a model. *Theory and Practice in Language Studies*, 4(8), 1609.
- Harmer, J., & Khan, S. (1991). The Practice of English Language Teaching with DVD. A TESOL Publication of English Australia Pty Ltd, 24(1), 85.
- Harmer, J. (2001). Book review: The practice of English language teaching. *RELC Journal*, 32(1), 135-136.
- Hashemzadeh, M. (2012). The effect of exercise types on EFL learners' vocabulary retention. *Theory and Practice in Language Studies*, 2(8), 1716-1727. doi:10.4304/tpls.2.8.1716-1727
- Hassankiadeh, M. A. G., & Hassankiadeh, S. M. G. (2013). Smart boards in language classes. *International Journal of Language and Linguistics*, 1(4-1), 48-52.
- Hendawi, M., & Nosair, M. R. (2020). The Efficiency of Using the Interactive Smartboard in Social Studies to Increase Students' Achievement and Tendency Toward the Subject Matter in the State of Qatar. *International Journal of Learning, Teaching and Educational Research*, 19(3), 1-19.
- Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research and Development*, 55, 223-252.
- Hockly, N., & Dudeney, G. (2018). Current and future digital trends in ELT. *RELC Journal*, 49(2), 164-178. <https://doi.org/10.1177/0033688218777318>
- Hosseini, M. (2020). The effect of online interpretations via interactive white boards on vocabulary learning. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 11(1), 37-45. <https://doi.org/10.1080/09571739985200021>
- İnal, S., Evin, İ., & Saraçoğlu, A. S. (2005). The Relation between Students' Attitudes toward Foreign Language and Achievement. Paper presented at the 1st International Conference Dokuz Eylül of Education, Izmir, 1-3 October.
- İstifçi, İ., Keser, A. D., Serpil, R., Önal, M. A., Alan, B., & Türkyılmaz, S. (2018). An analysis of teachers' and students' perceptions on the use of smart boards in foreign language classrooms. *Turkish online journal of language teaching*, (3), 2, 83-110.
- Iyer, V. L. (2020). An Exploratory Research Examining Knowledge Retention using Virtual Reality and 3D printing in Education. *International Journal for Research in Applied Science and Engineering Technology*, 8(11), 438-443.
- Jelyani, S. J., Janfaza, A., & Soori, A. (2014). Integration of SMART boards in EFL classrooms. *International Journal of Education and Literacy Studies*, 2(2), 20-23.

- Jeong, K.-O. (2006). Promoting communicative language teaching in EFL context: An English writing course mediated through the Web. *English Language Teaching*, 18(3), 47-68.
- Karaca, E. (2007). The impact of computer technology on the success of teaching English to secondary school students. [Master's thesis, Selçuk Üniversitesi, Konya].
- Karadag, M., Koc, A., & Kalkan, U. (2017). The impact of smart board usage on class management. *New trends and issues Proceedings on Humanities and Social Sciences*, 4(9), 82-89.
- Karahan, F. (2007). Language attitudes of Turkish students towards the English language and its use in Turkish context. *Çankaya University Journal of arts and sciences*, 1(7), 73-87.
- Katwibun, H. (2014). Using an interactive whiteboard in vocabulary teaching. *Procedia-Social and Behavioral Sciences*, 116, 674-678.
- Kiliç, M. (2007). The sources and relations of foreign language listening anxiety with respect to text type and learner variables: A case study at Gaziantep University. *Unpublished master's dissertation, University of Gaziantep*.
- Kirbas, A. (2018). Student Views on Using Smart Boards in Turkish Education. *Universal Journal of Educational Research*, 6(5), 1040-1049.
- Kırbas, A. (2019). Encountered in the Use of Smart Boards in Turkish Language Teaching (Sampling of Turkey). *International Online Journal of Educational Sciences*, 11(1).
- Kiziltan, N., & Atlı, I. (2013). Turkish young language learners' attitudes towards English. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 28(28-2), 266-278.
- Kline, R. B. (2015). Principles and practices of structural equation modelling. In *Methodology in the social sciences* (The Fourth). THE GUILFORD PRESS.
- Korkmaz, O., & Cakil, I. (2013). Teachers' difficulties about using smart boards. *Procedia-Social and Behavioral Sciences*, 83, 595-599.
- Korlu, H., & Mede, E. (2018). Autonomy in vocabulary learning of Turkish EFL learners. *The EUROCALL Review*, 26(2), 58-70.
- Koşar, G., & Bedir, H. (2018). Improving Knowledge Retention via Establishing Brain-Based Learning Environment. *Online Submission*, 4(9), 208-218.
- Labrador, T. (2016). Integrating technology into ELT. Universidad FASTA Facultad de Humanidades.
- Laufer, B., & Rozovski-Roitblat, B. (2014). *Retention of new words: Quantity of encounters, quality of task, and degree of knowledge. Language Teaching Research*, 19(6), 687-711. doi:10.1177/1362168814559797
- Laufer, B., & Rozovski-Roitblat, B. (2015). Retention of new words: Quantity of encounters, quality of task, and degree of knowledge. *Language Teaching Research*, 19(6), 687-711.
- Lee, K. W. (2000). English teachers' barriers to the use of computer-assisted language learning. *The Internet TESL Journal*, 6(12), 1-8.

- López, O. S. (2010). The digital learning classroom: Improving English language learners' academic success in mathematics and reading using interactive whiteboard technology. *Computers & Education*, 54(4), 901-915.
- Mathew, N. G., & Alidmat, A. O. H. (2013). A study on the usefulness of audio-visual aids in EFL classroom: Implications for effective instruction. *International Journal of Higher Education*, 2(2), 86-92.
- McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). The MOOC model for digital practice.
Retrieved from http://www.elearnspace.org/Articles/MOOC_Final.pdf
- McCarten, J. (2007). Teaching Vocabulary Lessons from the Corpus, Lessons from the Classroom. Cambridge: Cambridge University Press.
- Miller, D., & Glover, D. (2002). The interactive whiteboard as a force for pedagogic change: The experience of five elementary schools in an English education authority. *Information Technology in Childhood Education Annual*, 2002(1), 5-19.
- Min, K., & Siegel, C. (2011). Integration of Smart Board Technology and Effective Teaching. *i-Manager's Journal on School Educational Technology*, 7(1), 38-47.
- Mohd Tahir, M. H., & Mohtar, T. (2016). The Effectiveness of using Vocabulary Exercises to Teach Vocabulary to ESL/EFL Learners. *Pertanika Journal of Social Sciences & Humanities*, 24(4).
- Moursund, D. (2005). Introduction to information and communication technology in education. University of Oregon. Retrieved from <http://pages.uoregon.edu/moursund/Books/ICT/ICTBook.pdf>
- Morgan, G. L. (2008). Improving student engagement: Use of the interactive whiteboard as an instructional tool to improve engagement and behavior in the junior high school classroom (Doctoral dissertation, Liberty University).
- Mun, S. H., & Abdullah, A. H. (2016). A review of the use of smart boards in education. In *2016 IEEE 8th International Conference on Engineering Education (ICEED)*, 120-125.
- Murphy, C., & Greenwood, L. (1998). Effective integration of information and communications technology in teacher education. *Journal of Information Technology for Teacher Education*, 7(3), 413-429.
- Mustafa, E. N. E. (2018) The Importance of Online Smart Board in improving EFL Learners' Oral Performance. *International Journal of Contemporary Applied Researches*, 5(5), 32-43.
- Nation, P., & Meara, P. (2002). Vocabulary. In N. Schmitt (Ed.), *An introduction to applied linguistics* (pp. 35-54). London: Arnold.
- Niño, A. (2009). Machine translation in foreign language learning: Language learners' and tutors' perceptions of its advantages and disadvantages. *ReCALL*, 21(2), 241-258.
- Nomass, B. B. (2013). The impact of using technology in teaching English as a second language. *English language and literature studies*, 3(1), 111.

- Norouzi, H., Mohammadi, F. A., & Madani, D. (2014). The effect of interactive whiteboard on teaching vocabulary on Iranian EFL learners retention. *Enjoy Teaching Journal*, 2(1), 99–105.
- Önder, R. (2015). Biyoloji dersinde akıllı tahta kullanımının öğrencilerin akademik başarılarına, akıllı tahta kullanımına ve derse yönelik tutumlarına etkisi. [Unpublished master's thesis, Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü]. İzmir.
- Ozfidan, B., & Burlbaw, L. (2020). Teachers' Perspectives and Attitudes towards Computer-Assisted Language Learning (CALL). *Revista de Cercetare si Interventie Sociala*, 71, 9-24.
- Özenç, E. G., & Özmen, Z. K. (2014). Akıllı tahtayla işlenen fen ve teknoloji dersinin öğrencilerin başarısına ve derse karşı tutumlarına Etkisi. *Türkiye Sosyal Araştırmalar Dergisi*, 182(182), 137-152.
- Öztan, A. C. (2012). *Fen ve teknoloji öğretiminde akıllı tahta kullanımının ilköğretim 7. sınıf öğrencilerinin akademik başarılarına etkisi* (Doctoral dissertation, Necmettin Erbakan University (Turkey)).
- Özyaşar, R. (2021). The Effect of Serious Games on Vocabulary Retention in Foreign Language Learning (Publication No. 703049) [Master degree dissertation, Bahçeşehir University]
- Patra, I., Shanmugam, N., Ismail, S. M., & Mandal, G. (2022). An Investigation of EFL Learners' Vocabulary Retention and Recall in a Technology-Based Instructional Environment: Focusing on Digital Games. *Education Research International*, 2022.
- Pazhakh, A., & Baghaei Nanekaran, J. (2017). The Effect of Smart Board Technology on Iranian EFL Learners' Achievement Motivation and Willingness to Communicate. *Iranian Journal of Applied Language Studies*, 9(Proceedings of the First International Conference on Language Focus), 125-148.
- Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: results from a worldwide educational assessment. *Computers & education*, 37(2), 163-178.
- Pourciau, E. A. L. (2014). *Teaching and learning with smart board technology in middle school classrooms* (Doctoral dissertation, Walden University).
- Preston, C., & Mowbray, L. (2008). Use of "SMART" Boards for Teaching, Learning and Assessment in Kindergarten Science. *Teaching Science*, 54, 50-53.
- Raja, R., & Nagasubramani, P. C. (2018). Impact of modern technology in education. *Journal of Applied and Advanced Research*, 3(1), 33-35.
- Ratheeswari, K. (2018). Information communication technology in education. *Journal of Applied and Advanced research*, 3(1), 45-47.
- Read, J. (2004). 7. research in teaching vocabulary. *Annual Review of Applied Linguistics*, 24, 146-161.
- Reber, A. S. (1995). *The Penguin dictionary of psychology* (2nd ed.). Penguin Press.
- Richards, J. C., & Schmidt, R. W. (2013). *Longman dictionary of language teaching and applied linguistics*. Routledge.

- Rodriguez, M., & Sadowki, M. (2000). Effects of rote, context, keyword, and context/keyword methods on retention of vocabulary in EFL classrooms. *Language learning*, 50(2), 385-412.
- Sabo, H.M. (2011). Use of Smart Board in Teaching Geography. *Conference proceedings of "eLearning and Software for Education*, 2, 184-188. Retrieved on March 12, 2014
- Saleh, Z., Abu Baker, A., & Mashhour, A. (2011). Evaluating the Effectiveness of Using The Internet for knowledge acquisition and Students' knowledge Retention. In *Digital Information and Communication Technology and Its Applications: International Conference, DICTAP 2011, Dijon, France, June 21-23, 2011, Proceedings, Part II* (pp. 448-455). Springer Berlin Heidelberg.
- Saraç, H. (2019). Ortaokul 8.sınıf öğrencilerinin akıllı tahta ve cep telefonu hakkında görüşleri: Metafor analizi çalışması. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 45, 99-115.
- Saraç, E. (2020). Fen bilimleri dersinde akıllı tahta kullanımının ilköğretim 6. sınıf öğrencilerinin akademik başarısına ve bilgilerinin kalıcılığına etkisi (Publication No. 656558) [Master's thesis, Mersin University].
- Sarıçoban, A., & Üstündağ, S. (2022). 8th grade secondary school students' attitudes towards learning English. *Eurasian Journal of Language Teaching and Linguistic Studies*, 2(2), 254-266.
- Sarkmaz, Ö. (2011). Technical and vocational high school students' attitudes to language learning in İskenderun. (*Unpublished master's thesis*). Çukurova University Institute of Social Sciences, Adana.
- Schmitt, N. (2000). *Vocabulary in Language Teaching*. Cambridge: Cambridge University Press.
- Schmitt, N. (2007). Current perspectives on vocabulary teaching and learning. *International handbook of English language teaching*, 827-841.
- Schmitt, N. (2008). Instructed second language vocabulary learning. *Language teaching research*, 12(3), 329-363.
- Scott, W., & Ytreberg, L. (1990). *Teaching English to Children*. New-York, Addison-Wesley Longman, Limited.
- Shabaneh, Y., & Farrah, M. (2019). The effect of games on vocabulary retention. *Indonesian Journal of Learning and Instruction*, 2(01).
- Shams, N., Dabaghi, A., & Shahnazari-Dorcheh, M. (2016). Iranian students' attitudes towards utilizing smart boards in EFL classrooms. *Iranian Journal of Applied Language Studies*, 8(1), 139-172.
- Schroeder, R. (2007). Active Learning with Interactive Whiteboards. *Communications in Information Literacy*, 1(2), 64-73. Retrieved on March 21, 2014.
- Singh, A., & Ramachandran, R. (2014). Study on Effectiveness of Smart Boards Technology in Improving the Psychological Processes of Students with Learning Disability. *Sai Om Journal of Arts & Education*, 1(4), 1-6.
- Van Slyke, C. (Ed.). (2008). *Information Communication Technologies: Concepts, Methodologies, Tools, and Applications: Concepts, Methodologies, Tools, and Applications* (Vol. 2). IGI Global.

- Solvie (2001). The Digital Whiteboard as a Tool in Increasing Student Attention during Early Literacy Instruction. Retrieved on March 28, 2014
- Şen, M. (2013). İngilizce öğretiminde akıllı tahta kullanımının ilköğrencilerinin başarısına etkisi. Yayınlanmamış yüksek lisans tezi, İstanbul: İstanbul Üniversitesi.
- Tabachnick, B. G., & Fidell, L. S. (2007). Using multivariate statistics (Fifth Edition). Pearson.
- Taheri, M. (2014). The effect of using language games on vocabulary retention of Iranian elementary EFL learners. *Journal of Language Teaching and Research*, 5(3), 544. doi:10.4304/jltr.5.3.544-549
- Taşpınar, M. (2017). *Sosyal bilimlerde SPSS uygulamaları: Nicel veri analizi*. Pegem Akademi Yayıncılık.
- Tayfa, H. (2018). Etkileşimli tahtanın Türkçe dersinde kullanımının ortaokul öğrencilerinin akademik başarı ve tutumlarına etkisi. Yayınlanmamış yüksek lisans tezi, Kütahya Dumlupınar Üniversitesi Eğitim Bilimleri Enstitüsü, Kütahya.
- Tinio, V. L. (2003). *ICT in Education*. United Nations Development Programme. Bureau for Development Policy.
- Toprakci, E. (2006). Obstacles at integration of schools into information and communication technologies by taking into consideration the opinions of the teachers and principals of primary and secondary schools in Turkey. *Journal of Instructional Science and Technology (e-JIST)*, 9(1), 1-16.
- Tsayang, G., Batane, T., & Majuta, A. (2020). The Impact of Interactive Smart Boards on Students' Learning in Secondary Schools in Botswana: A Students' Perspective. *International Journal of Education and Development using Information and Communication Technology*, 16(2), 22-39.
- Tunaboğlu, C., & Demir, E. (2017). The Effect of Teaching Supported by Interactive Whiteboard on Students' Mathematical Achievements in Lower Secondary Education. *Journal of Education and Learning*, 6(1). <https://doi.org/10.18844/prosoc.v2i7.1988>
- Türkmen, H. (2006). What Technology plays Supporting Role in Learning Cycle Approach for Science Education. *The Turkish Online Journal of Educational Technology*, 5, 2, 71-76.
- Vanve, A., Gaikwad, R., & Shelar, K. (2016). A new trend e-learning in education system. *International Research Journal of Engineering and Technology*, 3(4), 299-302.
- Wall, K., Higgins, S., & Smith, H. (2005). The visual helps me understand the complicated things: pupil views of teaching and learning with interactive whiteboards. *British journal of Educational Technology*, 36, 5, 851-867. Retrieved on March 30, 2014
- Wang, Y. H. (2014). Use of interactive web-based exercises for English as a foreign language learning: Learners' perceptions. *Teaching English with Technology*, 14(3), 16-29.

- Webb, S. (2005). Receptive and productive vocabulary learning: The effects of reading and writing on word knowledge. *Studies in second language acquisition*, 27(1), 33-52.
- Weimer, M. J. (2001). The influence of technology such as SMART board interactive whiteboard on student motivation in the classroom. Smarter Kids Foundation. Retrieved on March 13, 2014
- Widener, J., Greene, M., & Gérard, F. (1999). Using SMART Board in foreign language classes. In *Society for Information Technology & Teacher Education International Conference* (pp. 1268-1273). Association for the Advancement of Computing in Education (AACE).
- Wilkins, D. (1972). *Linguistics in Language Teaching*. London: Edward Arnold.
- Wolman, B. B. (Ed.). (1989). *Dictionary of behavioral science* (2nd ed.). Academic Press.
- Wuerzer, B. (2008). The effectiveness of the smartboard while instructing limited english proficient learners. SMARTer Kids Foundation. Retrieved from <http://smarterkids.org/research/pdf/SKFRResearchBeckyWuerzer.pdf>
- Wulf, J., Blohm, I., Leimeister, J. M., & Brenner, W. (2014). Massive open online courses. *Business & Information Systems Engineering*, 6, 111-114.
- Yorgancı, S., & Terzioğlu, Ö. (2016). Matematik öğretiminde akıllı tahta kullanımının başarıya ve matematiğe karşı tutuma etkisi. *Kastamonu Eğitim Dergisi*, 21(3), 919-930.
- Young, E. B. (1991). Empowering teachers to use technology in their classrooms. *Computers in the Schools*, 8(1-3), 143-146.
- Zimbardo, P., & Leippe, M. (1991). *The psychology of attitude change and social influence*. Philadelphia, PA: Temple University Press.

APPENDICES

Appendix A- Attitude Scale

II. BÖLÜM - İNGİLİZCE DERSİNE YÖNELİK TUTUM MADDELERİ Aşağıdaki cümlelerin karşısında size en uygun olan kısmı (X) işaretleyiniz. Adınızı yazmayınız & soru atlamayınız. Arş. Gör. Ulviye AYDOSLU					
TUTUMLAR					
	Tamamen katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Hiç katılmıyorum
1. İngilizce sevdiğim bir derstir.	5	4	3	2	1
2. İngilizce'yi kullanabileceğim web sitelerine girerim.	5	4	3	2	1
3. İngilizce şarkılar dinlerim.	5	4	3	2	1
4. İngilizce dersinden korkuyorum.	5	4	3	2	1
5. İngilizce zor bir derstir.	5	4	3	2	1
6. İngilizce dersinde zaman çabuk geçiyor.	5	4	3	2	1
7. İngilizce zevkli geçen bir derstir.	5	4	3	2	1
8. Mümkün olsa İngilizce dersi yerine başka bir ders almak isterdim.	5	4	3	2	1
9. Türkçe alt yazısız ya da dublajsız İngilizce filmleri izlemem.	5	4	3	2	1
10. İngilizce bilmenin iş şansımı artıracığını düşünüyorum.	5	4	3	2	1
11. İngilizce hikaye kitapları okurum.	5	4	3	2	1
12. İngilizce sınavından çekinirim.	5	4	3	2	1
13. İngilizce dersini sıkıcı buluyorum.	5	4	3	2	1
14. İngilizce ders kitaplarını çalışmaktan hoşlanmam.	5	4	3	2	1
15. İngilizce yayın yapan televizyon kanallarını izlerim.	5	4	3	2	1
16. İngilizce bilgimi artırmak için daha çok zaman harcamak istiyorum.	5	4	3	2	1
17. İlköğretimin I. kademesinden itibaren İngilizce dersi verilmesine karşıyım.	5	4	3	2	1
18. İngilizce'den nefret ediyorum.	5	4	3	2	1
19. İngilizce oyunlar oynarım.	5	4	3	2	1
20. İngilizce öğrenmek benim için son derece gereksizdir.	5	4	3	2	1
21. İngilizce'yi yaşamımda birçok şekilde kullanacağıma inanıyorum.	5	4	3	2	1
22. İngilizce dersi benim için boşa zaman harcamaktır.	5	4	3	2	1
23. İngilizce ders saatinin sayısı azaltılırsa mutlu olurum.	5	4	3	2	1
24. İngilizce derslerinde işlenen konular önemlidir.	5	4	3	2	1
25. İngilizce derslerinde İngilizce konuşmaktan hoşlanmam.	5	4	3	2	1
26. İngilizce çalışmak sınırimi bozar.	5	4	3	2	1
27. İngilizce yazılabileceğim yabancı arkadaşlar edinmeye çalışırım.	5	4	3	2	1
28. İngilizce dersini kaçırmak istemem.	5	4	3	2	1
29. İngilizce ödevlerini yapmaktan zevk alırım.	5	4	3	2	1
30. İngilizce çalışarak zamanımı boşa harcamam.	5	4	3	2	1

Appendix B- Vocabulary Achievement and Retention Test

Unit 6/7 Vocabulary Test

1. Alice: Hi Steven. How are you?

Steven: I am fine. You look beautiful. Where are you going?

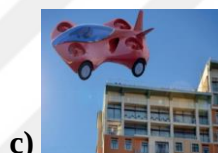
Alice: My best friend will today. I am going there. Steven: What a nice event. I hope they will be happy forever.

Fill in the blank according to the conversation above.

- a) get married B) get retired c) visit relatives d) graduate

2. *Fortuneteller:* In the future, there will be a war in the world.

Choose a suitable picture according to the prediction of the fortuneteller.



3. I am very excited today because it is my last day of school. Tomorrow I have and I will receive my diploma.

Fill in the blanks with the correct special day.

- a) slumber party b) farewell party c) sacrifice feast d) graduation party.



4. Betty: what is your future dream, Alex?

Alex: I love visiting new places. So in the future, I want to **According to the conversation above, fill in the blank correctly.**

- a) live in a big city b) adopt a pet
c) travel around the world d) run my own business



5.

Hello !

I am a _____

I can make predictions about

- a) robot maid b) fortuneteller c) wife d) husband



6. Arranging a good party is not an easy issue. There is a lot of work. For example, you should decide on the guest list, shopping list, music list, etc. But firstly you should have a/an to have a perfect party.

- a) to-do list b) birthday cake c) invitation card d) dinner speech

- 7. In the future, you will go to university and graduate with a degree.
- You will get married to a handsome man.
- You will live in a village.
- You will be famous.

According to the predictions above, which of the following is NOT mentioned?

- a) Education b) Marriage c) Living in a big city d) Living in the countryside

Look at the text and answer the questions below.

Dear Sam,

Jack and I are organizing a surprise birthday party for Emily. It's on 3rd of November, Friday at 7 p.m. It will be at my home.

I hope you can come.

Love,
Alice

8. Who is the host of the surprise party?

- a) Sam b) Alice c) Emily d) Jack

9. **There is no information about the of the party.**

- a) date b) time c) place d) fee

10. Tomas and Lily are getting married today. Their _____ is at Robert's Café. Let's congratulate them.

- a) engagement ceremony b) New Year party c) farewell party d) wedding ceremony

11. A: I hate cooking and cleaning the house every day. I saw that in the future there will be and they will do all the housework for us.

Read the sentence and complete it correctly.

- a) flying cars b) robot maids c) food pills d) underwater cities



12.

Choose the best answer to complete the sentence below.

Thank you for helping me

- a) prepare the guest list
- b) wrap the present
- c) decorate the party place
- d) order a party cake

13. Sally: We are going on a picnic tomorrow. Why don't you come with us?

Merve: _____. I love being in the nature. See you tomorrow then.

Which of the following can NOT complete the sentence

- a) Why not?
- b) That sounds good
- c) Sure
- d) I'm sorry

14.



A: What will you do in your 30s?

B: I believe I will _____

Which of the following can be one of the answers?

- a) run my own business.
- b) sail around the world. I hope we can do it.
- c) travel to space
- d) use flying cars

15.



**According to the Picture above, in the future,
Jack wants to _____**

- A) have a new car.
- B) travel around the world.

C) live in a peaceful place.

D) live in a crowded city.

16.



Derek: I love fancy dress parties . Which party items should Derek prefer?

a)



b)



c)



d)



17. Read the conversation and answer the question.

Betty: Today we have a special event for my sister. We are celebrating her 5th birthday party. My mum and my brother made a cake and cookies for her. I decorate the room. My father bought some party hats and snacks for the party. I hope we will have a great party today!

Which of the following is not mentioned in the conversation?

a)



b)



c)



d)



18.



In the near future, there won't be water on our planet because of.....

A)disaster

B)peace

C)planet

D)global warming

19.

Jane: Hi Jack, I will send _____ to you. I would like to see you at my birthday party. You can find information about time and place on it.

A)snacks

B)party hats

C)invitation cards

D)candles



20. Nancy: Hi, I'm going to arrange a surprise birthday party for my friend's 18th birthday. So I need 18 _____ on the cake. Can you buy them for me?

Susan: Of course.

- a) balloons b) candles c) cookies d) invitation cards

21. Fill in the blanks correctly

Sally: I am planning a Halloween party. Can you help me for _____

Alex: Of course. I can bring some _____.

Choose the correct option.

- A) decoration--balloons
 B) beverages---cakes
 C) pijamas--invitation cards
 D) birthday—guests



22. In the future, there won't be drivers. There will be.....

- A) Planes
 .B) Self-driving cars
 C) Astronauts
 D) Space shuttles

23.

.....	
-lemonade	-cake
-coke	-cookies
-tea	-snacks

-Look at the lists above and find their correct titles.

- A) Decorations---Costumes
 B) Costumes---Food
 C) Beverages---Food
 D) Costumes---Beverages

24.

Steven wants to be famous in the future. Which picture defines Steven's dream?

a)



b.)



c)



d)



25.



We visit our relatives and eat a lot of meat on this day. Which day is it?

- a) Slumber party b) Sacrifice Feast c) Wedding Day d) Ramadan Feast

26. My friend is going to move to another city next month. So I will prepare a to say goodbye to him.

- A)farewell party B)birthday party C)graduation party D)halloween party

27. I hope I will have an excellent career and _____ a lot of money in the future. Then, I will help people in need.

- a) Work b) earn c) hope d) waste

28.



Scientists believe that in the future _____ from other planet will visit our World.

- a) aliens b) robots c) maids d) people

29.



People won't cook in the future. We will have _____. We will take them when we are hungry.

- A) food-pills B) health C) space D) peace

30. I will probably get married, and maybe I'll _____ and happy life

- a) get a scholarship
b) have some Money
c) find a job
d) have a child

31. Alan: What will you study at university?

Jane: I love animals, and I want to adopt a pet. Maybe I will be a vet.

Which of the following pictures shows Jane's future dream?

a)



b)



c)



d)



32. Which of the following match is **False**?

A)



Guest

B)



Decoration

C)



Gift



Beverages

33. Which of the following match is **NOT** correct?



a) Get marry



b) Live in a big house



c) Adopt a pet



d) Live in a big city

Appendix C- Attitude Scale Consent E-mail



ben 28 Kas



Merhaba.

ismim Ayşin YILMAZ. Gaziantep Üniversitesinde
yüksek lisans
yapmaktayım. Yüksek lisans tezim için eğer izniniz
olursa
araştırmanızda geliştirdiğiniz İngilizce Dersine
Yönelik Tutum
Maddeleri Anketini kullanmak istiyorum.
Şimdiden teşekkürler.

...



Ulviye AYDOSLU 21:58



alıcı: ben v

Merhaba Ayşin YILMAZ,
ÖĞRETMEN ADAYLARININ YABANCI DİL OLARAK
İNGİLİZCE DERSİNE İLİŞKİN TUTUMLARININ
İNCELENMESİ (B.E.F. ÖRNEĞİ)" başlıklı yüksek lisans
tezim için geliştirmiş olduğum tutum ölçeğini
çalışmanızda kullanmanızda hiçbir sakınca yoktur. İyi
çalışmalar diliyorum.

Öğr. Gör. Ulviye AYDOSLU

Appendix D- A Sample Syllabus for the groups

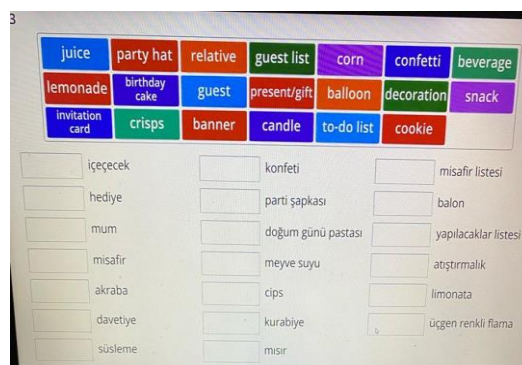
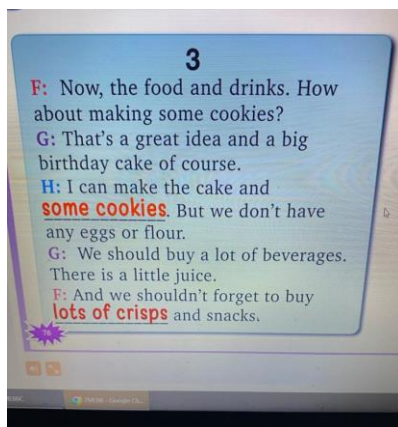
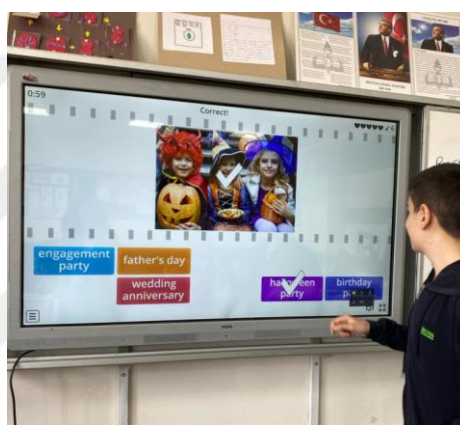
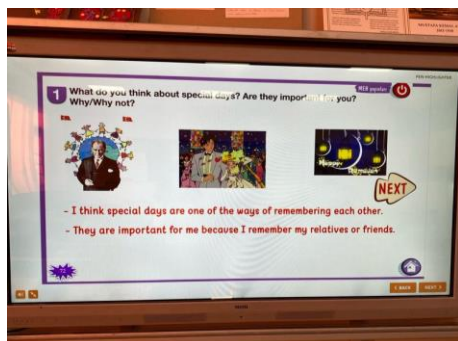
Weekly Leeson Plan- Sample for Unit 6

GRADE	7 th Grades	TIME/DURATION	4 hours
DAY/DATE			
UNIT	6		
TOPIC	CELEBRATIONS		
LEARNING OUTCOMES	Students will be able to learn about different party types and party items. Ramadan Feast, Sacrifice Feast, Mother's Day, Engagement Day, Wedding Ceremony, Graduation Party, Farewell Party.		
Materials used in groups	Experimental group Z- version of MEB book, video about the vocabulary of the unit, a slide, online matching activities, games about the vocabulary	Control group MEB book, some pictures of vocabulary, blackboard, and hardcopy vocabulary worksheet.	
Tasks/ Activities	<i>Warm up- pre-stage:</i> The teacher shows the pictures of special days on the smartboard and asks, 'What do you think about special days? Are they important for you?' <i>While stage</i> The students Watch a video about the special days on the smartboard and do an online matching activity. The students see, write, and listen to the new vocabulary words from the smartboards. The students	<i>Warm up- pre-stage:</i> The teacher asks and writes on the whiteboard, 'What do you think about special days? Are they important for you?' <i>While Stage</i> The Students write the vocabulary list the teacher wrote on the whiteboard and do a handout matching exercise. The students saw the vocabulary pictures in their book, and the teacher pronounced them. The students do exercises in their book and fill in the blanks, match fake tweets, and do tarsia exercises about the vocabulary they have learned. They play a hangman game on the whiteboard. <i>Post-stage</i>	

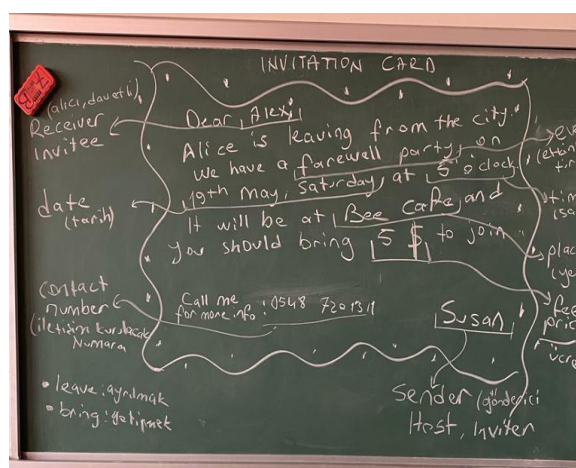
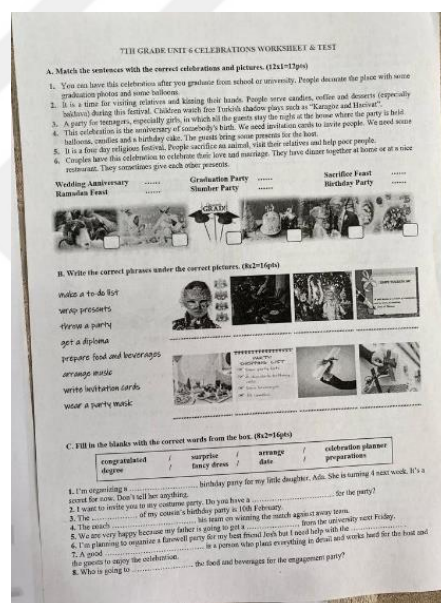
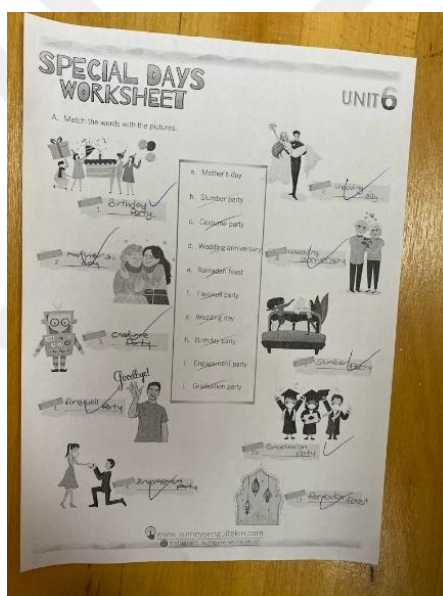
	do some activities using Liveworksheet, Quizlet, and Word wall web.2 tools and play an online hangman game about the vocabulary covered in class. <i>Post-stage</i> The teacher asks students to reorder and create new sentences by using party items on an online activity on the smartboard. Then, the students choose the best party type for the items.	The teacher asks students to choose a party type, decide the items necessary for the party they chose, and write and share meaningful sentences using new words.
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Appendix E- Some activity photos from the teaching period in the experimental and the control groups

Experimental Group



Control Group



Appendix F- Students' Consent Form

Sayın Katılımcımız

Katılacağınız bu çalışma, “The Effect Of The Use Of ICT Through Smart Boards on Language Attitude, Vocabulary Achievement & Retention Of Turkish EFL Learners” (Akıllı Tahta Yoluyla Bilgi Ve İletişim Teknolojileri Kullanımının İngilizceyi Yabancı Dil Olarak Öğrenen Öğrencilerin Dil Tutumu, Kelime Başarısı Ve Kalıcılığı Üzerindeki Etkisi) adıyla, Ayşin YILMAZ. tarafından 06/02/2023-08/05/2023 tarihleri arasında yapılacak bir araştırma uygulamasıdır.

Araştırmanın Hedefi: Bu çalışma, akıllı tahtaların kullanımının öğrencilerin dil bilgisi ve kelime öğrenme üzerindeki etkileri, bu öğrenmelerin kalıcılığına etkisi ve öğrencilerin dile olan tutumları üzerindeki muhtemel etkilerini araştırmayı amaçlamaktadır.

Araştırmanın Nedeni: O Bilimsel araştırma O Tez çalışması

Araştırmanın Yapılacağı Yer(ler): Yeşilkent Şehit Ömer Polat Ortaokulu-Şahinbey/Gaziantep

Araştırma Uygulaması: O Tutum Ölçeği O Test

Araştırma T.C. Milli Eğitim Bakanlığı'nın ve okul/kurum yönetiminin izni ile gerçekleştirilmektedir. Araştırma uygulamasına katılım tamamıyla gönüllülük esasına dayalı olmaktadır. Çalışmada sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplar tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Veriler sadece araştırmada kullanılacak ve üçüncü kişilerle paylaşılmayacaktır.

Uygulamalar, kişisel rahatsızlık verecek sorular ve durumlar içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden rahatsız hissederseniz cevaplama işini yarıda bırakabilirsiniz.

Katılımı onaylamadan önce sormak istediğiniz herhangi bir konu varsa sormaktan çekinmeyiniz. Çalışma bittikten sonra bizlere telefon veya e-posta ile ulaşarak soru sorabilir, sonuçlar hakkında bilgi isteyebilirsiniz. Saygılarımızla,

Araştırmacı :

İletişim bilgileri :Telefon No: e-posta:

Yukarıda bilgileri bulunan araştırmaya katılmayı kabul ediyorum.

....../...../.....

İsim-Soyisim İmza:

Katılımcı Adı-Soyadı :

Appendix G- Parental Consent Form- Veli Onam Formu

Sayın Veli;

Çocuğunuzun katılacağı bu çalışma, “The Effect Of The Use Of ICT Through Smart Boards on Language Attitude, Vocabulary Achievement & Retention Of Turkish EFL Learners” (Akıllı Tahta Yoluyla Bilgi Ve İletişim Teknolojileri Kullanımının İngilizceyi Yabancı Dil Olarak Öğrenen Öğrencilerin Dil Tutumu, Kelime Başarısı Ve Kalıcılığı Üzerindeki Etkisi) adıyla, 06/02/2023- 08/05/2023 tarihleri arasında yapılacak bir araştırma uygulamasıdır.

Araştırmanın Hedefi: Bu çalışma, akıllı tahtaların kullanımının öğrencilerin dil bilgisi ve kelime öğrenme üzerindeki etkileri, bu öğrenmelerin kalıcılığına etkisi ve öğrencilerin dile olan tutumları üzerindeki muhtemel etkilerini araştırmayı amaçlamaktadır.

Araştırma Uygulaması: Tutum Ölçeği / Test şeklindedir.

Araştırma T.C. Milli Eğitim Bakanlığı’nın ve okul yönetiminin de izni ile gerçekleştirilmektedir. Araştırma uygulamasına katılım tamamıyla gönüllülük esasına dayalı olmaktadır. Çocuğunuz çalışmaya katılıp katılmamakta özgürdür. Araştırma çocuğunuz için herhangi bir istenmeyen etki ya da risk taşımamaktadır. Çocuğunuzun katılımı **tamamen sizin isteğinize bağlıdır**, reddedebilir ya da herhangi bir aşamasında ayrılabilirsiniz. Araştırmaya katılmamama veya araştırmadan ayrılma durumunda öğrencilerin akademik başarıları, okul ve öğretmenleriyle olan ilişkileri etkilemeyecektir.

Çalışmada öğrencilerden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplar tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir.

Uygulamalar, genel olarak kişisel rahatsızlık verecek sorular ve durumlar içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden çocuğunuz kendisini rahatsız hissederse cevaplama işini yarıda bırakıp çıkmakta özgürdür. Bu durumda rahatsızlığın giderilmesi için gereken yardım sağlanacaktır. Çocuğunuz çalışmaya katıldıktan sonra istediği an vazgeçebilir. Böyle bir durumda veri toplama aracını uygulayan kişiye, çalışmayı tamamlamayacağını söylemesi yeterli olacaktır. Anket çalışmasına katılmamak ya da katıldıktan sonra vazgeçmek çocuğunuza hiçbir sorumluluk getirmeyecektir.

Onay vermeden önce sormak istediğiniz herhangi bir konu varsa sormaktan çekinmeyiniz. Çalışma bittikten sonra bizlere telefon veya e-posta ile ulaşarak soru sorabilir, sonuçlar hakkında bilgi isteyebilirsiniz. Saygılarımızla,

Araştırmacı :

İletişim bilgileri :

e-posta:

Velisi bulunduğum sınıfı numaralı öğrencisi

.....’in yukarıda açıklanan araştırmaya katılmasına izin veriyorum. (Lütfen formu imzaladıktan sonra çocuğunuzla okula geri gönderiniz*).

VITAE

Ayşin YILMAZ graduated from Çine Teacher Training Anatolian High School in 2015. After high school, she started the Hacettepe University Faculty of Education English Language Teaching Program and graduated from here in 2019. She has been working as an English Teacher in the Ministry of National Education since 2020. She started the M.A. program at Gaziantep University, Department of English Language Teaching in the fall semester of the 2020-2021 academic year. She knows English at an advanced level.

ÖZGEÇMİŞ

Ayşin YILMAZ, 2015 yılında Çine Öğretmen Anadolu Lisesi'nden mezun oldu. Liseden sonra Hacettepe Üniversitesi Eğitim Fakültesi İngilizce Öğretmenliği Programına başladı ve 2019 yılında buradan mezun oldu. 2020 yılından bu yana Milli Eğitim Bakanlığı'nda İngilizce Öğretmeni olarak çalışmaktadır. 2020-2021 eğitim öğretim yılının güz döneminde Gaziantep Üniversitesi İngiliz Dili Eğitimi Anabilim Dalı'nda yüksek lisans eğitimine başlamıştır. İleri düzeyde İngilizce bilmektedir.