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EFFECTIVENESS OF FULLY IMMERSED VIRTUAL REALITY TOOLS ON TURKISH YOUNG LEARNERS' VOCABULARY ACQUSITION AND THEIR PERCEPTION OF USING VIRTUAL REALITY TOOLS IN THE CLASSROOM

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TAM YOĞUNLAŞTIRILMIŞ SANAL GERÇEKLİK ARAÇLARININ TÜRK ÇOCUK ÖĞRENCİLERİN KELİME EDİNİMİ ÜZERİNDEKİ ETKİNLİĞİ VE SINIFTA SANAL GERÇEKLİK ARAÇLARINI KULLANMA ALGILARI

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Kardelen YAMAN tarafından hazırlanan “Effectiveness of Fully Immersed Virtual Reality Tools on Turkish Young Learners’ Vocabulary Acquisition and Their Perception of Using Virtual Reality Tools in the Classroom” başlıklı çalışma, **07/12/2023** tarihinde yapılan savunma sınavı sonucunda oybirliği ile başarılı bulunmuş ve jürimiz tarafından Yabancı Diller Eğitimi Ana Bilim Dalı İngiliz Dili Eğitimi Programında **YÜKSEK LİSANS** tezi olarak kabul edilmiştir.

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ABSTRACT

EFFECTIVENESS OF FULLY IMMERSED VIRTUAL REALITY TOOLS ON TURKISH YOUNG LEARNERS' VOCABULARY ACQUSITION AND THEIR PERCEPTION OF USING VIRTUAL REALITY TOOLS IN THE CLASSROOM

Virtual Reality (VR) refers to a computer-generated environment that immerses users in a simulated, interactive experience through visual, auditory, and sometimes tactile stimuli. The primary aim of this study was to evaluate the effectiveness of integrating Virtual Reality (VR) technology for improving vocabulary acquisition among young learners. Additionally, the study assessed the students' acceptance and willingness to incorporate VR into English language instruction. This research adopted a mixed-method approach to comprehensively address these aspects. In the quantitative phase, a pre-test and post-test design was employed to compare the progress of the experimental and control groups. The experimental group experienced English language instruction with VR technology, while the control group followed traditional methods. To delve deeper into the students' perceptions, the Technology Acceptance Model (TAM) survey was administered to the experimental group, probing attitudes and behavioral intentions towards VR integration. Simultaneously, semi-structured interviews were conducted with ten volunteers from the experimental group, forming the qualitative arm of the study. The qualitative data underwent thorough analysis, yielding insights that were categorized and interpreted by the researcher using a comprehensive codebook. Quantitative data underwent statistical analysis using independent sample t-tests and paired sample t-tests. However, the results showed no statistically significant difference in vocabulary improvement between the experimental and control groups. Conversely, qualitative insights illuminated the experimental group's experiences. Participants expressed contentment with immersive VR tools, highlighting enhanced engagement and improved retention of newly learned words. These qualitative findings underscored the positive impact of VR on students' motivation and learning experience. In conclusion, this study indicated the potential of VR technology in enhancing vocabulary acquisition. While quantitative results did not exhibit significant differences *($p=0.936$)*, qualitative feedback highlighted VR's positive influence on learning. These insights offer a valuable contribution to understanding VR integration in education and set the stage for further exploration of its optimal use in language instruction.

Keywords: EFL Learning, Perceptions of Technology, Virtual Reality Tools, Vocabulary Acquisition, Young Learners,

ÖZET

TAM YOĞUNLAŞTIRILMIŞ SANAL GERÇEKLİK ARAÇLARININ TÜRK ÇOCUK ÖĞRENCİLERİN KELİME EDİNİMİ ÜZERİNDEKİ ETKİNLİĞİ VE SINIFTA SANAL GERÇEKLİK ARAÇLARINI KULLANMA ALGILARI

Sanal Gerçeklik (VR), kullanıcıları görsel, işitsel ve bazen dokunsal uyarıcılar aracılığıyla bir simülasyon ortamına daldıran bir bilgisayar tarafından oluşturulan ortamı ifade eder. Bu çalışmanın temel amacı, çocuk öğrenciler arasında İngilizce kelime öğrenimini geliştirmek için Sanal Gerçeklik (VR) teknolojisinin derslere entegrasyonunun etkinliğini saptamaktı. Ayrıca, öğrencilerin İngilizce dil eğitimine VR teknolojisinin entegrasyonuna karşı kabul ve istekliliği değerlendirildi. Bu araştırma, bu yönleri kapsamlı bir şekilde ele almak için karma yöntem yaklaşımını benimsedi. Nicel aşamada, deney ve kontrol gruplarının ilerlemesini karşılaştırmak için öntest ve sontest tasarımı kullanıldı. Deney grubu, İngilizce dil eğitimini VR teknolojisiyle deneyimlerken, kontrol grubu geleneksel yöntemleri izledi. Öğrencilerin algılarını daha ayrıntılı şekilde anlamak için Teknoloji Kabul Modeli (TAM) anketi deneysel gruba uygulandı ve VR entegrasyonuna yönelik tutumları ve davranışsal niyetleri sorgulandı. Aynı anda, çalışmanın nitel ayağı olarak deneysel gruptan on gönüllü öğrenciyle yarı yapılandırılmış görüşmeler gerçekleştirildi. Bu görüşmeler, nüanslı bakış açıları çıkarmayı ve nicel bulguları tamamlamayı amaçladı. Elde edilen nitel veriler araştırmacı tarafından titizlikle analiz edildi ve kapsamlı bir kod kitabı oluşturularak kategorilere ayrıldı ve yorumlandı. Nicel veriler, bağımsız örneklem t-testleri ve eşleştirilmiş örneklem t-testleri kullanılarak istatistiksel analize tabi tutuldu. Sonuçlar, deney ve kontrol grupları arasında kelime gelişimi açısından istatistiksel olarak anlamlı bir fark olmadığını gösterdi *(p=0.936)*. Nitel bulgular ise deneysel grubun deneyimlerini aydınlattı. Katılımcıların neredeyse tamamı etkileşimli VR araçlarını kullanmanın getirdiği memnuniyeti ifade ettiler ve artan katılım ve yeni öğrenilen kelimelerin daha iyi akılda tutulması konusundaki gelişmeyi vurguladılar. Bu nitel bulgular, öğrencilerin motivasyonu ve öğrenme deneyimi üzerindeki VR'nin olumlu etkisini vurguladı. Sonuç olarak, bu çalışma, kelime öğrenimini artırmada VR teknolojisinin potansiyelini gösterdi. Nicel sonuçlar belirgin farklar göstermese de, nitel geri bildirim sanal gerçeklik araçlarının öğrenmeye pozitif etkisini öne çıkardı. Bu bulgular yazına eğitimde sanal gerçeklik araçlarının entegrasyonunu anlama konusuna değerli bir katkı sunar ve sanal gerçeklik araçlarının dil eğitiminde optimal kullanımını daha fazla keşfetmek için zemin oluşturmaktadır.

Anahtar Kelimeler: Çocuk Öğrenenler, Sanal Gerçeklik Araçları, Sözcük Edinimi, Teknolojiye Yönelik Algı, Yabancı Dil Olarak İngilizce Öğrenimi

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LIST OF ABBREVIATIONS

AR	: Augmented Reality
CLL	: Computer Assisted Language Learning
EFL	: English as a Foreign Language
ELT	: English Language Teaching
HMD	: Head Mounted Display
VR	: Virtual Reality

1. INTRODUCTION

The current study aims to discover effectiveness of Virtual Reality Tools on young learners' vocabulary acquisition. The study also seeks to unveil learners' perceptions of Virtual Reality technology and to discover their acceptance level for using it in the vocabulary learning process. The chapter covers the study's context, the statement of the problem, and the research's objectives. Additionally, it outlines the research questions and highlights the study's significance.

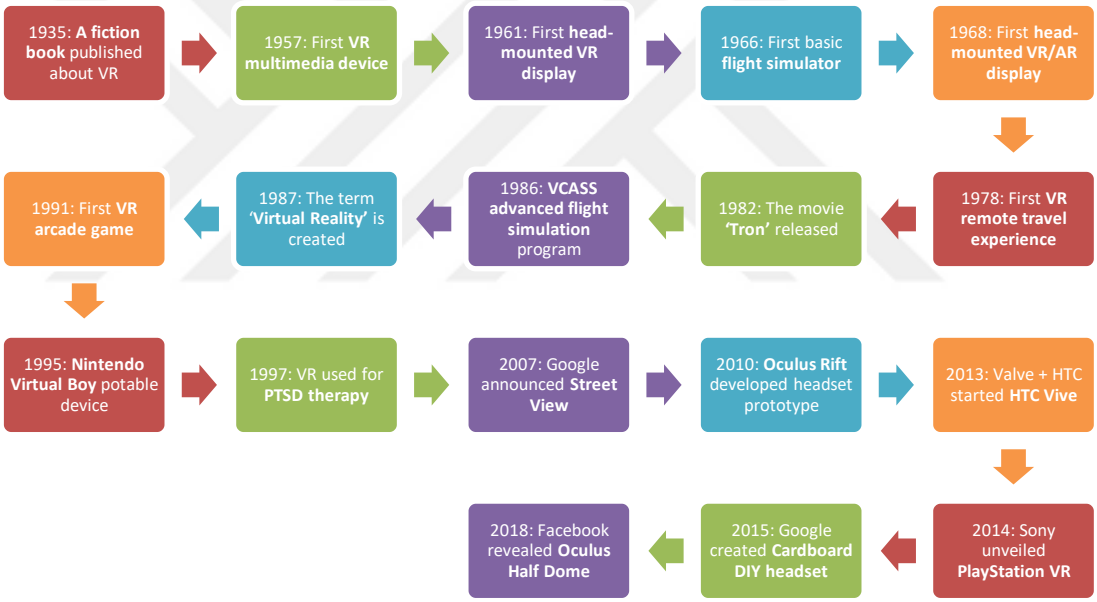
1.1. Background of the Study

Rapid developments on the field of technology shows itself in practically every facet of daily life. The needs of the students who are belong to the group called generation Z, leads the changing in this direction. Generation Z can be identified as children that are born into technology and grown with it, also known as 'digital natives.' Nowadays many different technologies are employed in educational settings to attract students' attention and to facilitate teaching in order to meet needs of this new generation. Many old-school tools are already switched with the modern technologies such as chalkboards are replaced by smartboards. As a result, Computer Assisted Language Learning (CALL) and Mobile Assisted Language Learning (MALL) have gained widespread acceptability from language teachers, notably over the past 20 years, with the development of technology in education (Zhang et al., 2020). With the aim of creating creative learning environments and enabling the use of new technology to revolutionize the existing teaching model, virtual reality is a new modality that has been used in the educational sector.

The word 'virtual' basically means something created by computer technology and appearing to exist but not exist in the physical world (Cambridge Dictionary, 2023). The goal of virtual reality (VR) technology is to give us the impression that we have left where we are and have been transported somewhere else. As the name of the technology suggests, VR involves the user being seated in front of a computer screen

and cooperating with objects using either VR glasses or a computer. Immersive systems confine the user's field of vision to the visualization display due to the necessity of wearing a headset. Over the years, the use of virtual reality technology has expanded to many different industries including marketing, entertainment, space exploration, and immersive breaking news. Figure 1.1 shows the progression of AR technologies over history. It starts with the Pygmalion's Spectacles which is a short story written by Stanley Weinbaum in 1935. The main character of the book encounters a lecturer who shaped a set of goggles that allow him to experience a film through all his five senses. This short story can be accepted as the first time VR has been used by a fictional character.

Figure 1.1 Historical Development of Virtual Reality Technology



(VRS, 2017)

1.1.1. Theoretical Background of VR Technology

In 1957, a multimedia theater cabinet gadget called the Sensorama was created by filmmaker Morton Heilig to give audiences an interactive experience. The design of the device encompassed a visual display screen, haptic oscillating fans for tactile stimulation, aromatic appliance emission for olfactory engagement, and integrated speakers for auditory immersion, collectively aimed at captivating and stimulating the

consumers' senses. Heilig's technology featured all the characteristics of a VR system, with the exception that the path was predetermined and pre-recorded and it wasn't interactive. In 1966, engineers Comeau and Bryan, employed by Philco Corporation, pioneered the Headsight, marking the advent of the initial head-mounted display (HMD) and motion-tracking device. The primary purpose of the Headsight was to facilitate remote camera movement, allowing users to observe distant locations virtually. Subsequently, military engineer Thomas Furness developed the first flight simulator for the Air Force, spurring a surge of interest in virtual reality (VR) technology and its potential applications in education. In 1968, Harvard professor and computer scientist Ivan Sutherland created the groundbreaking VR/AR head-mounted display "The Sword of Damocles," further advancing the evolution of immersive technologies. These developments were the beginning of the VR technology, merely it got improved over time.

A decade after, the Aspen Movie Map, created by MIT, gave users what they called a "Surrogate Travel" experience using images captured from an automobile in Aspen, Colorado. It was the initial first-person sight of the city, nowadays Google Street provides its users a similar experience. Virtual reality became widely known because of the movie named ‘Tron’. The targeted audience of the Tron was gamers consequently the protagonists were completely submerged in a virtual environment that replicated a computer game in the movie. Throughout the 1980s, Furness dedicated his efforts to the development of the Visually Coupled Airborne Systems Simulator (VCASS), an innovative project for the Air Force, aimed at advancing the realm of simulation technology. System came out at 1986 and it provided pilots with a virtual picture that organized the constant stream of information they receive. The emergence of the Super Cockpit program followed the successful development of VCASS, incorporating cutting-edge tools such as computer-generated 3-D maps, infrared, and radar data to enhance pilots' decision-making processes with greater speed and efficiency. The term "virtual reality" was coined by John Lanier, a computer scientist, researcher, and artist, in the year 1987. Lanier established the Visual Programming Lab (VPL) and collaborated with Tom Zimmerman to pioneer several VR innovations, including the Dataglove and the EyePhone HMD, thereby positioning VPL as the pioneering entity in marketing VR eyewear.

In the year 1991, The Virtuality Group achieved a significant milestone by developing various video games and arcade experiences that democratized virtual reality, making it widely accessible. These games entailed the utilization of virtual reality goggles, enabling players to immerse themselves in real-time interactive gaming environments. Through their console, Sega tried to bring a comparable gaming experience into houses. Since developers were hysterically afraid that the Sega VR headset accessory would be too realistic and cause harm to users, the firm never launched it. In 1995, Nintendo introduced the groundbreaking Nintendo Virtual Boy, marking the first-ever portable gaming device to feature 3-D graphics. However, despite its technological novelty, the product's failure ensued due to several factors, including its perceived high base price of $180, the lack of colored imagery, and inadequate software support. In 1997 Researchers from Georgia Tech and Emory University collaborated to develop Virtual Vietnam. The team assisted veterans receiving psychosocial interventions for PTSD by replicating conflict areas in virtual reality. A decade later, Google with Immersive Media introduced Street View. Five mapped regions' footage was available when the technology first emerged. Today, Google Street View is commonly used and widely known example of VR technology. The panoramic images featured in Street View, showcasing roads, interior views of buildings, and other relevant content, were captured utilizing a specialized camera mounted on a mobile vehicle.

VR technology has gained a significant recognition in the last decade. Well known tech-based companies in the world, such as Amazon, Google, Meta (as known as Facebook) all started to build their own VR divisions. Palmer Luck in 2010 created a model for the VR headset that would eventually become the Oculus Rift. Four years later, Meta bought Oculus VR prototype for 3 billion. In the year 2023, Valve Corporation innovated a lag-free method for presenting virtual reality (VR) content and generously shared this advancement with Oculus and other VR suppliers. Subsequently, in 2025, Google unveiled Cardboard, an accessible do-it-yourself (DIY) stereoscopic viewer, enabling users to insert their smartphones into physical Cardboard structures that can be worn as head-mounted displays.

Virtual Reality (VR) is regarded as one of the most recent and highly auspicious technological advancements within the realm of education. (Yang, Chen, & Jeng, 2010) Virtual worlds' exceptional potential provides instructors with a variety of

chances for creative activities in the classroom. A comprehensive understanding of the utilization of virtual worlds to augment the educational environment necessitates the implementation of practical applications within real classroom settings. (Parmaxi, 2020).

The theoretical framework of using VR on educational settings mostly based on Constructivism. According to Robinson and Coltz, (2013) VR technology is related with the constructivist learning as it enables students to engage more deeply with the tasks, ideas, and resources, which enables them to develop lasting connections within their existing knowledge. Schott and Marshall, on the other hand, conveys VR with the 'Situated Experiential Education' (Schott & Marshall, 2018). They mention that learning takes place in an unsettled atmosphere where students may experience accomplishment, failure, challenge, and risk-taking while also being involved academically, morally, culturally, politically, emotionally, and physically. Situated learning, alternatively referred to as situated cognition, stands as a fundamental educational pedagogy that situates the learning process within real-world contexts to foster meaningful learning experiences and effective knowledge transfer (Choi & Hannafin, 1995). VR is a suitable technology to provide Situated Learning since it helps creating authentic and contextualized learning by taking students to another world in the classroom.

The scientific community has strategically integrated findings from VR studies to elucidate the ways in which this technology facilitates learning and training programs. However, a current analysis of VR's impact on specific domains, such as language learning, remains lacking within academic literature (Parmaxi, 2020). In a meta-analysis done by Parmaxi in 2020, which includes 26 manuscripts published between 2015-2018, explores the advantages and limitations of incorporating VR as an educational tool in language classrooms. The results demonstrate that virtual reality offers diverse opportunities to enhance language learning and instruction while fostering crucial competencies and skills, including teamwork, autonomy, and cultural awareness, which are significant for 21st-century learners (Parmaxi, 2020).

As VR represents a novel approach to immersive and interactive learning experiences, its applications in education depend on several key factors, such as available resources, the range of applications, student acceptance, and motivation, which may influence its

adoption or rejection. (Soto, Ocampo, Colon, & Oropesa, 2020). Considering the available literature, one can see there are inadequate research done with the young learners and most of the research done in the area consist of adolescents and adults. The current study is essential owing to the two reasons: it is done with the young learners and fully immersive VR technology was used in the study.

1.2. Statement of the Problem

Every day, new innovations in technology are offered to the study of foreign languages. Foreign language teachers that are looking for more efficient teaching methods try to adjust to the opportunities provided by technology. Computers, the internet, interactive whiteboards, and smart phones are all available in this area, which provide more advance technology every day. The significance of these technical resources has expanded, particularly in light of the significant role that the internet plays in almost every aspect of daily life. The recent COVID-19 pandemic has increased awareness of the critical role that technology plays in all facets of life, from economy to academia, and it has changed how lectures are presented.

Virtual Reality technology is relatively new in the field of language education. VR is basically the process by which a person interacts with a computer-generated 3D image or simulations of the environment, through specialized electronic devices such as helmets with screen or gloves with sensors embedded in them (Freina, & Ott, 2015). According to Lee (1999), three-dimensional VR applications assistance instructors fulfill the gap among concrete and fictitious information. The cognitive constructivist approach emphasizes how learners interact with their social and physical surroundings in order to make sense of the information, gain first-hand knowledge of the materials, and work in harmony with their surroundings. (Inhelder & Piaget, 1971; Vygotsky, 1978) Virtual Reality (VR) applications are considered a pivotal element for achieving success in foreign language instruction, as they play a vital role in fostering student engagement and facilitating information retention (Lee, J. 1999). Virtual worlds are organized settings where students can design, direct, and manage every aspect of digital information to suit their needs (Chee, 2001). Contemporary education relies on third-party information that anticipates students' learning preferences and information assimilation patterns, without providing them with authentic experiential learning

opportunities (Winn, 1993). It has been noted that first- and third-person learning produce different qualitative outcomes. Learning from a third-person perspective is typically of short duration and results in a low level of memory retention (Chee, 2001). With VR, students immerse themselves in authentic settings while learning the language in a setting they can control.

Recently, Virtual Reality technology has started to appeal notice by many researchers. In Turkish context, recognizable studies took place in the field of education. Başaran, (2010) published a thesis about Pre-service teachers' perceptions of using VR tools for pedagogic purposes. She worked with distinctive teachers from different majors and showed their acceptance level of VR and categorized teachers in terms of many variables. Çoruh (2011) observed the effectiveness of the VR on art students. He used VR actively at the Art History lectures and his results declares that art students found VR technology appealing and motivating. There are too many studies done to observe effectiveness of VR tools on science education such as Arıcı (2013) and Durukan (2018).

Numerous research endeavors have been conducted on the subjects of motivation, learning achievements, and the efficacy of virtual reality (VR) technology in the domain of English language teaching (ELT). All language skills have been considered, however the majority of research in this area has been on using virtual reality technology to teach vocabulary (Koçbuğ, 2018; Saka 2019). Up to know, all the thesis in the Turkish context which applies the VR technology for language learning based on the data collected from adults and adolescents as participants. Some other research based on acceptance of teachers and pre-service teachers. Conversely, there is still a lack of enough studies done with young learners. Current study attempted to reveal how effective VR on young learners' second language vocabulary acquisition and their perceptions of the technology.

1.3. Purpose of the Study and Research Questions

Current study had two purposes: (a) to examine the efficiency of the VR supported vocabulary acquisiton on young learners' vocabulary acquisition and (b) to understand

young learners' perception of using VR tools for language lessons. The research questions focused on this study are as follows:

1) What impact does VR technology have on young learners' language development?
    a) Do the pre-test scores show a statistically significant difference between the experimental and control groups?
    b) Do the post-test scores show a statistically significant difference between the experimental and control groups?
2) What are the young learners' acceptance level of using Virtual Reality technology during the English lessons?

1.4. Significance of the Study

The current research examined the implications of incorporating VR technology into vocabulary acquisition for young learners, focusing on its influence on vocabulary acquisition and the learners' receptivity to using this technology in their educational sessions. This study enriches the ELT area in following ways.

The first one is that the current study, as mentioned before, has done with young learners. There are several studies in the field that used VR tools to support vocabulary acquisition and vocabulary retention but the participants of those studies, up till now, was the adolescents and mostly adults. There are number of studies done with instructors and pre-service language teachers to see their self-efficacy about using these technologies as well. To this point there is only one other thesis in Turkey that observed the effectiveness of the VR technology on vocabulary retention and the study was conducted with people aged 20-65 (see; Koçbuğ, 2018). Young learners, on the other hand, mostly unobserved and the amount of the VR supported language acquisition studies done with young learners are very inadequate.

The majority of the current literature on VR for language acquisition focuses on non-immersive or semi-immersive VR. Therefore, more study is required on fully immersive systems, which are already on the market and can offer a richer and more effective learning experience. The current study's second contribution is that it is grounded on fully immersive VR experience. Students used VR glasses to involve in

the virtual environment fully. Therefore, it has different outcomes than non-immersive VR experience such as using a computer screen to comprehend virtual environment.

The last but not least, the study includes young learners' thoughts and feelings about the process through semi-structured interviews. It is a valuable contribution to literature, especially the curriculum planners and policy makers can benefit from it.

Taking into account these contributions, the current study can fill gaps in the field of ELT by providing information for teachers, lecturers, policy makers, material developers and course book designers, curriculum developers, and teacher trainers about the use of virtual reality technology for language acquisition.

1.5. Assumptions and Limitations

The assumptions of the study can be listed as following.

1) In this study experimental group consist of 18 students and control group consist of 16 students, they are all 3rd graders and studying at different state schools in Ankara. Their English levels supposed to be close to each other according to placement exam done at the beginning of the academic year.
2) The design and data gathering methods employed in the study were appropriate for the research questions.
3) It is assumed that the students who participated in the study gave their sincere attention to the activities they carried out and the questionnaire they answered.
4) The information from the sources was properly cited as a reference for the study's goals.

The limitations of the study can be listed as following.

1) The duration of this study is just six weeks of treatment.
2) The participants of the study are all 3rd graders, and the term young learners refers to only 8 and 9 years old in the study.
3) The study is conducted using VR programs well-suited to Android and iOS mobile operating systems used by the 4 smartphones provided by the researcher.

4) Only one VR application was used in the study because fully immersive VR applications usually expensive and researcher covered the expenses of this specific VR application.
5) Only one HMD VR glasses from the brand VR Shinecon was available to use during the study, additionally Google Cardboard glasses have been used.

1.6. Definitions

Virtual Reality: Virtual Reality (VR) refers to a simulated three-dimensional environment that enables users to engage with and explore a virtual setting, replicating real-life experiences through the users' senses. VR environments are constructed using computer hardware and software, often requiring users to don helmets or goggles to interact with the virtual world. Enhanced user immersion in the VR experience, accompanied by the ability to disregard their physical surroundings, facilitates a heightened sense of realism and suspension of disbelief, even in scenarios that may be imaginative or fanciful.

Technology Acceptance Model (TAM): This model focuses on users' enthusiasm to use a certain technology on a regular basis to achieve their objectives of finishing particular jobs and activities (Teo, 2011).

Head Mounted Display: HMDs are head-mounted visual displays with a head tracking system that transmits data to a computer about the user's head orientation and location (Blade & Padgett, 2002). Virtual environments (VEs) are presented on HMDs are usually for teaching, simulation, or entertainment purposes.

Cardboard VR Viewer: A Cardboard VR Viewer refers to an immersive, accessible, and cost-effective virtual reality device that facilitates the visualization of three-dimensional digital environments through a unique combination of cardboard material and smartphone technology. By placing their cellphones within a perfectly engineered cardboard construction that functions as a basic headgear, users of this cutting-edge viewer have the chance to immerse themselves in thrilling virtual experiences. The Cardboard VR Viewer takes advantage of the smartphone's display and processing power by deftly integrating specialist VR applications to generate captivating graphics in a stereoscopic manner. This method gives the appearance of depth and perspective,

enabling users to perceive and engage with virtual environments in a very realistic way.

Oculus Rift: A head-mounted virtual reality display device called the Oculus Rift uses cutting-edge technology to give customers a fully realistic VR experience. The Oculus Rift offers a virtual world where users may see and interact with computer-generated environments by seamlessly merging high-resolution images, precise motion tracking, and interactive features. The Oculus Rift provides access to a range of virtual experiences, including gaming, artistic pursuits, and professional training, thanks to its ergonomic design and specialized software programs. This gadget marks a significant development in virtual reality technology by providing a way to connect more deeply and immersively with digital information.

2. LITERATURE REVIEW

2.1. Introduction

This section covers the description of virtual reality, the relation between technology and language use, history of technology on the field of language education and metaverse, studies that have been done on VR use for educative purposes, its affordances and limitations, its applications to language learning and instructors' and lastly students' impressions of virtual reality in language classrooms.

2.2. Language Teaching and Technology

Technology is becoming a more important component of curriculum implementation day by day, with all the changes on its nature technology directly effects how language teachers teach and language learners learn. (Warschauer and Meskill, 2000: Lacina, 2005). As a result of those rapid changes, the tools and equipment used in the teaching process should renovate themselves with the innovations in technology, so that they can be capable of responding to the needs of the age (Karasar, 2004). Technology is increasingly portable for both teachers and students, and in many schools, laptop computers, tablets, and cellphones are commonplace elements of the educational environment. Educational institutions are increasingly adopting computer technology and interactive whiteboards, with a notable trend towards enhancing connectivity between schools and the broader global network at accelerated rates (Richards, 2015). Educators and educational administrators are progressively recognizing the internet and digital resources' potential to elevate student engagement and motivation, cater to diverse learning styles, and optimize the efficiency of teaching and learning processes (Zhou, 2005). The scholarly literature has extensively explored the influence of technology on English language instruction, with numerous researchers delving into this topic over the years.

According to Levy, M. (2010), technology can support language teaching in five different levels. The physical level includes tools such as computers, tablets or smart phones. The management level is about LMS (learning management systems), which is about the systems that helps us to administrate language courses through these tools. The third level is the application level. Here he identifies how clients will find those

systems, like e-mail lists or social networking sites. The resource level mentions the sources one can reach through technology, such as authentic materials, online magazines, language teachers and different websites specifically created for language students. Finally, many technological devices like online dictionaries, spelling or grammar checkers and every tool that support language use and production.

The extensive use of technological tools has increased the pleasure and effectiveness of language learning by providing learners with countless opportunities (Ahmad, 2012). Levy (2010), also mentions how each skill can benefit from the technological tools when it comes to language acquisition. For speaking, he states that two or more users can communicate using such apps. For learners, the incorporation of video in many of these programs can be especially beneficial because the additional visual information aids in message comprehension. In order to improve listening skill, many authentic listening materials such as broadcast or interviews or variety of listening texts like YouTube videos and advertisements now available through internet. Like these two examples, all skills can be improved by using technological tools and which Levy detailly explains in his article.

Today's schools must use technology as a matter of course; it is no longer an option. Along with quality schools using the tools that technology makes accessible, teachers are expected to be digitally proficient (Zhao, 2015). According to the International Society for Technology in Education's Technology Standards (NETS) for Teachers, teachers are also expected to be digitally literate (ISTE, 2000). According to Levy (2010) teacher's position is altered when they take on new duties like coach, facilitator, and consultant. As a facilitator, the instructor establishes the objectives of the project, offers rules and materials, and goes around the classroom offering advice and encouragement for student involvement. Thus, technology modifies the nature of the pupil–teacher connection. It provides new strategies for engaging students in learning and in interaction with the teacher and their classmates, as well as opening up the potential of alternative teaching techniques. Overall, changes in how people learn necessitate corresponding adjustments in how teachers and institutions of higher learning run their operations. Nevertheless, to ensure effective utilization of technology, substantial investment is necessary not only in procuring the technology

itself but also in establishing the requisite infrastructure within schools for its seamless operation.

2.3. Virtual Reality

The prevailing literature on virtual reality (VR) in the field of education predominantly explores specific implementations aimed at distinct educational or training objectives. These papers can be categorized into two primary groups: those concentrating on adult education and those centered around high school and university education (Freina & Ott, 2015). As the technology's name implies, VR entails users seated in front of a computer screen, engaging with objects using VR glasses or a computer interface. The adoption of head-mounted helmets or headsets in immersive systems restricts users' field of view to the visual display, enhancing the sense of immersion in the virtual environment. The 3D environments made in a computer are what VR consists of (Arts and Humanities Data Service, 2002). The goal of VR is to produce a practice that immerses the consumer in a world that appears to be real (Bertrand Obrist & Martínez Jara, 2015) and offers a chance to use culturally appropriate physical contact (Cheng, Yang & Andersen, 2017).

Wilches (1999) integrates virtual reality in three concepts:

1. **Immersion** occurs when a user is involved, they feel as though they are a part of the activity on the monitor.

2. **Interaction** within virtual environments involves real-time responsiveness to the user's actions, allowing the system to identify and acknowledge the user's inputs, leading to interactive modifications in the virtual setting

3. **Imagination** basically refers to the system's user-friendly interface which promotes imaginative problem-solving and facilitates novel experiential opportunities.

The use of VR enhances learning process performance, improves usability and interaction, allows users to live various learning experiences outside of reality, includes and offers several viewpoints in the sensory encounter and allows users to navigate through virtual worlds that appear real (Sánchez, Lumbreras, & Silva, 1997).

In the literature, three types of immersive VR have been initiated.

2.3.1. Non-Immersive Virtual Reality

This technology allows users to be fully engaged in a computer-generated environment while remaining aware of and retaining control over their physical surroundings. Non-immersive virtual reality systems necessitate a computer or video game console, along with peripherals such as monitors, keyboards, mice, and controllers. Video games serve as common illustrations of non-immersive virtual reality applications.

2.3.2. Semi Immersive Virtual Reality

Semi-immersive virtual experiences offer users a partially virtual environment, where focusing on the digital image induces a sense of being in an alternate reality while simultaneously maintaining awareness of the immediate surroundings. This type of VR is commonly employed for instructional or training purposes and relies on high-resolution screens, powerful computing systems, projectors, or hardware simulators that partially emulate real-world mechanics. That kind of virtual reality is a system that gives its users a sensation of presence and a modicum of immersion in a virtual environment, but not adequate to make the users ignore about the outside world (Allen et al., 2002). Following figure is an example of semi-immersive VR experience, the picture is taken from a YouTube video about a pilot training. As the figure shows, the windows are exposing virtual content while the control panel is real.

Figure 2: Example of Semi-Immersive VR Experience



(GreatFlyer, 2018)

2.3.3. Fully Immersive Virtual Reality

It offers the most authentic virtual experience. To create a realistic experience and imitate as many senses as possible, it uses head-mounted displays (HMDs), headphones, and other tools. Users are completely taken from their physical environment, and they become part of fully immersive VR. This system needs special hardware, such as CoSpaces. Despite the fact that virtual reality has traditionally been utilized for gaming and other types of entertainment, its application in other industries, notably education, is expanding.

In the definitions of virtual reality, the environment is described as an artificial environment, still those who experience fully immersive VR experience states that they felt closer to reality. Steuer (1992), investigated whether the hardware infrastructure or the experiential side of virtual reality is more prominent. He defined virtual reality not as a hardware stack but as a specific type of experience. He argued that his work would contribute to changing the definition of virtual reality. According to Howard-Jones, Ott, van Leeuwen, and De Smedt (2014), immersive VR places a strong emphasis on spatial immersion, with a narrow definition of being present in the task surroundings from the first-person perspective. By donning a VR headset, which resembles a sizable pair of goggles enveloping the eyes, users can engage in such experiences.

2.3.4. The History of VR

Stricter definitions emphasize the term VR's highly specialized nature: a mostly industrial computer graphics format modeling navigable 3D landscapes and needing significant computing power, despite the term's expanding wide use in popular culture to apply to nearly everything digital, including even computer games. Originating from Ivan Sutherland's seminal 1965 paper titled "The Ultimate Display" and his subsequent collaboration with student Bob Sproull in constructing the first head-mounted display (HMD) for the Bell Helicopter Company, funded by ARPA military resources, significant advancements in VR transpired during the 1980s (Sutherland, 1965). The main events in the VR history are already taken place in the ‘Background of the Study’ part, (see, Table 1)

The idea of virtual reality (VR) first gained traction in the video game industry in early 1990 (Rheingold, 1991; Mazuryk & Gervautz, 1996), but its adoption in the 1990s was hampered by the high cost and impractical design of VR goggles and data gloves. A virtual reality head-mounted display (HMD) was created by SEGA in 1993, and other game firms created software for it, but it was not ever launched (Horowitz, 2004). Nintendo announced the Virtual Boy, a VR-based gaming device, in July 1995. (Kushner, 2014). Numerous research on the use of virtual reality to the classroom, despite their commercial failure, have produced positive results, including augmented time spent on task (Huang, Rauch & Liaw, 2010; Johnson et al., 1998), amusement (Apostolellis & Bowman, 2014; Ferracani, Pezzatini & Del Bimbo, 2014), willingness (Cheung et al., 2013; Jacobson et al., 2005; Huang et al., 2010; Rizzo et al., 2006). In spite of these encouraging outcomes, virtual reality technology hasn't been broadly accepted in the education industry.

Throughout the 2000s, commercially available VR technologies received limited attention from the general public and investors. In 2001, Z-A Production created by Benayoun and David, in collaboration with Barco and Clarté, developed the first PC-based cubic room, known as SAS Cube (SAS3), which was implemented in Laval, France. This development gave rise to Virtools VR Pack, which stemmed from the SAS library. Furthermore, in 2007, Google introduced Street View, a service that offers panoramic vistas of an expanding array of global locations, encompassing roadways, interior structures, and rural landscapes. In 2010, a stereoscopic 3D mode was provided. VR is now recognized as a medium on par with telephones and televisions. Hardware and software are included in it. The most notable distinction between modern VR and its earlier iterations is that it works with any smartphone. Everyone now has the chance to experience virtual reality (VR) with their cellphones in their pockets thanks to the introduction of the head mounted display Google Cardboard (see Figure 3).

Figure 3: Google Cardboard VR Viewer

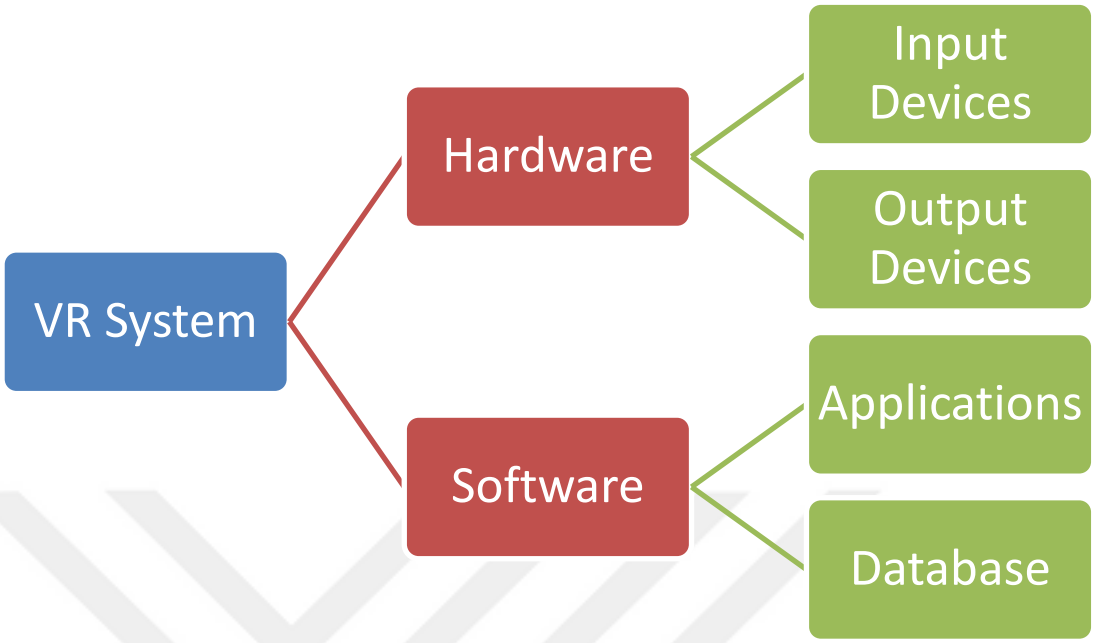


(Wikipedia, 2014)

2.3.5. Components of VR

Virtual reality (VR) refers to a collection of interconnected elements that together give consumers access to immersive and interactive experiences. The key components of Virtual Reality can be examined under two major categories; hardware and software. These elements work together to form virtual reality, which opens up new opportunities for training, education, entertainment, and a variety of professional applications. Virtual reality takes users to artificial, computer-generated worlds through an immersive, multisensory experience.

Figure 4: Components of Virtual Reality System



(Bamodu & Ye, 2013)

2.3.5.1. The Input Devices

Interaction with the virtual environment is facilitated through input devices, which relay user actions to the system. In real-time, output devices respond accordingly by conveying feedback to the user. Input devices encompass voice devices, bio-controllers, tracking devices, and point input devices (Bamodu & Ye, 2013). Examples of input devices include gloves, trackers, keyboards, and both 2D and 3D mice (Mazuryk & Gervautz, 1996).

2.3.5.2. The Output Devices

To induce sensory stimulation, the output devices receive feedback from the VR engine and subsequently relay it to users through the suitable output channels. These output devices can be classified based on the senses they target, which include visual (graphics), auditory (audio), haptic (touch or force), olfactory (smell), and gustatory (taste) sensations. Visual, auditory and haptic senses are typically used in VR systems, but taste and smell are still foreign to the VR experience (Bamodu & Ye, 2013). In the 2000s, wearable vision systems developed further and improved in terms of usability.

Two widely adopted options for graphics in Virtual Reality (VR) are the stereo display monitor and the more immersive Head-Mounted Display (HMD). The HMD provides a heightened level of immersion as it presents two separate viewpoints to the brain, which subsequently processes these inputs to generate a three-dimensional perspective of the virtual environment. One of the most popular wearable VR system is Oculus Rift which was bought by the company META for 2 billion dollars (see Figure 5).

Figure 5: Oculus Rift



(Wikipedia, 2012)

2.3.5.3. System Software

According to Mazuryk and Gervautz (1996), basic software has a huge impact on virtual reality experience which is beyond the input and output devices. Software is in the position of controlling input and output devices, processing incoming information, and producing precise responses. The difference from traditional systems is that fully immersive VR devices are much more complex than non-immersive VR devices such as people use on the desktop. Fully immersive VR devices are extremely sensitive to usage and direct great deal of data to the system. Correspondingly, timing is critical in all applications and the software must manage it. Input data should be handled in a timely manner, and to avoid damaging the sense of immersion, the system response provided to the output displays should be rapid. With head-mounted goggles and connected ensembles, the electronic representations of the real surroundings are able to come alive for the users (Steuer, 1992).

2.4. Using VR for Educational Purposes

New methods for teaching and learning have been made possible by the technological revolution. Earnshaw (2014), mentions in his book 'Virtual Reality Systems' that the advantages of simulation environments for training have been demonstrated by flight simulators, which have cheaper operating costs and are safer to use than actual planes. Moreover, flight simulators enable the simulation of risky situations that are not possible with actual aircraft. Also, they increase revenue by freeing up aircraft to be employed for customers, freight, or both. Virtual reality presents three-dimensional computer-generated environments featuring advanced interactive capabilities, which have the potential to augment learning motivation and serve as a promising platform for the creation of innovative educational tools. According to the Horizon Reports of 2016, 2017, and 2018, VR, or mixed reality, stands as a highly influential technology poised for widespread integration in education in the immediate future. (Adams Becker et al., 2016; Freeman et al., 2017; Adams Becker et al., 2018).

Çoruh (2011), assessed the efficiency of the virtual reality applications in art history course and his findings demonstrated that VR applications has a positive impact on art history students. He used experimental research design and at the end of the process the experimental group's post test results, the group exposed the VR during the semester, superior to control group which has not been showed any VR supported lesson. His research also provides data about students' attitude about the process and according to results students enjoyed using virtual reality applications for the art history lesson.

Virtual Reality has been widely used for science lessons. Arıcı (2013), used virtual reality tools to provide three dimensional visualizations of solar system and space. He worked with 7th graders and his results showed that experimental groups' academic success increased more than control group students' success. Durukan (2018), made research with pre-service science teachers, and he examined the effects of virtual reality enhanced learning environments. His findings suggest that prospective science instructors largely view the usage of virtual reality in the classroom as advantageous. The number of studies done with teachers and pre-service teachers are increasing as VR usage in K–12 education grows, it's critical that tech-savvy educators and

organizations assist schools in navigating this significant change so they can begin using VR in the classroom in the best way possible.

Studies also pointed out if and how the VR supported lessons effect student motivation or anxiety. Tunç (2018), focused on how Second Life, one of the desktop virtual reality settings, affected audience anxiety and people's interactions with one another. The results of the study show that users typically do not feel significant interaction anxiety in the virtual world. Yet, audience anxiety is more intense than interpersonal anxiety. As the various age groups were looked at, it was found that the level of anxiety often decreases with age.

Clark (2006), asserts that regardless of how expensive the simulation is, the utilization of virtual reality can enhance the appeal and enjoyment of learning, aiming to boost motivation and focus while also reducing costs. Additionally, VR technology facilitates the exploration of scenarios that are otherwise unattainable in the physical world, such as venturing to distant planets like Mars or navigating the interior of the human body, exploring caves or submarines, and traveling to molecules, as well as places that are extremely expensive or far away, or not exist in the time being (Piovesan, Passerino & Pereira, 2012).

It may be claimed that the place of fully immersive virtual reality in modern education system is still in its infancy but given that it won't be long before VR fully develops. Not just for education but for all the other disciplines mentioned, it will produce significantly greater affordances. As previously said, there are several development toolkits for virtual reality, which is both advantageous because many of them are free and offer a variety of special features, and disadvantageous because there isn't a single, simple platform for creating VR applications in order to support instructions.

2.4.1. The Role of VR in Second Language Teaching

The phrase "virtual reality" (VR) denotes an immensely interactive, computer-driven, multimedia setting in which the user actively engages as a participant alongside the computer, immersed in a digitally simulated environment that closely resembles reality (Pantelidis, 1993). Parisi (2015) asserts that virtual reality is a medium with enormous potential. Since VR allows for exploration and interaction, it can give L2 learners authentically simulated contexts for language education (Lan, 2016; Lan, Lyu, & Chin,

2019). It also fosters a convincing sensation of existence (Wang, Petrina, & Feng, 2017), provides room for investigation and engagement, and consequently improves knowledge (Chen, 2016; Wang et al., 2020). Virtual Reality (VR) in language learning provides an experiential learning approach that allows users to engage with the material from a first-person perspective, facilitating personalized perception and comprehension while they are trying to learn, in contrast to traditional language teaching textbooks. Textbooks reliant on third-person knowledge lack the same level of significance and meaning for students (San Chee, 2001). Immersion is one of the key aspects of VR that improves users' situated experiences. There is no longer a requirement for physical presence to feel present (Flower, 2015). This feature enables second language (L2) and foreign language (FL) learners to integrate studying a second language with a multicultural experience outside of their native nations and beyond geographical boundaries without having to leave the classroom (Wang, Petrina, & Feng, 2017).

There are many studies in the literature covers the effects of VR on language learning, but most of these studies were based on non-immersive VR technology. For example, Wehner, Gump, and Downey (2011), worked with the L2 Spanish learners whose L1 background is English, and they have explored how the game Second Life impacts their language learning motivation. The findings showed that the assistance, resources, and immersion provided boosted the participants' self-efficacy. Additionally, researchers want to look at language learners' anxiety related to virtual learning environments. It was discovered that the group's anxiety levels dropped when compared to a control group that took part in comparable interactions in a typical classroom. In conclusion, this research show that desktop VR can strengthen self-efficacy, increase motivation, and minimize the affective filter.

Studies in the field, mostly focused on specific language skills. Since this particular research is looking for vocabulary acquisition, previous VR studies which mostly focused on vocabulary learning and retention were given the highest attention.

Koçbuğ (2018), looked at the efficacy of virtual reality tools in enhancing vocabulary learning and retention. The study's findings indicated that while virtual reality tools enhance vocabulary learning and retention, there is no detectible difference in the

instructive efficacy of VR supported teaching between the study's participant groups. The majority of VR studies on L2 vocabulary learning have utilized desktop-based VR (e.g. Chen, 2016; Chen et al., 2014; Cheng et al., 2017; Lan et al., 2015; Liou, 2012). Those studies confirmed the efficiency of VR on vocabulary teaching and learning process. There are a few studies based on the fully immersive VR with HMDs. Madini and Alshaikhi (2017) and Alfadil's (2017) studies, both can be given as example of the VR studies that used mobile HDMs and both studies demonstrate the value of VR-mediated vocabulary learning.

2.5. The Impact of VR on Language Skills

Virtual Reality (VR) technology has permeated educational settings, offering unique opportunities to augment various cognitive and linguistic skills. This literature review delves into the impact of VR tools on critical thinking, creativity, and pronunciation within the context of language learning, exploring the potential of immersive environments to enhance these crucial aspects of language acquisition.

Listening: VR tools have shown promise in improving listening skills by creating realistic environments that mimic authentic language situations. For instance, virtual language immersion programs enable learners to engage in simulated conversations with native speakers, facilitating exposure to diverse accents, tones, and conversational contexts (Li, 2019). Research by Slater et al. (2018) emphasizes the positive impact of VR on enhancing auditory perception and comprehension skills, attributing it to the heightened sense of presence and immersion offered by VR environments.

Speaking: The interactive nature of VR facilitates the development of speaking skills through simulated conversations and language scenarios. VR platforms, such as language exchange programs in virtual environments, enable learners to practice speaking with virtual characters or real counterparts in a risk-free setting (Zhang et al., 2020). A study by Wu et al. (2017) demonstrated that VR-based language learning interventions resulted in increased speaking proficiency and reduced communication apprehension among participants.

Reading: In the realm of reading skills, VR tools contribute to creating engaging and dynamic environments that promote active reading. Virtual libraries and immersive

storytelling experiences provide learners with opportunities to interact with textual content in a three-dimensional space, fostering comprehension and retention (Froese et al., 2021). The study by Wang et al. (2019) highlights the positive correlation between VR-based reading interventions and improved reading comprehension skills in language learners.

Writing: VR tools offer innovative approaches to enhance writing skills by providing learners with virtual writing spaces and collaborative environments. Virtual classrooms enable real-time feedback and peer collaboration, creating a supportive ecosystem for the development of writing proficiency (Lee et al., 2021). The study conducted by Xu et al. (2018), showcases the positive impact of VR on writing skills, emphasizing the improvement in language accuracy and expression among participants.

Pronunciation: VR tools play a significant role in refining pronunciation skills by providing learners with authentic and interactive language experiences. Pronunciation-focused VR applications enable learners to practice in a controlled and immersive environment, receiving instant feedback on articulation and intonation (McCrocklin, Stuckel & Mainake 2022). The study conducted by Alemi & Khatoony (2020), illustrates the effectiveness of VR-based pronunciation training in improving accuracy and fluency among language learners.

Critical Thinking: VR tools contribute to the development of critical thinking skills by providing learners with realistic scenarios that demand problem-solving and decision-making. Virtual simulations and immersive experiences engage learners in complex situations, prompting them to analyze information, evaluate options, and make informed decisions (Merchant et al., 2014). The study by Cheng et al. (2017) highlights the positive correlation between VR-enhanced language learning environments and the development of critical thinking skills among participants.

Creativity: Immersive environments created by VR tools offer a platform for fostering creativity in language learning. Virtual spaces enable learners to engage in imaginative and collaborative activities, such as virtual language projects or creative writing in simulated settings (Selfa-Sastre, et al. 2022). Research by Anderson et al. (2013), demonstrates the positive impact of VR on unlocking creative potential, emphasizing the role of immersive experiences in stimulating linguistic creativity and expression.

In conclusion, the integration of VR tools in language learning environments demonstrates a significant potential for fostering various language skills. The immersive and interactive nature of VR facilitates a holistic language learning experience, addressing the challenges associated with traditional methods. While the literature indicates promising results, further research is needed to explore the long-term effectiveness and scalability of VR tools in language education influence on these cognitive and linguistic dimensions.

2.6. Vocabulary Teaching and Learning

In order to learn and use a language effectively, vocabulary is essential. From the past to the present, researchers who study second or foreign languages have been interested in the goal of improving vocabulary knowledge, which has led to the improvement on the numerous vocabulary teaching methods, strategies, and practices. There are two key approaches to learning vocabulary that are often distinguished in vocabulary learning theories: explicit and implicit vocabulary learning (Hulstijin, 2001; Nassaji, 2003). Implicit vocabulary learning, in another term "incidental vocabulary learning" pertains to the acquisition of knowledge without a deliberate intention to learn, where learners grasp certain elements, such as vocabulary, while pursuing other primary objectives (Laufer & Hulstijn, 2001). Explicit vocabulary learning on the other hand refers to learning words through instructions.

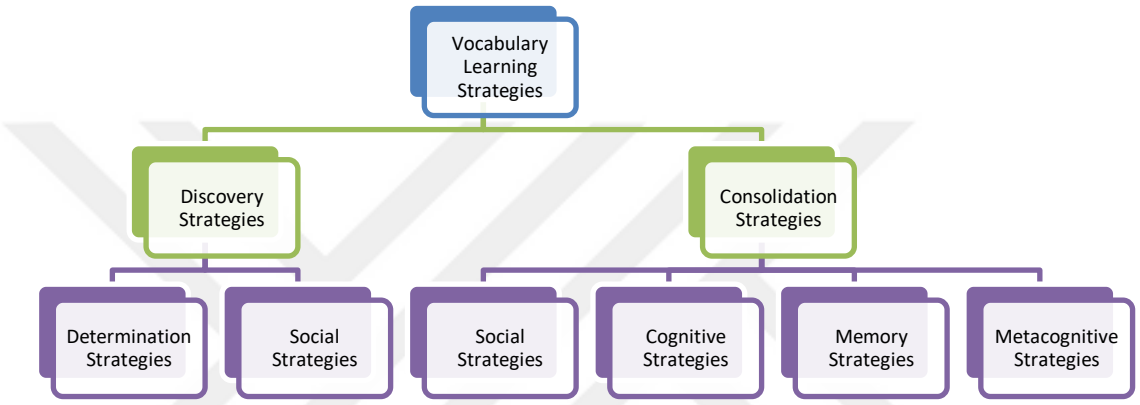
Even though the importance of vocabulary is very clear today, the scholars neglected vocabulary instruction and learning in L2 until the middle of the 1980s (Richards & Renandya, 2002). Due of this, researchers have begun to place more emphasis on vocabulary for language learning since the middle of the 1980s (Laufer, 1990; Nation, 1990; Descamps, 1992; Lewis, 1993).

Considering nothing could be communicated without vocabulary, learning vocabulary is most likely the most important component of any successful language acquisition process (Wilkins, 1976; Schmitt, 1997; Stockwell, 2007). Lexis alone can be used to communicate without having a solid grasp of grammar (Scrivener, 2005). According to Widdowson (1978), native speakers may more easily comprehend statements with accurate vocabulary but poor grammar, but they struggle to understand sentences with

accurate grammar but poor vocabulary. Vocabulary therefore is an essential component while learning a language.

Vocabulary Learning Techniques are the methods that students use to acquire new words, and Schmitt (1997), created a taxonomy of them for foreign languages with two dimensions, as illustrated in the following table.

Figure 6 Schmitt's Taxonomy of Vocabulary Learning Strategies



(Schmitt N. , 1997)

The two subcategories of discovery strategies—social strategies and determination strategies—are those that deal with learning the definitions of new phrases. Within this category of approaches, when learners encounter unfamiliar vocabulary, they deduce its meaning through their comprehension of the language structure, potential L1 cognates, contextual cues, reference materials, or by seeking assistance from others. Determination techniques make it easier to learn a new expression from the initial four possibilities. Social techniques are used to collaborate with others to understand a word's meaning. On the contrary, consolidation methods are utilized to effectively retain words after their initial encounter. There are four subcategories within this group, including social, memory, cognitive, and metacognitive methods. According to Schmitt (1997), memory strategies tie new information to what is already known, whereas cognitive strategies include the learner manipulating or transforming the target language (Schmitt, 1997). Last but not least, metacognitive methods are defined as a intentional assessment of the acquisition process and decision-making regarding planning, observing, or evaluating the most effective method of study.

It is commonly believed that if a learner masters the most common terms in the target language—usually between 1500 and 2000 words—they would be able to communicate with native speakers with ease. According to Laufer and Shmueli (1997), in order to understand the bulk of high frequency terms used in written and spoken discourse, students need be able to grasp about 3000 of them. Instructors typically introduce new terms to their students, either in context or on their own, and then expect them to understand and appropriately use them (Akın, Seferoğlu, 2004). The majority of words that students must use or grasp cannot be addressed in class, so it is important to give kids the knowledge and abilities they need to study outside of the classroom. Technologies such as VR and AR can produce variety of settings, and this can be an advantage to use it in order to provide contexts which is hard to existent at the real classroom environment.

Apparently defining what it is to know a word is the first step towards comprehending vocabulary learning. Nation (2001), describes what is knowing a word as following:

Figure 7: Learning Vocabulary in Another Language

Form		
spoken	R	What does the word sound like?
	P	How is the word pronounced?
written	R	What does the word look like?
	P	How is the word written and spelled?
word parts	R	What parts are recognizable in this word?
	P	What word parts are needed to express this meaning?
Meaning		
form and meaning	R	What meaning does this word form signal?
	P	What word form can be used to express this meaning?
concept and referents	R	What is included in the concept?
	P	What items can the concept refer to?
associations	R	What other words does this make us think of?
	P	What other words could we use instead of this one?
Use		
grammatical functions	R	In what patterns does the word occur?
	P	In what patterns must we use this word?
collocations	R	What words or types of words occur with this one?
	P	What words or types of words must we use with this one?
constraints on use (register, frequency…)	R	Where, when, and how often would we expect to meet this word?
	P	Where, when, and how often can we use this word?

R = receptive knowledge
P = productive knowledge

(Nation I. S., Learning vocabulary in another language, 2001)

This listing demonstrates that having a wide range of word knowledge components is necessary for true word mastery. The more word knowledge we possess, the more

likely it is that we will be able to use a term correctly and in the appropriate settings. The three key components of vocabulary learning—word form, word meaning, and word use—should be taken into consideration by teachers while teaching vocabulary, according to the vocabulary acquisition hypothesis. To put it another way, vocabulary instruction ought to address both the essential components of lexical items and how they relate to other words (Pan & Xu, 2011).

2.6.1. Factors Influencing the Learning and Acquisition of Vocabulary

A key component of learning a language is building a large vocabulary since it has a big influence on a person's ability to communicate and use the language. However, acquiring a new vocabulary is a complicated process that is defined by a wide range of elements that add to its complexity and diversity.

Age: Age is a key factor that has a significant effect on one's capacity to learn new words. Young learners frequently have increased sensitivity to linguistic input throughout their key era for language development, boosting the acquisition of a wider lexicon. On the other hand, older students may find it difficult to pick up new words quickly owing to a decline in neuroplasticity.

Exposure: Both the amount and type of language exposure have a big impact on vocabulary growth. Compared to students with minimal linguistic exposure, individuals who are engaged in language contexts that are rich and diverse tend to have more significant vocabulary increase. The degree of language immersion emphasizes the significance of real-world context for vocabulary development even more.

Successful vocabulary acquisition depends heavily on the frequency of introduction to new words and subsequent repetition. The learner's language repertoire is strengthened through repeated exposure to words in various settings.

Cognitive Abilities: The capacity of memory, attentional control, and reasoning aptitude all play crucial roles in the acquisition and retention of new language. The necessity to take into account cognitive variety in educational environments is highlighted by the possibility that learners with higher cognitive capacities will demonstrate improved language learning abilities.

Motivation: Learners' engagement and active participation in the vocabulary acquisition process are strongly fueled by motivation and a sincere desire in learning a language. To maximize language proficiency results, educators and organizations must cultivate an innate drive for vocabulary growth.

Learning Strategies: Utilizing efficient learning techniques, such as associations, mnemonics, and gamified methods, may significantly improve vocabulary retention and recall. The use of these techniques in language curriculum provides students with flexible tools to increase their vocabulary.

Impact of First Language: It is important to pay attention to the impact that a learner's mother tongue or first language has on their ability to acquire vocabulary in a second language. Language differences and similarities can facilitate or hinder the transfer of vocabulary, calling for specialized methods of language training.

Socioeconomic and Cultural Background: The linguistic opportunities and resources that are accessible to learners can be influenced by socioeconomic level and cultural background, which may have an impact on vocabulary growth and language proficiency. In order to promote fair language instruction, it is crucial to take these socio-cultural elements into account.

Teaching Methods: The effectiveness of vocabulary learning is substantially influenced by the pedagogical approaches used by instructors and language programs. The language development of students is facilitated by the thoughtful blending of multimedia, digital resources, and cutting-edge teaching strategies.

In conclusion, learning and acquiring a vocabulary is a dynamic process driven by a complex interaction of elements. For vocabulary growth in educational environments to be optimized, it is critical to comprehend and acknowledge the influence of age, language exposure, cognitive abilities, motivation, learning tactics, linguistic origins, and instructional approaches. Teachers can enable students to develop greater language proficiency and communication competence by using a thorough and specialized approach.

2.6.2. VR Supported Vocabulary Learning

Researchers have found that immersive language learning platform has a favorable impact on vocabulary development because it gives intelligible information and meaningful communication throughout context-based education. The impact of various learning environments on the acquisition of Mandarin Chinese as a second language was examined in 2015 (Lan, Fang, Legault, & Li, 2015). Cognitive and linguistic viewpoints were contrasted and studied between virtual and conventional learning contexts. A research study involving 31 monolingual English speakers engaged in a training program consisting of seven learning and testing sessions, followed by a subsequent session, which comprised a delayed examination. The findings demonstrated that participants in the virtual environment learned more quickly than those in a traditional learning setting. The virtual environment's multimodal cues helped learners see, comprehend, and build their own knowledge.

2.7. Vocabulary Assessment

Assessment of students' vocabulary is an essential part of determining their level of language competence and plays a significant role in language acquisition. An effective vocabulary test can provide important information about a learner's lexical knowledge, linguistic understanding, and communicative skills.

Vocabulary assessment involves a multifaceted approach to measure various aspects of language acquisition. It considers both receptive and productive abilities, testing pupils' capacity to understand and use language in authentic situations (Nation, 2013). Traditional paper-based exams, oral evaluations, and interactive exercises that measure students' comprehension, pronunciation, and use of words in various settings are a few common vocabulary assessment techniques (Milton, 2009).

Assessment of pupils' vocabulary skills is essential to determining their overall language ability. For learners to express themselves clearly and understand complex grammatical structures, a wide and varied lexicon is necessary (Thornbury, 2006). Educators can monitor language development and spot areas that need more care and help by tracking vocabulary expansion over time (Nation, 2001). This makes it

possible for teachers to modify their pedagogical approaches to meet the needs of each student.

A strong vocabulary helps learners communicate more effectively by enabling them to express their thoughts and ideas precisely and concisely (Schmitt & Schmitt, 2014). Students acquire confidence in utilizing new terms through vocabulary evaluation, which increases their participation in communicative activities and fosters meaningful language exchanges (Laufer & Hulstijn, 2001). Additionally, it encourages students to actively participate in class discussions and to individually research a variety of vocabulary resources.

Effective vocabulary assessment contributes to academic success by promoting language proficiency across various subject areas (Graves, 2016). Students that have a diverse vocabulary are better able to understand academic literature, complete challenging activities, and communicate their knowledge well (Milton, 2009). As a result, vocabulary evaluation promotes lifetime language learning behaviors and serves as a basis for sustained academic success (Nation, 2013).

In conclusion, vocabulary assessment is crucial to language acquisition since it offers a thorough assessment of students' lexical knowledge and language skills. By using a variety of evaluation techniques, teachers may learn important information about the language development of their students and adjust their curriculum to fit each student's requirements. Students can succeed in a variety of subject areas by using a rich vocabulary, which also boosts academic performance and improves communication skills. In the end, vocabulary testing helps kids develop a strong enthusiasm for studying languages and gives them the confidence and skills they need to communicate effectively.

2.7.1. Preparing Vocabulary Test for Young Learners

The efficacy and appropriateness of a vocabulary test for young students taking a second language should be ensured by taking into account a number of important factors. The objective is to develop a test that correctly assesses students' language skills and inspires them to participate in the learning process.

Many students have varying levels of language proficiency. Word knowledge is presented by Dale and O'Rourke (1986) in four stages:

Level 1: I have never seen it before.

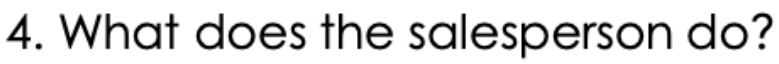
Level 2: I've heard of it, but I don't know what it means.

Level 3: I recognize its context; it has something to do with...

Level 4: I know it.

In the process of creating the pre and post-vocabulary exams, the main goal was the observe the difference of the beginning level and the end level of students for each vocabulary item. In order to do that, exam included many different types of vocabulary questions which were testing the different level of word knowledge according to Dale and O'Rourke's scale. For example, following question (Figure 8) was meant to be level 4 since students cannot answer it without knowing the meaning of the word "salesperson".

Figure 8: Example Question from Pre- Vocabulary Exam



There were some 'fill in the blanks' questions which were clearly aimed level 3 on Dale and O'Rourke's scale. Furthermore, those questions included related pictures, so that the context which was given with words also supported with images.

Figure 9 shows another example from the post-vocabulary exam, this time the context didn't included, even though students may have an idea through the picture. Still they need to know the exact meaning of the word for the given picture in order to find the right answer. One can claim that this question refers to level 4 on Dale and O'Rourke's scale.

Figure 9: Example Question from the Post-Vocabulary Exam



cold headache stomachache

In preparing both the pre and post vocabulary exams for my research, I meticulously considered several key factors to ensure their effectiveness and validity. First, I carefully chose vocabulary terms that were appropriate for the participants' level of language ability and representative of the instructional material, aligning the test questions with the study's unique learning objectives (Brown & Lee, 2015). Additionally, I balanced the difficulty level of the test items, incorporating both foundational vocabulary and more advanced terms, to measure diverse aspects of language acquisition (Ur, 2012). To enhance the authenticity of the assessment, I contextualized the vocabulary words within meaningful sentences and images to facilitate comprehension and retention for young learners (Harmer, 2007). Additionally, I made sure the word selections were age-appropriate and reflected the interests and life experiences of the learners (Brown & Lee, 2015). By conducting a pilot test to validate the test items and making necessary revisions based on the feedback received, I aimed to enhance the reliability and accuracy of the exams (Ur, 2012). Ultimately, these considerations were crucial to construct well-designed pre and post vocabulary exams, offering valuable insights into the language learning progress of the young participants and contributing to the success of the research.

3. METHOD

3.1. Introduction

This section encompasses the formulated research inquiries, the research design, the study's context and participants, the instruments utilized for data collection, the data collection and analysis procedure, and, finally, the underlying assumptions of the study.

3.2. Research Questions

The following were the primary research questions that were addressed by the current study:

1) What impact does VR technology have on young learners' language development?
    a) Do the pre-test scores show a statistically significant difference between the experimental and control groups?
    b) Do the post-test scores show a statistically significant difference between the experimental and control groups?
2) What are the young learners' acceptance level of using Virtual Reality technology during the English lessons?

3.3. Research Design

The major goal of the study was to determine how effective virtual reality technologies were in helping young learners learn language. Mixed method research design was used for current study. As described by Creswell (2014), mixed methods research represents an approach that entails the collection of both quantitative and qualitative data, their integration, and the utilization of distinct designs that encompass philosophical presumptions and theoretical frameworks. The fundamental premise behind this type of study is that the combination of qualitative and quantitative methods provides a more comprehensive understanding of a research problem compared to using each method in isolation. Both quantitative and qualitative research methods have advantages and disadvantages. Therefore, doing a mixed-method study

can help researchers maximize their strengths and minimize their shortcomings from different research methodologies (Creswell, 2014). In order to properly understand how EFL students perceive the incorporation of VR technologies into English language classes, the present study adopted a mixed methods research approach, encompassing both quantitative and qualitative research methodologies. Qualitative data provided comprehensive and detailed insights into young English as a Foreign Language (EFL) learners' perspectives on Virtual Reality technologies in English language classes. On the other hand, quantitative data contributed to an overall comprehensive understanding of the research area. The implementation of a mixed method research design allowed the researcher to address the limitations inherent in each methodology. To acquire quantitative results, the experimental phase of the study involved two groups with equivalent elementary-level proficiency. In the beginning of the school year, third grade elementary level students were randomly assigned to Classroom A and Classroom B. That is why any other selection process has not taken place during the study. VR tools actively used in experimental group during the treatment whereas control group was strict to the regular syllabus. However, both groups were given same subjects at the same amount of time. A TAM survey also given to participants at the end of treatment process. Since the TAM survey consist of Likert scale, the data gathered from it considered as quantitative as well.

The qualitative data was collected through semi-structured interviews with 10 volunteer students at the end of the treatment period. The interviews which have been recorded carefully analyzed by the researcher and a codebook was formed accordingly.

3.4. The Context and Participants

The target audience of this study is young learners who learn English as a foreign language in Turkey. When we look at the data published by Minister of Education (MEB), currently there are 18.085.943 students in Turkey. This number includes students from pre-school to end of secondary school which means students from age 5 to 18. There is no clear data about each age group, current study consists of students who are 8 and 9 years old. Since it would have taken too long and been too expensive to contact every 3rd grader in Turkey, the researcher selected a sample group using the convenience sampling method. The participants who are easily accessible and eager to

contribute are chosen for the study using non-random sampling technique (Fraenkel et al., 2012). As a result, the researcher conducted the study with the third graders who are already her students. Necessary permissions are taken from the parents and the interpretation process has begun right after. Participants were all state school students, and they were attended a weekend course where they can practice English. This language course is located in Çankaya, Ankara. 35 students took part in this study.

3.4.1. Demographic of the Participants

The current study, which involved 35 3rd grade EFL learners enrolled in the English Course of a private language course in Ankara, was conducted during the second semester of the 2022-2023 academic year. 34% of the participants (*N=12*) were eight years old, and 66% of the participants (*N=23*) were 9 years old. The main reason behind the age difference was the birth month of the students, even though they all born in the same year some of them were still 8 years old by the time interpretation took place. The experimental group had 13 nine-year-old and 6 eight-year-old, the control group on the other hand had 10 nine-year-old and 6 eight-year-old. The frequencies and percentages of the participants' ages are demonstrated in the following table and the figure.

Table 1: Participants' Age

Age	Number	Percentage
8	12	34%
9	23	66%
Total Students	35	100%

Figure 10: Participants' Age

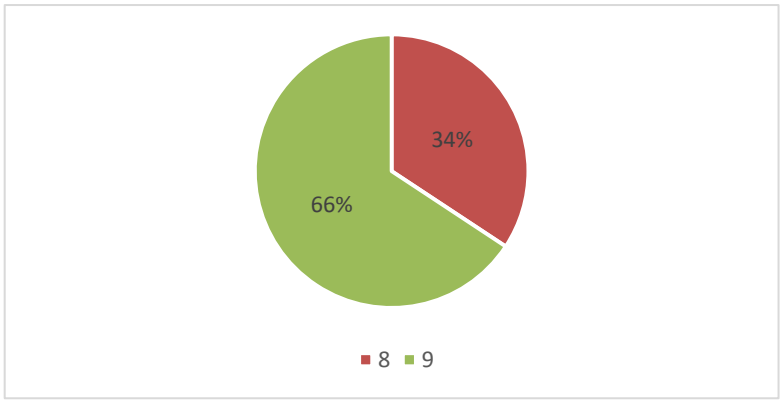


Figure 11 illustrates the gender distribution of the participants who took part in the study. The figure and the table clearly show that the number of female and male learners in the study is almost identical. To be exact, 51% of the learners are female (*N=18*) while 49% of the participants are male (*N=17*). The frequencies and percentages of the gender distribution are given in the following table and figure.

Table 2: Gender Distribution of Participants

Gender	Number	Percentage
Female	18	51%
Male	17	49%
Total	35	100%

Figure 11: Gender Distribution of Participants

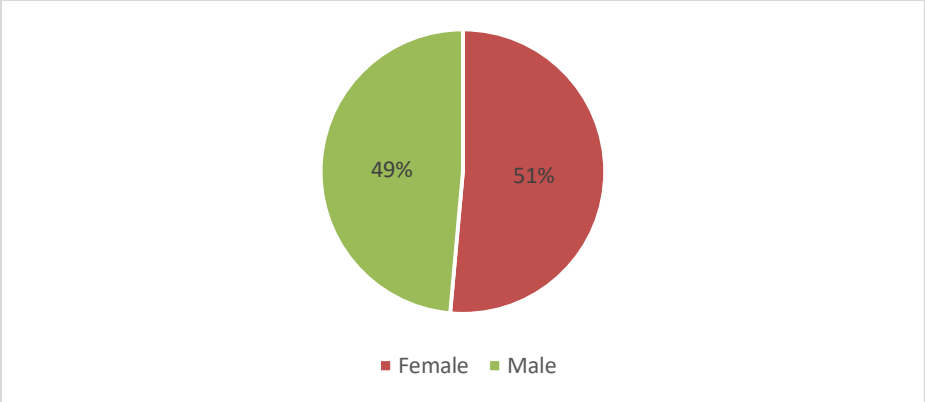
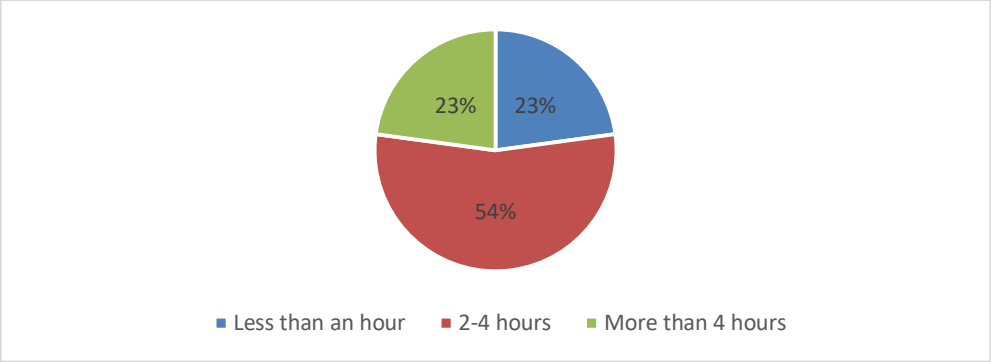


Table 3 and Figure 12 show the frequencies and percentages of participants' use of internet technologies such as smartphones and computers on a daily basis. Most of these results were based on the parent approval. Some parents are very strict about the screen time that the students expose, whereas some parents are very flexible about the issue. According to results, 23% *(N=8)* of the students expose to internet technologies approximately 1 hour a day. More than half of the students, 54% *(N=19)* expose to internet technologies two to four hours a day. Another 23% of the students *(N=8)* declared that they have expose to internet technologies more than four hours a day. Some parents were mentioned that, students in the last group were taking some online coding courses and they were practicing many school lessons through internet.

Table 3 Participants' Use of Internet Technologies on a Daily Basis

	Number	**Percentage**
Less than an hour	8	23%
2-4 hours	19	54%
More than 4 hours	8	23%
Total	35	

Figure 12 Participants' Use of Internet Technologies on a Daily Basis



Following table (Table 4) shows the devices that used for internet connection among students. In this part, participants were allowed to give multiple answers in order to clarify all the devices that they use to connect internet. According to results, every student in the study *(N=35)* was able to use computers to connect internet. 71% of the students *(N=25)* had smartphones, some of them stated that they were using the old phone of their parents or older siblings. Majority of the participants *(N=28, 80%)* were using tablets to connect, while only 37% of the students *(N=13)* were using Smart TV.

Table 4 Devices Used to Connect Internet Technologies

Device	Number of Students	Percentages
Tablets	28	%80
Smartphones	25	71,42%
Computers/Laptops	35	100%
Smart TV	13	37,14%

Table 5 demonstrates the participants' purposes of internet connection. As one can see from the table, 100% of the students were using internet for academic purposes, to study their lessons or finish their homework. Majority of the students *(N=29, 82,85%)* stated that they were using internet to learn new things. They added what they learn, for instance some of them were taking online courses. 74,28% *(N=26)* of the students

were using internet connection to have fun. Under the have fun option, participants have explained that they usually play computer games, watch videos, and use social different types of social media.

Table 5 Participants' Purposes of Internet Connection

Purpose of Internet Use	Number	Percentage
Academic Purposes (Study of do homework)	35	100%
To learn new things	29	82,85%
Play Games or Have Fun	26	74,28%
To Interact with People	11	31,42%

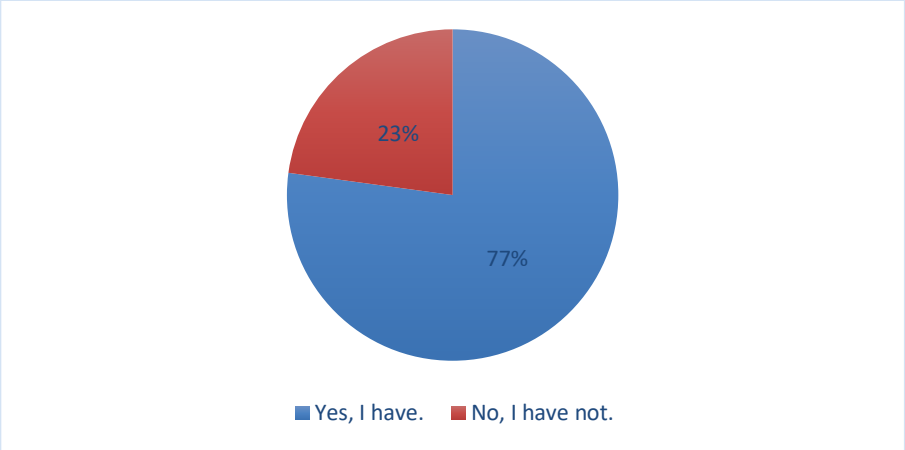
Next part specifically focused on VR technology and participants' experience with it, if they had any. In order to understand participants' knowledge of VR a few questions took place on the research. First question was aimed to find out if participants were familiar with the term VR. If they knew what virtual reality was, they were to respond to the second and third questions. If not, they were skip to this part of the survey. 77% of the students *(N=27)* claimed they have heard VR before while 23% of the students *(N=8)* were not familiar with the term or were not sure the meaning. Following table and figure demonstrates these results. In the placement process of the experimental group and control group, those data have been used to create two equal groups. Those who are not familiar with the term 'VR' has been separated equally into control group and experimental group to avoid any sampling errors.

Table 6 Participants' Familiarity with VR

Have you ever heard the term 'Virtual Reality'?	Number	Percentage

Yes, I have.	27	77%
No, I have not.	8	23%

Figure 13 Participants' Familiarity with VR

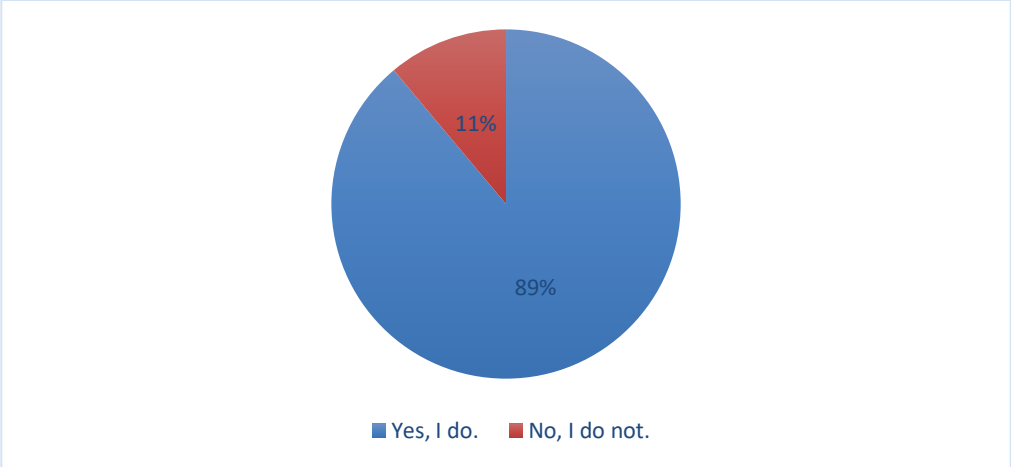


On the condition that the participants responded "Yes" to the first question, the second question was to be answered. The second inquiry sought to ascertain whether the participants had prior experience using fully immersive virtual reality (VR) technology. Twenty-seven participants out of the thirty-five who answered "Yes" to the first question had the chance to answer this question and greater part of the students *(N=24)* stated that they had experience with fully immersive virtual reality as demonstrated in Table 7 and Figure 14.

Table 7 Participants' Experience with Fully Immersive VR Technology

Do you have any prior experience with fully immersive VR?	**Number**	**Percentage**
Yes, I do.	24	89%
No, I do not.	3	11%

Figure 14 Participants' Experience with Fully Immersive VR Technology



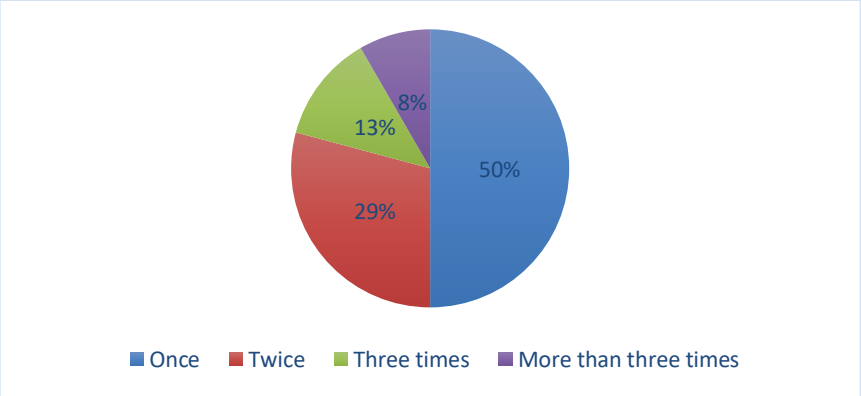
Regarding the third question, participants were given four options—once, twice, three times, and more than three times—to indicate how many times they had previously tried fully immersive virtual reality. This question was only for the participants who answered 'Yes, I do' to previous question. As one can see from the following table (Table 8) and figure (Figure 11), half of the students who answered this question *(N=12, 50%)* stated that they have experienced fully immersive VR only once in their life. They have also mentioned this experience took place on a school trip where students were allowed to use a Head Mounted Display to experience fully immersive VR in a shopping mall. 29% of the students *(N=7)* stated they have experienced VR twice, while 13% of them *(N=3)* said they have experienced three times. Only 8% of the students *(N=2)* had experience with fully immersive VR more than three times. Those two students added that they have VR devices in their family.

Table 8 Previous Experience with Fully Immersive VR in Numbers

How many times have you experienced fully immersive VR?	**Number**	**Percentage**
Once	12	50%
Twice	7	29%

Three times	3	13%
More than three times	2	8%

Figure 15 Previous Experience with Fully Immersive VR in Numbers



3.5. Data Collection Instruments

With the aid of surveys and interviews, both quantitative and qualitative data were gathered for the current study. The next five sections provide a summary of each data collection tool's specifics.

3.5.1. Survey

The primary goal of using surveys in research studies is to examine a sample of a population to describe its features (Dörnyei & Csizer, 2012). The use of surveys by academics to collect data has a number of benefits. These benefits include access to a wide range of participants, the ability to swiftly obtain a lot of information in an easily processed manner and relatively low data collecting costs (Mathiyazhagan & Nandan, 2010). To learn more about how young learners perceive the VR supported vocabulary teaching in English language classrooms, questionnaires were conducted after the intervention. Pre-Survey was mainly aimed to collect demographic data of participants and their background with the VR technology whereas post-survey (TAM) only conducted with the experimental group to understand their acceptance on VR technology which will be explained detailly in part 3.5.4. The details and the questions of the Pre-Survey already given under the section 3.4.1. It is also available on appendix

(See Appendix). This pre-survey helped the shape experimental group and control group evenly.

3.5.2. Pre-Vocabulary Test

All of the items that would be covered during the study were included in the pre-test, which was created to assess the students' proficiency with the targeted vocabulary (See Appendix). Targeted vocabulary is based on the coursebook (Everybody Up 3), which was main course material for this institute. As mentioned under the section 2.6.1, pre vocabulary test included questions which were assessing the different levels of vocabulary knowledge. Questions were designed for 3rd graders and in that age, they are familiar with only a few question types. As a result, the test included basic, familiar assessment techniques. Matching the pictures with the words and vice versa was used primarily. Fill in the blank questions were used in order to test participants' knowledge of the words in a given context. WH- questions and Yes/No questions also took place in the test since students were familiar with those types of questions and they were proper to evaluate vocabulary knowledge. In order to increase reliability of the results, the key factors of the preparing an assessment which were detailly explained in the literature review under the section 2.6 always considered.

Pre-Vocabulary test included six separate worksheets and they were given to students one by one. The main reason why the worksheets given separately was the avoid any replication from paper to paper since some papers were included questions which contains answers of other papers. Those tests took place 2 weeks before the first day of intervention. Students were given approximately 15 minutes for each paper.

3.5.3. Intervention

The intervention process aimed to explore the effectiveness of Virtual Reality (VR) tools in enhancing young learners' vocabulary acquisition. The study focused on the topic of "Occupations, and 'Illnesses" and the intervention spanned six weeks. The use of VR technology aimed to create an immersive and interactive learning experience, fostering students' engagement and motivation in the vocabulary learning process. Lesson plans for the experimental and control groups can be found at the appendix section (See Appendix).

At the first lesson students of experimental group have been introduced to VR technology and its potential benefits for language learning. They became familiarize with the VR headsets and ensure they are comfortable using them. Then the topic of "Occupations" has been given to students. Students are introduced to the VR application specifically designed for the topic of "Occupations." Through the VR application, students explore different occupations in a 3D virtual environment. Vocabulary related to each occupation is introduced, and students can interact with virtual objects and scenes to reinforce their understanding.

Afterwards, students engage in interactive vocabulary activities within the VR environment. VR simulations and quizzes are incorporated to assess their understanding of occupation-related vocabulary. The gamified nature of the activities motivates students to actively participate and compete with their peers.

On the following week, students participate in role-playing scenarios within the VR environment, where they assume different occupation roles. They use the target vocabulary to communicate with virtual characters and simulate real-world language use.

On week three, the topic ‘occupations’ has been reviewed and reinforced the learned vocabulary through VR-based exercises and games. Students engaged in collaborative activities, working together to solve language challenges presented by the VR application. Instructor provided feedback and support to help students improve their vocabulary usage.

The same process took place for the topic ‘Illnesses’ for the following three weeks. Control group was presented the same topics but this time activities of the lessons were not based on VR tools. Flashcards, pictures, PPTs and web 2.0 games were used with control group.

Subsequently, to evaluate students' vocabulary knowledge through a final assessment, which includes VR-based tasks and traditional methods, a posttest has been applied. Interviews and surveys to gather feedback from students about their experience with VR technology for vocabulary learning have taken place to reflect on the intervention process and students' responses to identify strengths and areas for improvement.

3.5.3.1. CoSpaces

During the intervention process, an application named CoSpaces has been used to enhance the lessons. This section provides wider explanation of the applications and its main features.

Innovative platform CoSpaces VR enables users to build, explore, and engage in virtual reality settings, providing a singular and immersive experience. With the help of this cutting-edge application, users may create custom 3D virtual worlds that include a variety of features including objects, animations, and interactions. CoSpaces VR is a flexible platform that has exceptional promise in the field of education, especially in the acquisition of vocabulary.

In educational settings, CoSpaces VR serves as an engaging and interactive medium to enhance vocabulary learning. Educators can utilize this platform to create virtual scenarios that align with lesson topics, such as a bustling market scene for teaching shopping-related vocabulary. Through the integration of text labels, animated objects, and even audio cues, CoSpaces VR effectively transforms abstract words into tangible and memorable experiences. Learners can walk through the virtual environment, interact with objects, and immerse themselves in context-rich scenarios, thereby solidifying their understanding of new words.

Moreover, CoSpaces VR fosters collaborative learning, allowing students to work together on shared projects, further enhancing their vocabulary acquisition process. The platform's user-friendly interface enables educators and learners alike to create customized VR content without the need for advanced programming skills. This democratized approach to content creation empowers teachers to tailor lessons to the specific needs and interests of their students.

In conclusion, CoSpaces VR presents a novel and impactful solution for vocabulary acquisition in educational contexts. By leveraging its immersive capabilities, educators can create dynamic and memorable learning experiences that transcend traditional teaching methods. CoSpaces VR not only enriches vocabulary acquisition but also cultivates creativity, collaboration, and a deeper engagement with the learning process, ultimately revolutionizing the way we approach language education.

3.5.3.2. VR Shinecon

In the research, which focused on assessing the impact of VR tools on the foreign language learning process among young learners, VR Shinecon brand has been used as the chosen virtual reality tool. The VR Shinecon headset is a prominent example of VR technology, designed to provide an immersive and interactive learning experience.

The adjustable straps on the VR Shinecon headset make it easy to use for a variety of users. It has premium lenses with a wide field of vision that improve the visual experience when participating in language learning exercises. Due to the device's compatibility with smartphones, users may access different educational VR experiences and programs that are accessible on app stores.

One of the notable attributes of the VR Shinecon tool is its ability to transport learners into a virtual environment where they can engage with language learning content in an immersive manner. Its stereoscopic display creates a three-dimensional visual experience, making language lessons more engaging and memorable. The headset's built-in speakers or headphone compatibility further enrich the experience with audio elements, aiding in pronunciation practice and listening comprehension.

The utilization of the VR Shinecon brand in the study exemplifies the practical implementation of virtual reality technology in educational settings. Through its features and capabilities, the VR Shinecon headset showcases its potential to enhance language learning experiences for young learners, fostering a more dynamic and captivating approach to acquiring foreign language skills.

The study's use of the VR Shinecon brand is an illustration of how virtual reality technology is practically applied in educational settings. The VR Shinecon headset demonstrates its potential to improve language learning experiences for young students through its features and capabilities, enabling a more dynamic and fascinating approach to learning foreign languages.

3.5.4. Post-Vocabulary Test

The post vocabulary test was used at the end of the treatment process to assess the students' improvement specifically focused on vocabulary part. The questions in the test were very similar to pre-test questions (See Appendix). Like pre vocabulary test,

post vocabulary test included six separate worksheets and all worksheets were given to students one by one to avoid replications.

3.5.5. Technology Acceptance Model (TAM) Survey

The use of TAM enables the researcher to fully describe and explore through the specifics of how users initially accepted a certain technology. The TAM survey which was used in the study was adapted from Keller (1987) and it was translated to Turkish by Kutu and Sözbilir (2011). Since the participants were not fluent English speakers, a survey which has been already translated to Turkish was selected. Before the study was conducted necessary permissions taken from Kutu and Sözbilir. The survey involved twenty-four questions and a Likert scale, ranging from (1) Strongly Disagree to (5) Strongly Agree, was used to determine the scoring. According to Kutlu and Sözbilir (2011), the reliability of the questionnaire was found to be 0.79 and 0.69 respectively. The Cronbach Alpha reliability coefficient of the entire questionnaire was found to be 0.83 and the reliability coefficients were found to be sufficient for the reliability of the questionnaire. From the data obtained as a result of the analyzes, it was concluded that the TAM, which was adapted into Turkish, is a valid and reliable questionnaire. Opinions of three expert have been considered with appropriateness of the survey with young learners. With the approval from Psychological Counselor, CEIT (Computer Education and Instructional Technology) and an Assessment and Evaluation Expert, some questions included explanations for young learners which aimed to simplify the sentences without changing the actual meaning.

The first eleven items of the TMA are basically related to attention-consistency aspect. The items in the confidence-satisfaction aspect are starting from item 12 and all the items after that. Negative statements are included in the 3rd, 12th, 14th, 16th and 18th items of the TAM. The purpose of using this questionnaire in the study was to determine how the students felt about the using fully immersive VR tools to support vocabulary learning process which were employed in the study. The full version of the survey is available at the appendix (See Appendix)

3.5.6. Semi-Structured Interview

One of the most entertaining and fascinating methods of data collection is interviewing (Fylan, 2005). Data that may not be available through surveys or observations can be

obtained through interviews (Blaxter et al., 2010). Structured, semi-structured, and unstructured interviews are the three different categories of interviews. The semi-structured interview was chosen as the best method for acquiring data among these three because it allows the interviewer to probe the interviewee's meaning and the reasoning behind a given response. An interview process was subsequently designed by the scholar based on the relevant prior related articles in the literature and research topics of the current study (See Appendix). The interview procedure created by Kaenchan (2018) to learn about Thai students' practices with AR technology in a university language education classroom served as the basis for the study questions, which were modified and created based on it.

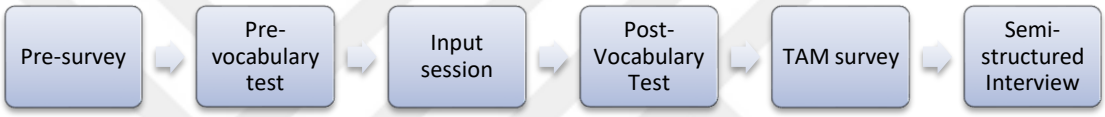
In order to understand young learners' perception of the intervention process through VR supported vocabulary learning, semi-structured interviews were carried on with 10 students from the experimental group. Students were chosen according to results of post-vocabulary test. Students were listed according to order of success which means those who got the best grades were at the top of the list while the ones who couldn't show too much success were at the end of the list. After the listing process done, all the odd numbers and the students represent them were chosen for the interview (1^{st}, 3^{rd}, 5^{th}… 19^{th}). In that way, participants were chosen evenly, the results were not based on only successful students or vice versa. One week after the administration of the post vocabulary survey, the interviews were conducted. It was made clear at the opening of the interview that participation was entirely voluntary and that, should they feel uncomfortable, they might leave at any time and without explanation. Additionally, they were informed that their voice would be recorded, and at the start of each interview, they gave their verbal agreement. Turkish was used for the interviews. Same experts that helped with the TAM survey approved the interview questions are appropriate for this age group.

The semi-structured interview includes two sections and a total of 11 questions. By asking interviewees 10 questions on their acceptance of and perceptions of VR technology, as well as their level of self-efficacy with this technology, the first section sought to evaluate their experiences with using this technology. The second and final question in the next section asked the participants whether they had any more inquiries, feedback, or recommendations regarding the study.

3.6. Data Collection Procedure

The pre-survey, pre and post vocabulary tests and interview protocol were created by the researcher with taking comments from three experts (psychological counselor, assessment expert and one colleague) and reviewed by the researcher's supervisor before to the study's start. Necessary permissions were taken for TAM survey. Following that, the ethical permission was acquired in December 2022 from the Yıldız Technical University's Applied Ethics Research Centre (See Appendix).

Figure 16: The Data Collection Process



There were six steps to the data gathering procedure, as shown in Figure 16. The procedure began with the participants' parents and participants being informed of the study's purpose and the expectations of their participation. The participants' parents were given the assurance that the information collected from them would be applied to the researcher's thesis work. Additionally, parents were informed that involvement in the research was voluntary and that their kid could decline to complete the survey for any reason. Therefore, it was ensured that they were exempt from research participation. The consent form was then delivered as handouts to the participants' parents (See Appendix).

3.6.1. Conducting Survey

After collecting the informed consent form from the participants' parents, the students were introduced to the pre-survey and given instructions on how to complete it and what was demanded of them. They were urged to get in touch with me in advance if they had any queries about the surveys or the research. 35 students in total were agreed to participate in the study. They had later been separated as experimental group, which included 19 students, and control group which included 16 students. The pre-survey was distributed through handouts, and respondents had 30 minutes to fill-in the pre-

survey. The survey was given during a lesson hour since the students were too young to handle it on their own. As a researcher, I explained each question clearly and detailly and participants were able to contact with me directly when they needed.

3.6.2. Conducting the Vocabulary Tests

Quantitative data was obtained to examine the effects of VR tools on vocabulary instruction. Students in the experimental and control groups were pre-tested on their knowledge of the targeted language at the outset. As mentioned priorly, the pre vocabulary test included 8 different worksheet and each worksheet had different types of vocabulary questions. Participants were given each worksheet separately.

The students were exposed to two separate vocabulary subjects during the study. At the input session, experimental group students were used HMD and experienced fully immersive VR. Control group on the other hand, watched videos about the target vocabulary and played games such as taboo or apple game in order to practice target vocabulary. Overall, the experimental group used a virtual reality tour to complete the assigned tasks, whereas the control group used additional flashcard and PowerPoint activities. This was the sole difference between the two groups. Both groups exposed the target vocabulary the same amount of time.

The post vocabulary test covering the two themes and the chosen vocabulary words was given at the conclusion of the lesson. It was closer to pre-vocabulary test in terms of question types. Like pretest, it also given one by one to students. All the tests were given the students during lesson hour, and any misunderstanding on the instructions made clear before the test start. Students were able to ask questions during the exam, and researcher response them unless they are related to questions' answer.

In the initial design of this study, it was my intention to incorporate a follow-up test in order to gauge the retention and long-term effectiveness of VR tools in young learners' vocabulary acquisition processes. Unfortunately, unforeseen circumstances during the course of the research project prevented the timely execution of this follow-up assessment. However, it is important to acknowledge that the absence of a follow-up test in this particular study does not preclude its potential inclusion in future research endeavors. The exploration of retention and the durability of the impact of VR tools on vocabulary acquisition among young learners remains an important avenue for

further investigation, which can be pursued in subsequent studies to provide a more comprehensive understanding of the sustained benefits of VR technology in educational settings.

3.6.3. Conducting the TAM Survey

The Instructional Materials Motivation Questionnaire was another tool used at the conclusion of the study to ascertain the views of the students regarding the materials. It was given the students at the lesson, ad each material in the survey explained carefully. It took 2 lessons for students to fill in this survey because questions needed explanation. Since, I was working with very young learners and they were not used to answer questionnaires with Likert Scale, I had to explain each question and what each point in Likert Scale means for that question. Participants were allowed to ask any question during the process.

3.6.4. Conducting the Interviews

Selecting the participants in semi-structured interviews, the results of pre-vocabulary and post-vocabulary exam have been used. In order to create a representative group, students from the top and the bottom percentage of the class needed to be chosen. As explained under the title 3.5.6, 10 participants chosen according to their success rate at the exams. All students have been listed from most successful to least successful and the students which were standing next to odd numbers (1^{st}, 3^{rd}, 5^{th}… 19^{th}) chosen for the interview.

Interview section carried out face to face and one-on-one basis. All the process audially recorded through audio-recording app of researcher's phone. The permission for audio recording was already taken from parents of participants at the beginning of the research (See Appendix). Parents were informed and insured that audio-recordings will be taken only for data-analysis process and afterwards the audios will not be kept. Each interview began with the assurance that participation was voluntary, and that the data collected would only be used for scientific purposes (See Appendix). Selected participants came to course center Sunday the week after TAM survey has conducted. Course hours were only on Saturdays and participants were unrestricted on Sundays. Even though the estimated time for each interview was 20 to 25 minutes, some interviews had to take longer than this. The reason behind that, young learners needed

to be clarified some questions in the survey. After the interview section has finished, the voice records have been transcribed by researcher and transcripts were coded for data analysis. Following table shows the descriptive features of the participants who took part in the interview.

Table 9: Demographics of the Participants of Interview

	Age	**Gender**	**Post Test Score**	**Duration of the Interview**
Participant 1	9	Female	37	22.47
Participant 2	9	Male	37	21.53
Participant 3	8	Male	37	28.42
Participant 4	9	Female	36	22.01
Participant 5	9	Female	36	27.47
Participant 6	9	Female	35	18.53
Participant 7	8	Male	35	20.26
Participant 8	8	Male	34	23.17
Participant 9	9	Male	33	19.38
Participant 10	9	Female	33	24.49

3.7. Data Analysis

Due to the explanatory sequential mixed method design used in the current study, both quantitative and qualitative data were gathered to ascertain how young learners felt about incorporating virtual reality (VR) technologies into English lessons for

vocabulary acquisition as well as their acceptance and level of self-efficacy in this area.

The data collected from pre, and post vocabulary exams transformed to an Excel sheet. Then the Excel sheet is imported to SPPS analyzing program. In order to understand whether there is a significant difference between pre-test scores of the groups, t-test results were controlled. To understand the effects of the VR tools posttest results were also controlled through independent sample t-test and ANCOVA which the posttest used as dependent variable. Results have been tabulated and presented under the results section (See 4.2).

The Instructional Materials Motivations Questionnaire was also transcript to SPPS, and the numeric data were tabulated and analyzed under the title 4.3.1. More details about the questionnaire were given under the same title.

The interviews with the chosen participants from the experimental group were recorded and transcript by researcher. The answers gathered from the participants were carefully analyzed and a codebook created by the researcher. The codebook and relevant examples for each code can be found under the title 4.3.2.

3.8. Assumptions of the Study

The following are the study's underlying presumptions:

- Both surveys and interviews were undertaken to collect quantitative and qualitative data in order to confirm the validity and reliability.
- The young learners who participated in the quantitative portion of the study gave honest evaluations of the survey items, while the interview subjects gave sincere responses to the interview questions.
- Young learners who are learning English as a second language among the participants adequately represented the population.

3.9. Role of the Researcher

The researcher of this study, who is also a language instructor, led the feedback session on using virtual reality technology and creating VR-enhanced vocabulary acquisition materials. The researcher's background is described below:

The researcher began her master's degree in English Language Teaching at Yıldız Technical University after receiving her B.A. in ELT from Başkent University. She took classes on the incorporation of ICT into ELT while pursuing her undergraduate degree. She has taught young students for one year and teenagers for another year. She was also an English as a Foreign language teacher at a private school in Ankara. She is working in a language course at the weekends where she conducted present study. She participated in online courses about the fully immersive VR embedded materials and how to design specific lectures through them. Her areas of interest in research include teacher training, technologically enhanced language learning materials, and ICT integration in ELT.

4. RESULTS

4.1. Introduction

This chapter aims to showcase the results obtained from the data analysis procedures conducted in response to each research question. Tables and graphs will be used to display the statistical analysis' findings.

4.2. The Efficiency of VR Tools on Vocabulary Acquisition

As mentioned previously, the research design entails a control group receiving no intervention and an experimental group utilizing VR tools to enhance learning. The first research question explores the impact of VR tools on vocabulary learning among young English as a Foreign Language (EFL) students, with two corresponding sub-questions identified. The initial sub-question (1-a) looks into whether there is a significant difference in the pre-test results between the experimental and control groups. Prior to the treatment process, a pre-test is necessary to establish the initial vocabulary levels of both groups, ensuring their equivalence in proficiency levels. Consequently, a pre-vocabulary test was conducted to compare the targeted vocabulary knowledge of the two groups and address the first sub-question (1-a). The results were subjected to analysis using an Independent Samples T Test through SPSS. The outcomes indicated no statistically significant difference in scores between the experimental group *(M = 14.11, SD = 3.740)* and the control group *(M = 14.13, SD = 3.879) (p > 0.05)*; t = -0.080 and p = 0.936. Consequently, neither the control nor the experimental group exhibited a distinct advantage in target vocabulary knowledge at the commencement of the trial.

Table 10: Group Statistics for Pre-Vocabulary Test Scores

Group	N	Mean	Std. Deviation	Std Error Mean
Experimental Group	19	14,11	3,740	,858
Control Group	16	14,13	3,879	,970

Table 11: Independent Samples Test Results Summary for Pre-Vocabulary Scores

	Hartley Test for Equal Variance					**95% Confidence Intervals for Difference**	
	Mean Difference	Std. Error Difference	t	df	Sig. (2-tailed)	Lower Limit	Upper Limit
Equal variances assumed	-,330	4,101	-,080	33,000	,936	-8,367	7,707
Equal variances not assumed	-,330	4,103	-,080	31,919	,936	-8,372	7,712

The research's treatment phase was initiated since no significant difference in pre-vocabulary test scores across groups was found. For six weeks, the experimental group received instruction using VR tools, while the control group was given regular classroom instruction. Details of this process given under the title 3.5.3. Additionally related lesson plans added to appendix (See Appendix).

Following the intervention, a posttest was administered to participants in both the control and experimental groups to assess any disparity in their target vocabulary knowledge. To ascertain whether a significant difference existed between the post-vocabulary test scores of the control and experimental groups, the results were subjected to analysis using an ANCOVA test, with the pre-test utilized as a covariate, as specified in the subsequent research question (1-b).

Table 12: Descriptive Statistics for Post-Vocabulary Test Scores

Dependent Variable: Post-Vocabulary Test

Group	N	Mean	Std. Deviation
Experimental Group	19	35,37	1,422
Control Group	16	34,25	1,770
Total	35	34,86	1,665

As one can see from the Table 11, the results demonstrate noticeable improvement in the scores of both experimental and control groups. Despite the increase in scores for the experimental group, their mean score (35,37) remained approximately 1 point higher than the mean score of the control group (34,25).

Table 13: Levene's Test for Equality of Variances

	F	Sig.	t	df
Equal variances assumed	,743	,395	2,073	33
Equal variances not assumed			2,034	28,682

Table 14: Test of Between-Subjects Effects

Dependent Variable: Post-Vocabulary Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	14,426[a]	2	7,213	2,890	,070
Intercept	2910,376	1	2910,376	1166,189	,000
Pre-Test	3,561	1	3,561	1,427	,241

Group	10,831	1	10,831	4,340	,045
Error	79,860	32	2,496		
Total	42620,000	35			
Corrected Total	94,286	34			

a. R Squared = ,153 (Adjusted R Squared = ,100)

The results presented in Table 12 and Table 13 indicate that the ANCOVA analysis of the post-test data *(p = .395)* does not reveal a statistically significant difference in the educational effectiveness between the group that received instruction supported by VR tools and the individuals who participated in the study.

4.3. Young Learners' Acceptance of VR Technology

4.3.1. Results of the IMMQ

The second research question aims to explore the students' perspectives regarding the utilization of VR-supported learning materials. To assess this, the "Instructional Materials Motivation Questionnaire" (IMMQ) (See Appendix) was administered to the students in the experimental group upon the completion of the instruction process. The IMMQ, originally developed by Keller (1987), has undergone validation and reliability testing in previous studies, including its translation, which was conducted by Kutu and Sözbilir (2011).

"Motivation for Instructional Materials Questionnaire" (IMMQ), originally developed by Keller in 1987, was adapted into Turkish and subjected to validity and reliability analyses. The original form of the questionnaire is in English and consists of a total of 36 items under four factors: attention, conformity, trust satisfaction. Following expert opinions, the Turkish translation of the questionnaire was administered to a total of 262 students studying in various departments of the Faculty of Education at Atatürk University and Erzincan University. Item analysis based on correlations was performed on the obtained data, and two items with negative or very low correlations

were removed from the questionnaire. The structural validity of the questionnaire was determined through exploratory factor analysis. Following the Varimax rotation technique, nine items with differences of less than 0.10 in multiple factors were removed from the questionnaire, resulting in the extraction of two factors with eigenvalues greater than 1. Subsequently, the analysis led to the removal of 11 items from the questionnaire, and the Turkish version was reorganized to comprise 24 items under a two-factor structure.

Furthermore, to assess the reliability of the questionnaire, Cronbach's alpha reliability coefficients were calculated for each factor, resulting in values of 0.79 and 0.69, respectively. The overall Cronbach's alpha reliability coefficient for the entire questionnaire was found to be 0.83, indicating sufficient reliability. The obtained reliability coefficients were deemed satisfactory for the questionnaire's reliability assessment.

In conclusion, the findings obtained from the adaptation, validity, and reliability study of the Instructional Materials Motivation Questionnaire (IMMQ), developed by Keller (1987c) with a total of 36 items, demonstrate that the questionnaire, with its 24-item version, is culturally appropriate for use in the context of Turkey, exhibits linguistic equivalence, and is a valid and reliable instrument. The said questionnaire can be reliably employed to assess the impact of instructional materials on the motivation of students.

Table 15: Descriptive Statistics of the Items of IMMQ

Item	Sum	Mean	Std. Deviation
1	93	4,89	,315
2	87	4,58	,769
3	60	3,16	1,608
4	77	4,05	1,353
5	86	4,53	1,020

6	83	4,37	,597
7	78	4,11	1,370
8	75	3,95	1,268
9	82	4,32	1,057
10	79	4,16	1,259
11	81	4,26	,806
12	37	1,95	1,545
13	78	4,11	1,243
14	41	2,16	1,425
15	81	4,26	1,368
16	37	1,95	1,508
17	84	4,42	1,170
18	41	2,16	1,537
19	87	4,58	1,017
20	86	4,53	,772
21	88	4,63	,684
22	88	4,63	,831
23	87	4,58	,838
24	91	4,79	,419

Table 14 shows the descriptive statistics for each item in the questionnaire. For all the items, the likers scale includes 5 options: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2) and Strongly Disagree (1). Numeric references written in the parenthesis used for making statistical descriptions of the results. Therefore, if the mean score closes to 5, it means it is close to Strongly Agree whereas if it closes to 1, it means the answers are close to Strongly Disagree option. The aim of the questionnaire was to discover young learners' attitude among the VR tools, previously used in language classes in order to improve their vocabulary acquisition. As table 14 clearly shows, students answers were mainly closed to positive sides which they indicated they were Strongly Agree with the statements.

Questionnaire also included negative items which indicates using VR is not enjoyable or the process was hard them to adapt. The numbers of the negative items are 3, 12, 14, 16, 18. Table 14 also shows that those items have the lowest mean scores. In another way, answers are consistent with the positive items in the questionnaire.

In conclusion, the incorporation of VR technology in language classes demonstrated to be an enjoyable and engaging experience for my students. As an answer for the second research question, one can conclude that students' acceptance level for the VR technology is quite high.

4.3.2. Results of the Interviews

Referring the second research question, a qualitative data collected from the participants of the experimental group. To collect this data, 10 students chosen from the experimental group took part in an interview with the researcher. The selection process detailly explained under the title 3.6.4. The demographic features of the interviewee can be seen in Table 9 under the title 3.6.4.

The collected data in this section were analyzed in order to answer second research question: What are the young learners' acceptance level of using Virtual Reality technology during the English lessons? Participants' responses were collected through semi-structured interviews. Following the analysis of the qualitative data, a total of seven themes and related codes were identified, as presented in Table 16.

Table 16: Results of Semi-Structured Interviews

Themes	Codes	Frequencies
Advantages of VR	Enjoyment of learning	10
	Feeling of Immersion	7
	Memorable Experience	3
	Motivation to Learn	8
	Language Skills Improvement	5
Engagement Level	Low	1
	Moderate	2
	High	3
	Very High	4
Understanding English	Moderately / No Difference	2
	Well	1
	Very well / Better	2
VR Headset Comments	Comfortable	5
	Uncomfortable	3
	Needs Improvement	2
Suggestions for Improvement	Enhanced Virtual Environment	6
	Affordability	7
	Multi-User Collaboration	4

	Games and Challenges	5
	Content Variety	6
Overall Experience	Favorite VR Activity	3
	Positive Comments	7
	Negative Comments	1

The majority of the participants mentioned the positive outcomes of the VR tools which is listed under the theme 'Advantages of VR'. In that part, all students *(f=10)* mentioned how much they enjoyed of using VR tools in language classes, which is reported as 'enjoyment of learning'.

> I want to use VR in every class because then the lessons would never be boring!
>
> Teaching English with VR was incredibly fun!

Most of the participants (f=7) also mentioned the feeling of immersion and how exciting it was.

> Seeing the texts come to life in virtual reality made me feel like I was inside a fairy tale book!
>
> When I put on the VR headset, the English lesson felt like I was in a magical world. Words were coming to life right in front of me, and I was having conversations with them!

Memorable experience was another code, I choose to put under the advantages part since it also refers something positive about VR experience.

> Learning by seeing the words, I never forget them anymore.
>
> I didn't realize how time passed. I still remember all the words.

Almost all students (f=8) explicitly indicated that using VR as a learning tool increased their learning motivation. For those answers code 'Motivation to Learn' has been added to the codebook.

> Conducting classes with VR technology was different and more engaging than regular lessons, so my interest in classes increased.
>
> English lessons with VR were much more enjoyable, which is why I was more eager to participate in classes!

Finally, some students (f=5) mentioned how their English skills have been improved thanks to VR technology and those answers are added to codebook under the advantages part as ‘Language Skills Improvement’.

> Now I remember words better, and I also understand what I hear more because I've always listened to words in VR.
>
> Sometimes, when reading in a book, I forget how things are pronounced, but since I always listened in virtual reality, I now understand words better through listening.

Another theme is the engagement level of the students during VR supported language lessons. For this part, I separated participants’ answer under 4 codes which are ‘Low’ (f=1), ‘Moderate’ (f=2), ‘High’ (f=3) and ‘Very High’ (f=4). Even though most of the students were managed to engage with the tool without any problem, some students indicated that they had some difficulties during the process.

> At first, I struggled a bit to understand the lessons, and honestly, I prefer activities I do with my friends. However, VR activities weren't bad either. (Low Engagement)
>
> In VR, sometimes I get confused, especially with those activities related to professions we did, you know. But overall, I liked it; it was good. (Moderate Engagement)
>
> I learned a lot in the VR lessons; I think it was cool. Plus, we did something different. (High Engagement)
>
> I always tell my dad at home about what we did today, and he said he'll get us an Oculus headset to immerse together... VR is so much fun; they were the most enjoyable lessons I've ever had

> in my life. I wish VR tools could be part of regular lessons. (High Engagement)

Understanding English is another theme which mainly focuses on the answers that mentions how clear was the English in VR environment and whether students had any trouble understanding English in there. Answers are separated to three codes which are ‘Moderately / No Difference’ (f=2), ‘Well’ (f=1) and ‘Very Well/Better’ (f=2).

> I understand English spoken in the virtual environment, but I used to struggle because the it sound like mechanical. Now, it sounds the same as in the classroom, and I understand it. (Moderately / No Difference)

> In virtual reality, I easily understand the words because I can start listening from the beginning as much as I want. (Well)

> In virtual reality, I understand better because in a regular class, I sometimes miss something, but in the virtual environment, I can progress at my own pace. When I don't understand, I can just click again and go back to the beginning, so it's easier to understand than in the classroom. (Very Well / Better)

During the interviews, all students mentioned the HDMs, those comments are put under the theme ‘VR Headset Comments’ and separated three codes as ‘Comfortable’ (f=5), ‘Uncomfortable’(f=3) and ‘Needs Improvement’ (f=2).

> I find it very comfortable; they've designed those soft parts on the headset, which we also have, but without the headphones, it's not as comfortable. This one, though, is really comfy; it fits my head perfectly. (Comfortable)

> I can't get comfortable with it because it slips off my head; those straps feel tight. (Uncomfortable)

> I think it would be better if they designed the headset area for people who wear glasses too. (Needs Improvement)

Throughout the interview, students were asked whether they have any suggestions to improve VR supported language lessons. Their answers are coded as ‘Enhanced Virtual Environment’ (f=6), ‘Affordability’ (f=7), ‘Multi-User Collaboration’ (f=4), Games and Challenges (f=5) and lastly ‘Content Variety’ (f=6). One answer from each section provided below.

> The designs could have been more realistic. Sometimes, when the design isn't that good, I start feeling a bit queasy, like you mentioned about that bad design. I remember feeling queasy there. (Enhanced Virtual Environment)

> I was planning to ask my dad to buy it, but it's really expensive. However, my dad says it will become cheaper in a couple of years. He said we'll get one when I start to middle school. (Affordability)

> It would be great if we could enter the virtual environment at the same time; waiting for the others can be boring. (Multi-User Collaboration)

> Having more games would be awesome, and if there were levels or challenges at the end of the games, it could be even better. (Games and Challenges)

> There could be more things too; for instance, there could be talking animals, and you could assign us a 10-minute daily speaking task. And if we could change our voices while talking, wouldn't that be fun? I'd talk like Alvin the Chipmunk. (Content Variety)

The last theme covers the overall evaluations of students according to VR experience they had. This theme separated three categories and each category is coded as following: ‘Favorite VR Activity’ (f=3) ‘Positive Comments’ (f=7) and ‘Negative Comments’ (f=1). One answer from each section is provided below.

> I liked the activities we did in CoSpaces the most. The game where we looked and tried to remember things was really enjoyable. (Favorite VR Activity)

> It was such an amazing experience. I think we should always use virtual reality. (Positive Comments)
>
> For me, it was a bit difficult to participate in activities because of the headset, and I also felt queasy, so VR is fun, but I still prefer regular classes. (Negative Comments)

In summary, participants of the interview conveyed that virtual reality (VR) technology holds numerous advantages for the English language teaching and learning journey. Its capacity to present content through audio, video, and 3D models enhances learners' engagement during lessons. The integration of diverse media resources facilitates the learning process, resulting in more enduring knowledge and heightened lesson effectiveness. Consequently, VR technology is perceived as a valuable contributor to learning outcomes and students' academic accomplishments.

The implementation of VR-based activities is seen as captivating and motivating, creating a conducive environment for enjoyable learning experiences while promoting educational progress. Even though some drawbacks have been noted by the participants, such as student with glasses should be considered, majority of the comments were suggesting that their acceptance level for the VR technology was really high.

4.4. Teacher Observations:

During the implementation of Virtual Reality (VR) technology in the English language instruction for vocabulary acquisition, several notable observations were made concerning students' experiences and reactions. The aim was to discern the impact of VR tools on engagement, motivation, and overall learning satisfaction.

Engagement and Interest: Students in the experimental group displayed heightened levels of engagement during VR-enhanced lessons. Their enthusiasm was palpable, as evidenced by increased participation, active discussions, and a genuine curiosity about the virtual environments.

Facial expressions and body language indicated a positive shift, with students leaning forward, gesturing, and expressing excitement as they interacted with the VR content.

Immersion and Focus: VR technology contributed to a heightened sense of immersion among students. Observations revealed that learners were not easily distracted during VR sessions, maintaining a focused and attentive demeanor throughout the instructional period.

The novelty of the virtual environments seemed to capture students' attention, fostering an environment conducive to sustained concentration on the vocabulary learning tasks.

Technical Challenges: Despite overall positive feedback, some technical challenges were encountered, such as occasional glitches in the VR software and connectivity issues. However, students generally demonstrated resilience and adaptability, treating these challenges as minor setbacks rather than major disruptions.

Positive Emotional Responses: Students expressed positive emotions associated with the VR experience, including excitement, curiosity, and a sense of accomplishment. The immersive nature of VR seemed to evoke a positive emotional response, contributing to a favorable learning atmosphere.

Retention of Vocabulary: Informal assessments indicated that students in the experimental group demonstrated a higher retention of newly acquired vocabulary compared to traditional instruction. This was reflected not only in their immediate responses but also in subsequent discussions and activities.

Interest in Further VR Integration: Many students expressed interest in continued use of VR tools for language learning. Some even suggested incorporating VR into other subjects, indicating a potential for broader application of the technology in the educational context.

In conclusion, the teacher observations revealed a generally positive response to the integration of VR technology for vocabulary acquisition. The heightened engagement, immersive experiences, and positive emotional responses observed among students underscored the potential of VR in enhancing language instruction. While technical challenges were noted, they did not overshadow the overall positive impact on students' learning experiences. These observations contribute valuable insights to the ongoing discourse on the effective integration of VR in education.

5. DISCUSSION AND CONCLUSION

5.1. Introduction

This section aims to present and analyze the research outcomes concerning the impact of fully immersive VR tools on vocabulary acquisition of young learners, alongside the students' perceptions of these tools. Subsequently, the study's limitations and implications will be deliberated, followed by recommendations for future studies in this domain.

5.2. Analysis of the Impact of VR Supported Vocabulary Acquisition on Young Learners

Virtual Reality (VR) has emerged as a promising technology in the field of education, providing novel and immersive learning experiences for students of all ages. Numerous studies have shown how well virtual reality aids in young learners' language development. According to research by Smith et al. (2020), primary school students who used VR-based vocabulary learning applications significantly improved their word recognition and comprehension abilities compared to children who used traditional teaching techniques. The immersive and interactive nature of VR allows students to engage with vocabulary in a multisensory environment, leading to enhanced memory retention and comprehension.

Virtual reality (VR) technology has shown to be a powerful tool for increasing student motivation and engagement in language learning. A study conducted by Lee and Park (2019) found that young learners showed increased levels of enthusiasm and interest when learning vocabulary using VR simulations. In VR settings, the gamified components and interactive scenarios foster fun and playfulness, which increases students' propensity to actively engage in the learning process.

Vocabulary learning enriched by VR offers young learners individualized and independent learning experiences. Learners may explore VR settings at their own speed, choose information based on their interests, and get rapid feedback, as stated in research by Chen et al. (2018). This freedom from teacher control encourages students

to take charge of their education, encouraging self-directed study habits and enhancing their confidence in learning new words.

Virtual reality (VR) delivers a multimodal learning experience that improves memory recall and word retention by fusing auditory, visual, and kinesthetic components. The study by Wang et al. (2017) found that young learners exposed to vocabulary through VR-based scenarios showed improved memory recall and the ability to apply the acquired words in real-life situations. Immersive experiences and multisensory stimuli work together to enhance the links between words and their meanings, promoting long-term memory.

Virtual reality (VR) technology's immersive and interactive features provide efficient, interesting, and tailored learning experiences that boost vocabulary retention and understanding. Additionally, VR increases student autonomy and motivation, transforming language learning for young students into an enjoyable endeavor. As educators and researchers continue to explore the potential of VR in education, integrating this technology into language classrooms can undoubtedly revolutionize the way young learners acquire vocabulary.

The purpose of this research was to investigate the effectiveness of Virtual Reality (VR) tools on young learners' vocabulary acquisition process. With the growing interest in integrating technology into education, VR presents a promising and immersive approach to enhance language learning experiences. This study aimed to explore how VR tools can positively impact vocabulary acquisition among young learners, considering their engagement, motivation, and overall language development. By examining the outcomes of utilizing VR technology in language instruction, this research seeks to contribute valuable insights to the field of language education and inform educators about the potential benefits and challenges of incorporating VR tools into the vocabulary learning process for young learners.

In order to understand the effectiveness of the VR tools on vocabulary acquisition process of young learners, an experimental group and control group were classified in the beginning of the research. Those groups were pre-tested to identify their existing vocabulary knowledge. According to pre-test results, (*the experimental group: M = 14.11, SD = 3.740* & *the control group: M = 14.13; SD = 3.879; p=0.936)* there were

no significant difference between experimental group and control group. Once it's proven that both groups are equal in terms of existing vocabulary knowledge, the treatment process began for both groups. Experimental group has introduced VR and lessons usually enriched with VR related activities. The Head Mounted Display (HDM) that have been used in the study were from the brand-named VR Shinecon. Those tools were provided by the institution which the study took place. The control group didn't receive any VR related activities, as one can see from the lesson plans (See Appendix) but they still had other technology related activities during the lesson. Both groups were presented equal numbers of lessons and same topics by the same instructor. Following, a post-test has been applied to both groups to detect whether there is any difference of the participants vocabulary knowledge. By employing the pre-test as a covariate, the data were examined, revealing that both groups demonstrated an increase in their scores. The post-test analysis ($p = .395$) indicated that there is no statistically significant difference in the educational effectiveness of VR tools supported vocabulary acquisition among the young learners.

There could be several reasons for the lack of significant difference occurred on post-test results. Firstly, the duration and intensity of intervention process may not have been sufficient to observe significant differences. Vocabulary acquisition often requires repeated exposure and practice over an extended period. Individual differences may have been affected the study as well. It's possible that some learners in the control group had more effective traditional teaching methods or that some learners in the experimental group struggled with the VR technology, impacting their performance. Moreover, there may have been uncontrolled variables that influenced the results. These could include external factors that were not accounted for in the study, such as differences in the teaching skills of the instructor. It's possible that the participants in the experimental group needed more time to adapt to the VR environment and learn how to use it effectively for language acquisition. Participants in the experimental group may have known they were part of an experiment involving new technology, leading to the Hawthorne effect, where they may have altered their behavior or performance because they were aware they were being observed.

To improve the effectiveness of VR tools for vocabulary acquisition among young learners, consider revising the VR program, increasing sample size, refining

assessment methods, and addressing the factors mentioned above. Further research and adjustments may be needed to better understand how to harness the potential of VR in language education.

One of the most striking outcomes of incorporating VR in vocabulary acquisition has been the significant increase in student engagement and motivation. The results of the survey and interviews unveiled a remarkable trend and young learners expressed genuine enthusiasm and excitement for VR-assisted vocabulary learning. They revealed that the immersive nature of VR significantly heightened their engagement with the lessons. Instead of considering learning new words to be an exhausting task, students were excited to explore virtual worlds, turning the process into a wonderful experience. Participants also expressed that VR-based vocabulary lessons were memorable and left a lasting impact on their language development. However, this statement isn't proven in the study, since there is no follow-up test applied to observe vocabulary retention.

Even though many of the comments in the interview were positive, there were some drawbacks of these tools that highlighted by the students as well. A few of the participants experienced motion sickness or dizziness while using VR. Although it was a small number of students, it did affect their overall enjoyment and focus during the vocabulary lessons. Over time, they adapted to the VR environment, but it was something to consider. Additionally, some students mentioned the uncomfortable features of the HMD, such as there were not enough place for students that use glasses.

The study's findings unequivocally demonstrate the positive impact of Virtual Reality on young learners' vocabulary teaching experience. The integration of VR technology has proven to be a powerful tool in motivating and engaging students, fostering their love for language learning. The immersive and interactive nature of VR empowers them to take ownership of their learning, building confidence and enhancing collaborative skills. As we continue to explore the potential of VR in education, I am excited to see how this innovative technology will further revolutionize language teaching and create a bright future for our young learners.

5.3. Implications for Practice

Virtual Reality (VR) has emerged as a groundbreaking technology with vast potential to revolutionize various industries, including education. Considering VR can produce immersive and interesting learning experiences, educators have started to investigate how to incorporate technology into educational environments.

The integration of VR in educational settings offers several benefits that enhance the teaching and learning experience. Firstly, VR provides students with immersive learning opportunities that transport them to virtual worlds, enabling them to explore different subjects beyond the confines of traditional classrooms. This enhanced level of engagement fosters a deeper understanding of complex concepts, making learning more enjoyable and effective. Moreover, VR promotes experiential learning by simulating real-life scenarios. For instance, students can explore historical events, scientific phenomena, or even foreign countries through VR simulations, making learning interactive and memorable. This experiential approach helps students retain information better and apply their knowledge to real-world situations. In addition, VR accommodates various learning styles, allowing educators to cater to individual needs. Visual learners benefit from the 3D visualizations, auditory learners from immersive sounds, and kinesthetic learners from the interactive nature of VR environments. Thus, VR technology can support personalized learning, fostering a more inclusive and diverse educational experience.

The study demonstrated that VR technology has the potential to significantly enhance engagement in language lessons. Educators can adapt VR tools to create immersive vocabulary activities, such as virtual word exploration games, interactive language puzzles, and simulated real-world scenarios that require the application of newly learned words. This can foster a dynamic and participatory learning environment.

VR platforms allow for the creation of realistic and context-rich environments. Language lessons can be designed to immerse students in scenarios where they must apply vocabulary in context, promoting a deeper understanding of word usage and meaning. For instance, virtual travel experiences, simulated conversations, or virtual storytelling sessions can contextualize language learning, making it more relevant and memorable for students.

VR technology offers opportunities for collaborative learning experiences. Teachers can design group activities within virtual spaces, encouraging students to work together to solve language challenges, engage in discussions, or collaboratively build language-related projects. This not only enhances linguistic skills but also fosters teamwork and communication.

The study identified occasional technical challenges, emphasizing the importance of addressing issues related to VR software glitches and connectivity. To facilitate smooth integration, educators and institutions should invest in reliable VR platforms, provide adequate technical support, and ensure accessibility for all students, considering factors such as device availability and internet connectivity.

VR technology allows for personalized learning experiences. Teachers can adapt language lessons to cater to individual learning styles and paces, offering tailored VR activities that address each student's specific linguistic needs. This customization can lead to more effective and personalized language instruction.

Integrating VR into language lessons requires educators to acquire new skills and competencies. Professional development opportunities should be provided to teachers to enhance their proficiency in leveraging VR tools for language instruction. This includes training on creating immersive content, managing virtual classrooms, and incorporating VR into pedagogical strategies effectively.

While this study focused on vocabulary acquisition, the potential of VR extends beyond single linguistic components. Future research and adaptation could explore the integration of VR into other language skills such as speaking, listening, reading, and writing, offering a comprehensive and immersive language learning experience.

Whereas the potential of VR in educational settings is promising, its implementation does come with challenges. One significant obstacle is the cost of VR equipment and content development. Schools and institutions may find it financially challenging to invest in high-quality VR devices and software. Moreover, developing educational VR content requires expertise and time, which may be limited for educators.

Another challenge is ensuring equitable access to VR technology. Not all students may have access to VR devices at home, leading to disparities in the learning experiences

between those who do and those who do not. Bridging this digital divide is crucial to ensure that all students can benefit from the transformative power of VR in education.

Despite the challenges, the future possibilities of VR in education are immense. As technology advances and becomes more affordable, VR is likely to become a standard tool in classrooms worldwide. From virtual field trips to historical landmarks to collaborative learning in VR environments, the possibilities for creating dynamic and engaging educational experiences are endless.

Educators and policymakers must work together to address the challenges and maximize the benefits of VR in educational settings. Providing professional development opportunities for teachers and investing in VR infrastructure in schools are critical steps towards successful integration. Additionally, collaboration with content developers and VR experts can ensure the creation of high-quality educational VR experiences.

In conclusion, Virtual Reality holds immense potential to transform educational settings and elevate the teaching and learning experience. With its ability to foster engagement, experiential learning, and personalized instruction, VR has the power to shape a more inclusive, dynamic, and effective education system. By embracing VR technology responsibly and addressing the challenges, we can harness its power to create a brighter future for learners of all ages.

5.4. Limitations of the Study

While the present study aimed to investigate the effectiveness of VR tools in enhancing vocabulary learning among young learners aged 8 and 9, certain limitations should be acknowledged to ensure the validity and generalizability of the findings.

5.4.1. Small Sample Size

The study was conducted with a relatively small sample of 35 participants, with 19 students in the experimental group and 16 students in the control group. This limited sample size may restrict the ability to draw definitive conclusions and generalize the results to a broader population of young learners. Future research with larger sample

sizes could provide more robust evidence of the impact of VR tools on vocabulary learning.

5.4.2. Short Duration of the Study

The research spanned over a 6-week period, which may have restricted the opportunity to observe long-term effects of using VR tools on language learning. A longer study duration could have allowed for more in-depth analysis of the sustained benefits and potential retention of vocabulary knowledge over time.

5.4.3. Lack of Diverse Settings

The study was conducted within a specific educational setting, and the participants were selected from a single school or institution. The limited scope of the research setting might hinder the generalizability of the findings to other diverse educational environments. Further investigations across various learning contexts would provide a more comprehensive understanding of the applicability and effectiveness of VR tools in different educational settings.

5.4.4. Limited Variability in Age Group

The study focused on young learners aged 8 and 9, which may have restricted the generalizability of the results to older or younger age groups. Including a wider range of age groups within the study could help to identify age-specific differences in the effectiveness of VR tools for vocabulary learning.

5.4.5. Control Group Inherent Bias

While efforts were made to ensure the similarity of the control and experimental groups, there might still be inherent differences between the groups that were not fully controlled for. Factors such as individual learning preferences or exposure to technology outside the study could have influenced the results.

5.4.6. Limited VR Tool Options

The selection of VR tools for the study was based on availability and compatibility with the devices used. This might have restricted the diversity of VR applications and experiences available to the participants. Including a broader range of VR tools and

platforms could have provided a more comprehensive assessment of their impact on vocabulary learning.

5.4.7. Potential Learning Curve

The introduction of VR technology to young learners might have resulted in a learning curve, particularly for those who were unfamiliar with such tools. This initial learning process could have influenced the results during the early stages of the study.

Despite these limitations, the present study provides valuable insights into the potential benefits of integrating VR tools in vocabulary learning for young learners. It is recommended that future research addresses these limitations to further enhance our understanding of the effectiveness and implications of VR technology in educational settings.

5.5. Recommendations for Future Studies

5.5.1. Longitudinal Studies

Conducting longitudinal studies with a larger sample size could provide valuable insights into the long-term effects of using VR tools for vocabulary learning. Observing students' progress over an extended period would help determine if the positive impact on learning is sustained and if any potential drawbacks lessen over time.

5.5.2. Diverse Age Groups

Expanding the age range of participants to include a wider demographic of young learners could shed light on age-related differences in the effectiveness of VR tools. Comparing the outcomes of different age groups might reveal age-specific benefits and challenges.

5.5.3. Comparative Analysis of VR Platforms

Given the limitations of specific VR applications and hardware, future studies should explore a variety of VR platforms with higher-quality Head-Mounted Displays (HMDs) and advanced software. Comparing different VR setups could help identify the most suitable and effective tools for vocabulary learning.

5.5.4. Incorporating Game Elements

Introducing gamification elements within VR-based vocabulary learning activities could enhance student motivation and engagement. Future studies could explore the effects of incorporating game-like features, such as rewards, challenges, and competition, to further stimulate students' interest and enthusiasm.

5.5.5. Language Proficiency Levels

Investigating the effects of VR tools on students with varying language proficiency levels could offer valuable insights. Future studies could include learners at different proficiency stages to determine whether VR is equally effective across all language levels.

5.5.6. Gender Differences

Analyzing potential gender differences in the perception and use of VR tools for language learning could help address the individual needs of male and female students. Understanding these differences might inform the design of gender-inclusive VR learning experiences.

5.5.7. Teacher Training

Conducting research on the effectiveness of incorporating VR training for language teachers could positively impact the implementation of VR tools in educational settings. Investigating how teacher training and support influence the integration of VR in language classrooms would be beneficial.

5.5.8. Transferability to Other Subjects

Exploring the applicability of VR tools to other subjects beyond language learning could provide valuable insights into the versatility of VR in educational settings. Investigating its impact on mathematics, science, or social studies could open up new avenues for immersive and interactive learning experiences.

By addressing these recommendations in future research, researcher can advance the understanding of the potential benefits and challenges of integrating VR tools in

language classrooms and create more effective and engaging learning environments for young learners.

REFERENCES

Adams Becker, S., Brown, M., Dahlstrom, E., Davis , A., DePaul, K., Diaz, V., & Pomerantz, J. (2018). *NMC horizon report: 2018 higher education edition.* Louisville: CO: Educase.

Adams Becker, S., Freeman, A., Giesinger Hall, C., Cummins, M., & Yuhnke, B. (2016). *NMC/CoSN horizon report: 2016 K-12 edition.* Austin, Texas: The New Media Consortium.

Ahmad, J. (2012). English language teaching (ELT) and integration of media technology. *Procedia-Social and Behavioral Sciences, 47*, 924-929.

Akın, A., & Seferoğlu, G. (2004). Improving Learners' Vocabulary through Strategy Training and Recycling the Target Words. *Hacettepe University Journal of Education, 27*, 1-10.

Alemi, M., & Khatoony, S. (2020). Virtual reality assisted pronunciation training (VRAPT) for young EFL learners. *Teaching English with Technology, 20(4)*, 59-81.

Alfadil, M. M. (2017). *Virtual reality game classroom implementation: Teacher perspectives and student learning outcomes.* . University of Northern Colorado.

Apostolellis, P., & Bowman, D. A. (2014). Evaluating the effects of orchestrated, game-based learning in virtual environments for informal education. *In Proceedings of the 11th Conference on Advances in Computer Entertainment Technology*, (pp. 1-10).

Arıcı, V. A. (2013). *Fen eğitiminde sanal gerçeklik programları üzerine bir çalışma:" Güneş sistemi ve ötesi: Uzay bilmecesi" ünitesi örneği.* Master's thesis, Adnan Menderes Üniversitesi, Sosyal Bilimler Enstitüsü.

Arts and Humanities Data Service. (2002). Retrieved from https://ahds.ac.uk

Başaran, F. (2010). *Öğretmen adaylarının eğitiminde sanal gerçeklilk kullanımına ilişkin görüşleri (Sakarya Üniversitesi BÖTE örneği).* (Doctoral dissertation, Sakarya Universitesi (Turkey).

Bamodu, O., & Ye, X. M. (2013). Virtual reality and virtual reality system components. *Advanced materials research, 765*, 1169-1172.

Barnard, D. (2023, June 14). *Virtual Speech*. Retrieved from Virtual Speech: https://virtualspeech.com/blog/history-of-vr

Bayram, N. (2009). *Sosyal Bilimlerde SPSS ile Veri Analizi.* Bursa: Ezgi Kitabevi.

Bertrand Obrist, V., & Martínez Jara, E. (2015). Application of virtual reality in a learning experience. *In XXI Congreso Argentino de Ciencias de la Computación.*

Blade, R. A., & Padgett, M. L. (2002). Virtual environments standards and terminology. *Handbook of virtual environments: Design, implementation, and applications*, 15-27.

Blaxter, L., Hughes, C., & Tight, M. (2010). *EBOOK: How to Research.* McGraw-Hill Education (UK).

Brown, H. D., & Lee, H. (2015). *Teaching principles.* Ausrtalia: Pearson Education.

Cambridge Dictionary. (2023). Retrieved from Cambridge Dictionary: https://dictionary.cambridge.org/dictionary/english/virtual

Cambridge University Press & Assessment. (2023). *Cambridge Dictionary*. Retrieved from Cambridge Dictionary: https://dictionary.cambridge.org/dictionary/english/virtual

Castellano Brasero, T., & Santacruz Valencia, L. (2018). EnseñAPP: aplicación educativa de realidad aumentada para el primer ciclo de educación primaria. . *Revista Iberoamericana de Tecnología en Educación y Educación en Tecnología*, 7-14.

Chee, Y. M. (2001). Virtual Reality in Education: Rooting Learning in Experience. Invited talk. *In Proceedings of the International Symposium on Virtual Education.* Busan, South Korea.

Chen, J. C. (2016). EFL learners' strategy use during task-based interaction in Second Life. *Australasian Journal of Educational Technology, 32(3)*, 1-17.

Chen, L., Chang, C., & Wang, C. (2018). Enhancing vocabulary learning for elementary school students using augmented reality . *Computers & Education, 125*, 95-109.

Chen, Y. L. (2016). The effects of virtual reality learning environment on student cognitive and linguistic development. *The Asia-Pacific Education Researcher, 25(4)*, 637-646.

Chen, Y.-P., Lee, S.-Y., & Howard, A. M. (2014). Effect of virtual reality on upper extremity function in children with cerebral palsy: a meta-analysis. *Pediatric Physical Therapy, 26(3)*, 289-300.

Cheng, A., Yang, L., & Andersen, E. (2017). Teaching language and culture with a virtual reality game. *In Proceedings of the 2017 CHI conference on human factors computing systems*, 541-549.

Cheng, A., Yang, L., & Andersen, E. (2017). Teaching language and culture with a virtual reality game. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, CHI '17*, 541-549.

Cheung, J., Maron, M., Tatla, S., & Jarus, T. (2013). Virtual reality as balance rehabilitation for children with brain injury: A case study. *Technology and Disability, 25(3)*, 207-219.

Choi, J.-I., & Hannafin, M. (1995). Situated cognition and learning environments: Roles, structures, and implications for design. *Educational technology research and development, 43(2)*, 53-69.

Clark, D. (2006). Retrieved from Epic-UK: http://epic-uk.co.uk/wp/

Coruh, L. (2011). *Sanat Tarihi dersinde bir öğrenme modeli olarak sanal gerçeklik uygulamasının etkililiğinin değerlendirilmesi (Erciyes Üniversitesi Mimarlık ve Güzel Sanatlar Fakülteleri örneği uygulaması)." Yayımlanmamış Doktora*

Tezi (Doctorate Dissertation). Ankara: Gazi Üniversitesi Eğitim Bilimleri Enstitüsü Uygulamalı Sanatlar Eğitimi Bölümü Grafik Eğitimi Anabilim Dalı, Ankara.

Creswell, J. (2014). *A concise introduction to mixed methods research.* SAGE publications.

Dörnyei, Z., & Csizer, K. (2012). How to design and analyze surveys in second language acquisition research. *Research methods in second language acquisition: A practical guide (1)*, 74-94.

Dale, E., & O'Rourke, J. (1986). *Vocabulary building.* Ohio: Zaner-Bloser .

Descamps, J.-L. (1992). Towards classroom concordancing. *Vocabulary and applied linguistics,*, 167-181.

Durukan, A. (2018). *SANAL GERÇEKLİKLE ZENGİNLEŞTİRİLMİŞ ÖĞRENME ORTAMININ FEN BİLİMLERİ ÖĞRETMEN ADAYLARI ÜZERİNDEKİ ETKİLERİNİN İNCELENMESİ.* Master's Thesis, Van Yüzüncü Yıl Üniversitesi Eğitim Bilimleri Enstitüsü.

Earnshaw, R. A. (2014). *Virtual reality systems.* Academic press.

Ferracani, A., Pezzatini, D., & Del Bimbo, A. (2014). A natural and immersive virtual interface for the surgical safety checklist training. *In Proceedings of the 2014 ACM international workshop on serious games*, (pp. 27-32).

Flower, C. (2015). Virtual reality and learning: Where is the pedagogy? *British Journal of Educational Technology, 46(2)*, 412-422.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education (Vol. 7, p.429).* New York: McGraw-hill.

Freeman, A., Adams Becker, S., Cummins, M., Davis, A., & Hall Giesinger, C. (2017). *NMC/CoSN horizon report: 2017 K–12 edition.* Austin, Texas: The New Media Consortium.

Freina, L., & Ott, M. (2015). A literature review on immersive virtual reality in education: state of the art and perspectives. *In The international scientific conference elearning and software for education (Vol. 1, No. 133)*, (pp. 10-1007).

Fylan, F. (2005). Semi-structured interviewing . *A handbook of research methods for clinical and health psychology*, 65-78.

Graves, M. F. (2016). *he vocabulary book: Learning and instruction.* Teachers College Press.

GreatFlyer. (2018, 10 11). *YouTube.* Retrieved from YouTube: https://www.youtube.com/watch?v=6oWPRhogNpQ&t=3s

Harmer, J. (2007). *The practice of English language teaching.* London/New York: Pearson Longman.

Horowitz, K. (2004). Sega VR: Great idea or wishful thinking. *In Sega-16 Forum*, (p. 13).

Huang, H.-M., Rauch, U., & Liaw, S.-S. (2010). Investigating learners' attitudes toward virtual reality learning environments: Based on a constructivist approach. *Computers & Education, 55(3)*, 1171-1182.

Hulstijn, J. H. (2001). Intentional and incidental second-language vocabulary learning: A reappraisal of elaboration, rehearsal and automaticity. In P. Robinson, *Cognition and Second Language Instruction* (pp. 258-286). Cambridge University Press.

Inhelder, B., & Piaget, J. (1971). *Die Entwicklung des räumlichen Denkens beim Kinde.* Klett-Cotta.

ISTE. (2000). *National educational technology standards for teachers.* International Society for Technology in Education.

Jacobson, J., Ellis, M., Ellis, S., & Seethaler, L. (2005). Immersive displays for education using CaveUT. *In EdMedia+ Innovate Learning* (pp. 4525-4530). Advancement of Computing in Education (AACE).

Johnson, A., Roussos, M., Leigh, J., Vasilakis, C., Barnes, C., & Moher, T. (1998). The NICE project: Learning together in a virtual world. *IEEE 1998 Virtual Reality Annual International Symposium (Cat. No. 98CB36180)* (pp. 176-183). IEEE.

Kaenchan, P. (2018). *Examining Thai students' experiences of augmented reality technology in a university language education classroom.* Doctoral dissertation, Boston University.

Karasar, Ş. (2004). Eğitimde yeni ilitişim teknolojileri-internet ve sanal yüksek eğitim.

Keller, J. M. (1987). *IMMS: Instructional materials motivation survey.* Florida: Florida State University.

Koçbuğ, R. (2018). *The Effectiveness of Virtual Reality Tools on Vocabulary Learning and Retention.* İstanbul: ayımlanmamış Yüksek Lisans Tezi, İstanbul Üniversitesi.

Kushner, D. (2014). Virtual reality's moment. *leee Spectrum*, 34-37.

Kutu, H., & Sözbilir, M. (2011). Adaptation of instructional materials motivation survey to Turkish: A validity and reliability study. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education, 5(1),* 292-312.

Lacina, J. (2005). Technology in the Classroom: Grammar Instruction and Technology. *Childhood Education, 81(4),* 247-249.

Lan, Y. J. (2016). The essential design components of game design in 3D virtual worlds: From a language learning perspective. In M. Spector, B. B. Lockee, & M. D. Childress, *Learning, Design, and Technology. An International Compendium of Theory, Research, Practice, and Policy* (pp. 1-18). Switzerland: Springer International Publishing.

Lan, Y. J., Fang, S. Y., Legault, J., & Li, P. (2015). Second language acquisition of Mandarin Chinese vocabulary: context of learning effects. *Educational Technology Research & Development, 63(5),* 671-690.

Lan, Y. J., Lyu, B. N., & Chin, C. K. (2019). Does 3D immersive experience enhance Mandarin writing by CSL students? . *Language Learning & Technology, 23(2)*, 125-144.

Lan, Y.-J. (2020). Immersion, interaction and experience-oriented learning: Bringing virtual reality into FL learning. *Language Learning & Technology, 24(1)*, 1-15.

Lantz-Andersson, A., Vigmo, S., & Bowen, R. (2013). Crossing boundaries in Facebook: Students' framing of language learning activities as extended spaces. *International Journal of Computer-Supported Collaborative Learning 8*, 293-312.

Laufer, B. (1990). Ease and difficulty in vocabulary learning: Some teaching implications. *Foreign Language Annals 23(2)*, 147-155.

Laufer, B., & Hulstijn, J. (2001). Incidental vocabulary acquisition in a second language: The construct of task-induced involvement. *Applied Linguistics*, 1-26.

Laufer, B., & Shmueli, K. (1997). Memorizing new words: Does teaching have anything to do with it? *RELC journal*, 89-108.

Lee, J. (1999). Effectiveness of computer-based instructional simulation: A meta analysis. *nternational journal of instructional media, 26(1)*, 71.

Lee, S., & Park, S. (2019). Engaging young language learners through virtual reality. . *Learning & Technology, 23(3)*, 84-101.

Levy, M. (2010). Developing the language skills: Aligning the technological tool to the pedagogical purpose. *The impact of technology on language learning and teaching: What, how, and why.* (pp. 16-27). Singapore: Regional Language Centre.

Levy, M. (2016). Researching in language learning and technology. *he Routledge handbook of language learning and technology*, 101-104.

Lewis, M. (1993). *The lexical approach (Vol. 1).* Hove: Language teaching publications.

Liou, H. C. (2012). The roles of Second Life in a college computer assisted language learning (CALL) course in Taiwan. *ROC. Comput. Assist. Lang. Learn. 25(4)*, 365-382.

Madini, A. H., & Alshaikhi, D. (2017). Virtual reality for teaching ESP vocabulary: A myth or a possibility. *International Journal of English Language Education, 5(2)*, 111-126.

Mathiyazgahan, T., & Nandan, D. (2010). Survey research method. *Media Mimansa, 4(1)*, 34-45.

Mazuryk, T., & Gervautz, M. (1996). History, applications, technology and future. *Virtual Reality, 72(4)*, 486-497.

McCrocklin, S., Stuckel, R., & Mainake, E. (2022). Exploring Pronunciation Learning in Simulated Immersive Language Learning Experiences in Virtual Reality.

Technological Resources for Second Language Pronunciation Learning and Teaching: Research-based Approaches, 193.

Merchant, Z., Goetz, E., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. (2014). Effectiveness of virtual reality-based instruction on students' learning outcomes in K-12 and higher education: A meta-analysis. *Computers & Education, 70*, 29-40.

Milton, J. (2009). *Measuring second language vocabulary acquisition (Vol. 45).* Multilingual Matters.

Nassaji, H. (2003). L2 vocabulary learning from context: Strategies, knowledge sources, and their relationship with success in L2 lexical inferencing. *Tesol Quarterly, 37(4)*, 645-670.

Nation, I. S. (1990). *Testing and teaching vocabulary.* New York: Heinle and Heinle.

Nation, I. S. (2001). *Learning vocabulary in another language.* Cambridge University Press.

Nation, I. S. (2013). *What should every EFL teacher know?* Shanghai Foreign Language Education Press.

Pan, Q., & Xu, R. (2011). Vocabulary Teaching in English Language Teaching. *Theory & Practice in Language Studies, 1(11).*

Pantelidis, V. S. (1993). Virtual reality in the classroom. *Educational technology, 33(4)*, 23-27.

Parisi, T. (2015). *Learning virtual reality: Developing immersive experiences and applications for desktop, web, and mobile.* O'Reilly Media, Inc.

Parmaxi, A. (2020). Virtual reality in language learning: a systematic review and implications for research and practice. *Interact. Learn. Environ. 31*, 172-184.

Parmaxi, A. (2023). Virtual reality in language learning: A systematic review and implications for research and practice. *Interactive learning environments, 31(1)*, 172-184.

Piovesan, S. D., Passerino, L. M., & Pereira, A. S. (2012). Virtual Reality as a Tool in the Education. *International Association for Development of the Information Society.*

Rheingold, H. (1991). *Virtual Reality: exploring the brave new technologies.* Simon & Schuster Adult Publishing Group.

Richards, J. C. (2015). *Error analysis: Perspectives on second language acquisition.* Routledge.

Richards, J. C., & Renandya, W. A. (2002). *Methodology in language teaching: An anthology of current practice.* . Cambridge university press.

Rizzo, A., Pair, J., K.Graap, Manson, B., McNerney, P. J., Wiederhold, B., & Spira, J. (2006). *A virtual reality exposure therapy application for Iraq War military personnel with post traumatic stress disorder: From training to toy to treatment.* NATO Security through Science Series E Human and Societal Dynamics, 6, 235.

Robinson, J., & Coltz, J. (2013). Augmenting your teaching using augmented reality. *In Society for information technology & teacher education international conference Association for the Advancement of Computing in Education (AACE)*. (pp. 3352-3353). Association for the Advancement of Computing in Education (AACE).

Robinson, J., & Coltz, J. (2013). Augmenting your teaching using augmented reality. *Society for information technology & teacher education international conference* (pp. 3352-3353). Association for the Advancement of Computing in Education (AACE).

Sánchez, J., Lumbreras, M., & Silva, J. (1997). Virtual reality and learning: trends and issues. *In proceedings of the 14th International Conference on Technology and Education*, 10-13.

Saka, E. (2019). *Eğitsel amaçlı sanal gerçeklik oyunlarına yönelik araştırmaların incelenmesi: Bir meta-sentez çalışması.* Doctoral dissertation, Lisansüstü Eğitim Enstitüsü (Bilgisayar ve Öğretim Teknolojileri Eğitimi.

San Chee, Y. (2001). Virtual reality in education: Rooting learning in experience. *In International symposium on virtual education (Vol. 41).*

San Chee, Y. (2001). Virtual reality in education: Rooting learning in experience. *In International symposium on virtual education (Vol. 41).*

Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt, & M. McCarthy, *Vocabulary: Description, Acquisition and Pedagogy*. (pp. 199-227). Cambridge: Cambridge University Press.

Schmitt, N., & Schmitt, D. (2014). A reassessment of frequency and vocabulary size in L2 vocabulary teaching1. *Language Teaching 47(4)*, 484-503.

Schott, C., & Marshall, S. (2018). Virtual reality and situated experiential education: A conceptualization and exploratory trial. *Journal of computer assisted learning, 34(6)*, 843-852.

Scrivener, J. (2005). *Learning teaching (Vol. 2)*. Oxford: Macmillan.

Selfa-Sastre, M., Pifarre, M., Cujba, A., Cutillas, L., & Falguera, E. (2022). The role of digital technologies to promote collaborative creativity in language education. *Frontiers in Psychology, 13*.

Smith, J., Brown, L., & Johnson, R. (2020). Exploring the effectiveness of virtual reality in vocabulary acquisition among elementary school students. *Journal of Educational Technology, 42(2)*, 237-254.

Soto, J. B., Ocampo, D. T., Colon, L. B., & Oropesa, A. V. (2020). Perceptions of ImmerseMe virtual reality platform to improve English communicative skills in higher education. *International Journal of Interactive Mobile Technologies*, 4-19.

Soto, J. B., Ocampo, D. T., Colon, L. B., & Oropesa, A. V. (2020). *Perceptions of ImmerseMe virtual reality platform to improve English communicative skills in higher education.*

Steuer, J. (1992). Defining virtual reality: dimensions determining telepresence. . *J Commun 42*, 73-93.

Stockwell, G. (2007). Vocabulary on the move: Investigating an intelligent mobile phone-based vocabulary tutor. *Computer Assisted Language Learning, 20(4)*, 365-383.

Sutherland, I. E. (1965). The ultimate display. *In Proceedings of the IFIP Congress (Vol. 2)*, (pp. 506-508).

Teo, T. (2011). *Technology acceptance in education.* Springer Science & Business Media.

Thornbury, S. (2006). *An AZ of ELT: A dictionary of terms and concepts used in English language teaching.* Oxford: Macmillan.

Tunç, S. (2018). *Sanal gerçeklik ortamlarında kişilerin etkileşim ve izlenme kaygılarının belirlenmesi.* Master's thesis, Kırşehir Ahi Evran Üniversitesi.

Ur, P. (2012). *A course in English language teaching. Cambridge University Press.* Cambridge University Press.

VRS. (2017). *VRS.* Retrieved from Virtual Reality Society: https://www.vrs.org.uk/virtual-reality/history.html

Vygotsky, L. S. (1978). *The role of play in development.*

Wang, C. P., Lan, Y. J., Tseng, W. T., Lin, Y. T., & Gupta, K. C. (2020). On the effects of 3D virtual worlds in language learning–a meta-analysis. *Computer Assisted Language Learning, 33(8)*, 891-915.

Wang, M., Chen, Y., & Huang, Y. (2017). Enhancing vocabulary retention and recall using virtual reality technology. . *International Journal of Computer-Assisted Language Learning and Teaching, 7(3)*, 41-58.

Wang, Y. F., Petrina, S., & Feng, F. (2017). VILLAGE–Virtual immersive language learning and gaming environment: Immersion and presence. *British Journal of Educational Technology, 48(2)*, 431-450.

Warschauer, M., & Meskill, C. (2000). Technology and second language learning. In J. Rosenthal. In R. N. Campbell, & J. W. Rosenthal, *Handbook of undergraduate second language education* (pp. 303-3018).

Wehner, A. K., Gump, A. W., & Downey, S. (2011). The effects of Second Life on the motivation of undergraduate students learning a foreign language. *Computer Assisted Language Learning, 24(3)*, 277-289.

Widdowson, H. G. (1978). *Teaching language as communication.* . Oxford university press.

Wikipedia. (2012). Retrieved from Wikipedia: https://tr.wikipedia.org/wiki/Oculus_Rift

Wikipedia. (2014, 06 25). Retrieved from Wikipedia: https://tr.wikipedia.org/wiki/Google_Cardboard

Wilches, Q. F. (1999). El nuevo paradigma educativo" realidad virtual vs. aprendizaje virtual. *Revista Colombiana de Education*, 38-39.

Wilkins, D. A. (1976). *Notional Syllabuses.* Oxford: Oxford University Press.

Yang, J. C., Chen, C. H., & Jeng, M. C. (2010). Integrating video-capture virtual reality technology into a physically interactive learning environment for English learning. . *Computers & Education, 55(3)*, 1346-1356.

Zhang, Y., Xu, J., Li, H., & Cao, B. (2020). A novel coronavirus (COVID-19) outbreak: a call for action. *Chest Journal*, e99-e101.

Zhao, Y. N. (2015). Yidaiyilu jiangwei Huawei tigong gengda de shichang kongjian [One Belt One Road will open up more market space for Huawei]. *21st Century Business Herald.*

Zhao, Y., Lei, J., Lai, B. Y., & Tan, H. S. (2005). What makes the difference? A practical analysis of research on the effectiveness of distance education. *Teachers College Record, 107(8)*, 1836-1884.

Zhou, Q. (2005). The development of digital libraries in China and the shaping of digital librarians. *The Electronic Library, 23(4)*, 433-441.

APPENDIXIES

Appendix 1. Pre-Survey

Demografik Veri ve Teknoloji Deneyimi Üzerine Ön Anket Çalışması

Lütfen aşağıdaki bilgileri kendinize göre doldurunuz.

Yaş:		
Cinsiyet:		Kadın
		Erkek
Günde kaç saat internet bağlantısı olan teknolojiler ile vakit geçiriyorsunuz? (Mesela akıllı telefon, tablet ya da bilgisayar.)		1 saatten daha az
		2-4 saat arası
		4 saatten daha fazla
İnternete ne kullanarak erişiyorsunuz? (Birden fazla seçenek seçebilirsiniz.)		Bilgisayar / Laptop
		Akıllı Telefon
		Tablet
		Diğer: _____
İnternet teknolojilerini çoğunlukla hangi sebeple kullanıyorsunuz?		Okulla ilgili sebepler (ödev ya da araştırma)
		Yeni şeyler öğrenmek için
		Oyun oynamak ya da eğlenmek için
		İnsanlarla iletişim kurabilmek için

		Diğer: _____
Daha önce hiç ‘Sanal Gerçeklik’ kavramını duydunuz mu? (Eğer bu soruya ‘Evet, duydum.’ yanıtını verdiyseniz lütfen takip eden soruları da yanıtlayın, eğer ‘Hayır, duymadım.’ yanıtını verdiyseniz takip eden soruları lütfen yanıtlamayın.)		Evet, duydum.
		Hayır, duymadım.
Daha önce tam dalışlı sanal gerçeklik teknolojisini deneyimledin mi? (Eğer bu soruya ‘Evet, deneyimledim.’ yanıtını verdiyseniz lütfen bir sonraki soruyu da yanıtlayın. ‘Hayır, deneyimlemedim.’ yanıtını verdiyseniz sonraki soruyu lütfen yanıtlamayın.		Evet, deneyimledim.
		Hayır, deneyimlemedim.
Daha önce kaç kez tam dalışlı sanal gerçeklik deneyimi yaşadınız?		Bir kez
		İki kez
		Üç kez
		Üçten fazla

Appendix 2. Pre-Vocabulary Test

Circle the Correct Picture

cashier			
librarian			
postal worker			
salesperson			
server			
vet			
firefighter			
cook			

Answer the Questions



1. Who works at the supermarket?

_____



2. Who works at the library?

_____



3. Who works at the post office?

_____



4. Who works at the department store?

_____



5. Who works at the restaurant?

_____



6. Who works at the animal hospital?

_____

Complete the Sentences

flies planes	helps sick animals	makes food	fights fires



The pilot

_____ .



The cook

_____ .



The firefighter

_____ .



The vet

_____ .

Answer the Questions



1. What does the vet do?

_____



2. What does the taxi driver do?

_____



3. What does the pilot do?

_____



4. What does the salesperson do?

_____



5. What does the cook do?

_____



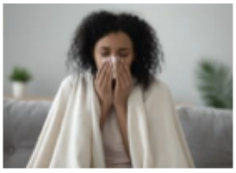
6. What does the firefighter do?

_____

Circle the Correct Word

	cold	headache	stomachache
	headache	fever	cold
	cold	fever	stomachache
	stomachache	headache	fever
	cold	headache	stomachache
	cold	stomachache	fever
	stomachache	cold	cold
	cold	stomachache	headache

Answer the Questions



1. What's the matter with her?

_____



2. What's the matter with him?

_____



3. What's the matter with her?

_____



4. What's the matter with him?

_____



5. What's the matter with her?

_____



6. What's the matter with him?

_____

Appendix 3. Post-Vocabulary Test

Circle the Correct Word

	cashier	cook	vet
	salesperson	librarian	firefighter
	cashier	server	postal worker
	cook	salesperson	librarian
	server	firefighter	postal worker
	librarian	vet	salesperson
	server	postal worker	firefighter
	vet	cook	cashier

Complete the Sentences

vet	librarian	cashier	server



The _____ works at the supermarket.



The _____ works at the animal hospital.



The _____ works at the restaurant.



The _____ works at the library.

Answer the Questions



1. Where does the cashier work?

_____



2. Where does the librarian work?

_____



3. Where does the postal worker work?

_____



4. Where does the salesperson work?

_____



5. Where does the server work?

_____



6. Where does the vet work?

_____

Answer the Questions



1. Who works at the supermarket?

_____



2. Who works at the library?

_____



3. Who works at the post office?

_____



4. Who works at the department store?

_____



5. Who works at the restaurant?

_____



6. Who works at the animal hospital?

_____

Circle the Correct Picture

cold			
fever			
stomachache			
headache			
cold			
fever			
stomachache			
headache			

Answer the Questions



1. What's the matter with her?

_____



2. What's the matter with him?

_____



3. What's the matter with her?

_____



4. What's the matter with him?

_____



5. What's the matter with him?

_____



6. What's the matter with her?

_____

Appendix 4. Letter Submitted to the Collaborating Institution

CAN İNGİLİZCE DİL EĞİTİM YAYINCILIK TİCARET VE LİMİTED ŞİRKETİ YÖNETİMİNE

Yıldız Teknik Üniversitesi, Sosyal Bilimler Enstitüsü, Yabancı Dil Olarak İngilizcenin Öğretimi Bölümü 20708013 numaralı Tezli Yüksek Lisans öğrencisiyim. "Sanal Gerçeklik Araçlarının Yabancı Dil Olarak İngilizce Öğrenen Çocukların Sözcük Edinimine Etkisi ve Öğrencilerin Sanal Gerçeklik Araçlarının Sınıf İçi Kullanımına Yönelik Algısı" başlıklı tez çalışması kapsamında ekte belirtilen ölçekleri 2022-2023 Eğitim Öğretim yılı içinde Ankara ili Çankaya ilçesinde bulunan kurumunuzun 3. Sınıf öğrencilerinden oluşan hafta sonu grubuna uygulayabilmem için gerekli izinlerin alınması hususunda;

Gereğinin yapılmasını bilgilerinize arz ederim.

___/___/2022

Kardelen Yaman

Appendix 5. Parental Research Permission Letter

Sayın Veli/Yetkili,

Ekte çocuğunuza (öğrencinize) uygulayacağımız anket ve görüşme soruları mevcuttur. Bu bilgiler araştırma amaçlı olup 'Yabancı Dil Olarak İngilizce Eğitimi' alanında kullanılacaktır. Bu bilgiler herhangi bir özel bilgi içermemektedir ve etik ilkelere paralel olarak kullanılacaktır.

Çocuğun adı, soyadı:

Çocuğun imzası: Tarih:

Velisinin adı, soyadı:

Velisinin imzası: Tarih:

Araştırıcının adı, soyadı, unvanı: Kardelen YAMAN, İngilizce Öğretmeni

Appendix 6. Research Consent Form Presented to the Parents

Sayın Veli;

Çocuğunuzun katılacağı bu çalışma, "Sanal Gerçeklik Araçlarının Yabancı Dil Olarak İngilizce Öğrenen Çocukların Sözcük Edinimine Etkisi ve Öğrencilerin Sanal Gerçeklik Araçlarının Sınıf İçi Kullanımına Yönelik Algısı" adıyla, 10/01/2023-11/03/2023 tarihleri arasında yapılacak bir araştırma uygulamasıdır.

Araştırmanın Hedefi: Sanal gerçeklik araçlarının İngilizce derslerine dahil edilmesi öğrencilerin kelime gelişimine bir katkısı olup olmadığını anlama ve öğrencilerin bu konudaki algısını ortaya çıkarmaktır.

Araştırma Uygulaması: Anket, Görüşme (ses kaydı alınacaktır) ve Test şeklindedir.

Araştırma T.C. Millî Eğitim Bakanlığı'nın ve kurum yönetiminin de izni ile gerçekleşmektedir. 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, kurum ve öğretmenleriyle olan ilişkileri etkilemeyecektir.

Çalışmada öğrencilerden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplar tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Ses kayıtları veriler kağıda geçirildikten sonra silinecektir.

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, yani bana, 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. Saygılarımla.

Kardelen YAMAN

Appendix 7. The Instructional Materials Motivation Survey

Adapted Version

1	İçeriği ilk öğrendiğimde, bu derste dikkatimi çeken bazı şeylerin olduğunu gördüm.					
2	Dersin işleniş şekli ve derste kullanılan materyaller dikkat çekiciydi.					
3	Derste kullanılan materyallerde yeterli bilgi yoktu.					
4	Derste kullanılan materyallerde bilgilerin işleniliş şekli dikkat çekiciydi.					
5	Bu derste dikkat çekici şeyler vardı.					
6	Derste bazı dikkat çekici yeni bilgiler öğrendim.					
7	Alıştırmaların, materyallerin, sunumların çeşitliliği dikkatimi derse vermeme yardımcı oldu.					
8	Derste kullanılan materyallerde işlenen konunun önemini gösteren hikayeler, resimler ve örnekler vardı.					
9	Derste kullanılan materyaller benim için uygundu.					
10	Derste öğrendiğimiz bilgilerin nasıl uygulamaya yansıtılabileceğine dair açıklama ve örnekler vardı.					
11	Derste kullanılan materyallerin gerek içeriği gerek sunumu konuların öğrenilmeye değer olduğu izlenimini uyandırıyor.					
12	Dersi anlamak beklediğimden daha zor oldu.					

13	İçeriğini ilk incelediğimde, bu ders kapsamında neler öğreneceğimi anladım.					
14	Derste kullanılan materyallerde çok fazla bilgi verildiğinden					
15	Verilen ödevleri yaptıkça konuları öğrenebileceğime dair kendime güvenim arttı.					
16	Dersteki alıştırma ve uygulamalar oldukça zordu.					
17	Ders konularını çalıştıktan sonra, bu dersten geçebileceğime dair güvenim arttı.					
18	Ders kapsamındaki konuların birçoğunu tam olarak anlayamadım.					
19	Dersteki konu diziliminin iyi olması dersi öğrenebileceğime dair güvenimi artırdı.					
20	Dersteki uygulamaları/alıştırmaları tamamlamak bende başarı hissi uyandırdı.					
21	Dersten zevk aldığım için, dersteki konular hakkında daha çok şey öğrenmek istiyorum.					
22	Derse zevk alarak çalıştım.					
23	Ödev sonrasındaki dönütler ve dersteki diğer yorumlar emeğimin karşılığını aldığım hissini verdi.					
24	Dersi başarıyla tamamlamaktan mutluluk duydum.					

Ek. Öğretim Materyalleri Motivasyon Anketi

Öğretim Materyalleri Motivasyon Anketi (ÖMMA)

Sevgili öğrenciler,

Bu anket derslerde kullanılan öğretim materyallerinin derse karşı olan motivasyonu nasıl etkilediğini ölçmeyi hedefleyen 24 maddeden oluşmuştur. Anketi cevaplarken, lütfen her bir ifadenin, karşısında yer alan **Tamamen Katılıyorum** (⑤), **Çok Katılıyorum** (④),**Orta Derecede Katılıyorum** (③), **Az Katılıyorum** (②), **Hiç Katılmıyorum** (①) seçeneklerinden size en uygun olanını işaretleyiniz. Unutmayınız ki bu bir sınav değildir ve sonuçta sizlere derslerinizi etkileyebilecek herhangi bir puan ya da not verilmeyecektir. Bu sebeple sizden soruları içtenlikle ve samimi bir şekilde cevaplamanız beklenmektedir. *Olmasını istediğiniz ya da başkalarının sizden duymayı istediği cevabı vermeyiniz*. Lütfen hiçbir soruyu cevapsız bırakmayınız. İlginiz ve katkılarınız için teşekkür ederim.

Uyarı: Bu ankette kullanılan "derste kullanılan materyaller" ifadesi ders içinde ve dışında öğrenciler tarafından kullanılması önerilen kitap, makale, sunu, web sayfası vb. her türlü derse yardımcı kaynakları ifade etmektedir.

		Tamamen Katılıyorum	Çok Katılıyorum	Orta Derecede Katılıyorum	Az Katılıyorum	Hiç Katılmıyorum
1	İçeriğini ilk öğrendiğimde, bu derste dikkatimi çeken ilginç bazı şeylerin olduğunu gördüm.	⑤	④	③	②	①
2	Dersin işleniş şekli ve derste kullanılan materyaller dikkat çekiciydi.	⑤	④	③	②	①
3	Derste kullanılan materyallerde yeterli bilgi yoktu.	⑤	④	③	②	①
4	Derste kullanılan materyallerde bilgilerin işleniş şekli dikkat çekiciydi.	⑤	④	③	②	①
5	Bu derste dikkat çekici şeyler vardı.	⑤	④	③	②	①
6	Derste bazı dikkat çekici yeni bilgiler öğrendim.	⑤	④	③	②	①
7	Alıştırmaların, materyallerin, sunumların çeşitliliği dikkatimi derse vermeme yardımcı oldu.	⑤	④	③	②	①
8	Derste kullanılan materyallerde işlenen konunun önemini gösteren hikâyeler, resimler ve örnekler vardı.	⑤	④	③	②	①
9	Derste kullanılan materyaller benim için uygundu.	⑤	④	③	②	①
10	Derste öğrendiğimiz bilgilerin nasıl uygulamaya yansıtılabileceğine dair açıklama ve örnekler vardı.	⑤	④	③	②	①
11	Derste kullanılan materyallerin gerek içeriği gerek sunumu konularının öğrenilmeye değer olduğu izlenimini uyandırıyor.	⑤	④	③	②	①
12	Dersi anlamak beklediğimden daha zor oldu.	⑤	④	③	②	①
13	İçeriğini ilk incelediğimde, bu ders kapsamında neler öğreneceğimi anladım.	⑤	④	③	②	①
14	Derste kullanılan materyallerde çok fazla bilgi verildiğinden nelerin önemli olduğunu ayırt edemedim.	⑤	④	③	②	①
15	Verilen ödevleri yaptıkça konuları öğrenebileceğime dair kendime güvenim arttı.	⑤	④	③	②	①
16	Dersteki alıştırma ve uygulamalar oldukça zordu.	⑤	④	③	②	①
17	Ders konularını çalıştıktan sonra, bu dersten geçebileceğime dair güvenim arttı.	⑤	④	③	②	①
18	Ders kapsamındaki konuların birçoğunu tam olarak anlayamadım.	⑤	④	③	②	①
19	Dersteki konu diziliminin iyi olması dersi öğrenebileceğime dair güvenimi artırdı.	⑤	④	③	②	①
20	Dersteki uygulamaları/alıştırmaları tamamlamak bende başarı hissi uyandırdı.	⑤	④	③	②	①
21	Dersten zevk aldığım için, dersteki konular hakkında daha çok şey öğrenmek istiyorum.	⑤	④	③	②	①
22	Derse zevk alarak çalıştım.	⑤	④	③	②	①
23	Ödev sonrasındaki dönütler ve dersteki diğer yorumlar emeğimin karşılığını aldığım hissini verdi.	⑤	④	③	②	①
24	Dersi başarıyla tamamlamaktan mutluluk duydum.	⑤	④	③	②	①

Appendix 8. Interview Protocol

Görüşme Protokolü

Bu görüşmelerin amacı, İngilizceyi yabancı dil olarak öğrenen çocukların Tam Dalışlı Sanal Gerçeklik ile geliştirilmiş dil öğrenme etkinliklerinin kelime edinimine katkısını gözlemlemek ve bu deneyimlerine ilişkin kişisel düşüncelerini, bakış açılarını ve açıklamalarını toplamaktır. Bu görüşme protokolü, katılımcının deneyimini ortaya çıkarmak için bir kılavuz olarak kullanılır. Mülakat soruları, teknolojik araçlar ve Sanal Gerçeklik (Cirit,2014; Kaenchan, 2018) konulu önceki tez çalışmalarından alınmıştır.

Görüşmeye Genel Bakış

Bu görüşmenin ortalama olarak 20-25 dakika sürmesi beklenmektedir. Davet edilen/seçilen her araştırma katılımcısı, bu zamanı sürece ilişkin kişisel deneyimi ve İngilizce dersleri için tam dalışlı VR destekli kelime öğrenme aktivitelerini nasıl bulduğunu ifade etmek için harcayacaktır.

1. **Kısım: Görüşmeci Tarafından Giriş**
   Görüşülen kişiye şunları söyleyin:
   Araştırma çalışmama katılmak için zaman ayırdığınız için çok teşekkür ederim. Ben Kardelen YAMAN, bu çalışmanın araştırmacısıyım. Görüşmemize başlamadan önce size bu çalışmanın amacını ve bu özel röportajı açıklamak istiyorum. Çalışmanın amacı, dil sınıflarında tam dalışlı sanal gerçeklik kullanılarak kelime öğretilmesine yönelik algılarınızı, tutumlarınızı ve kabulünüzü araştırmaktır. Bu aynı zamanda, teknolojiyle yapmak istediğinizi yapmayı ne kadar iyi başardığınıza dair kendi yargılarınızın araştırılmasını da içerir. Görüşme yaklaşık 20-25 dakika sürecektir. Görüşme sorularım herhangi bir noktada sizin için net değilse, lütfen açıklama istemekten çekinmeyin. Ayrıca, kendinizi rahatsız hissederseniz, istediğiniz zaman görüşme oturumundan çekilme talebinde bulunabilirsiniz. Başlamadan önce herhangi bir sorunuz var mı?
2. **Kısım: Görüşülen Kişinin Sanal Gerçeklik Kullanımına Yönelik Deneyimi (Tam dalışlı sanal gerçeklik teknolojisine ilişkin tutum, kabul ve algı)**

2.1 Kendi kişisel deneyiminize göre sanal gerçekliğin ne olduğunu açıklayabilir misiniz?

2.2 Özellikle sanal gerçeklik teknolojisinin kullanımını nasıl değerlendiriyorsunuz? Öğrenmenizde önemli olduğunu düşünüyor musunuz? Evet ise, nasıl ve ne ölçüde?

2.3 Lütfen sanal gerçeklik teknolojisini sınıftaki dil öğrenme etkinliklerine entegre etmenin bazı faydalarını açıklayın.

2.4 Lütfen sanal gerçeklik teknolojisini sınıftaki dil öğrenme etkinliklerine entegre etmenin bazı dezavantajlarını açıklayın.

2.5 Sanal gerçeklik teknolojisini eğitimde nasıl faydalı buluyorsunuz? Sanal gerçeklik teknolojisinin geleceğiniz için faydalı olabileceğini düşünüyor musunuz?

2.6 Sanal gerçeklik teknolojisini sınıflarınızda kullanmakta başarılı olduğunuzu düşünüyor musunuz? Genel olarak böyle bir teknolojinin kullanıcısı olarak kendinizi nasıl değerlendirirsiniz? Sanal gerçekliğin kendine güvenen veya yetkin bir kullanıcısı olarak kendinizi 1'den 10'a kadar bir puan üzerinden kaç puanla derecelendirirsiniz?

2.7 Sınıfınızda sanal gerçeklik teknolojisini kullanırken karşılaştığınız teknik kısıtlamalar/zorluklar nelerdir? Yeterli desteğiniz ve kaynağınız var mı? Ne tür destek ve kaynakların önemli olduğunu düşünüyorsunuz? Lütfen açıkla.

2.8 Sanal gerçeklik teknolojisini kullanırken herhangi bir hayal kırıklığı veya endişe hissediyor musunuz? Etkili bir şekilde kullanamayacağınızdan endişe duyuyor veya korkuyor musunuz? Lütfen açıkla.

2.9 Sanal gerçeklik teknolojisini dil öğreniminde veya dil sınıflarında kullanmayı eğlenceli ve keyifli buluyor musunuz? Lütfen açıkla.

2.10 Bu belirli SG uygulamasının (CoSpaces ve Mondly) gelecekteki gelişimi için öneriler/yorumlar sağlayabilseydiniz, geliştirme ekibine ne söylerdiniz?

3. Kısım : Diğer

Araştırmacıya sormak istediğiniz herhangi bir soru veya eklemek istediğiniz yorum var mı?

Appendix 9. Ethics Committee Approval

YILDIZ TEKNİK ÜNİVERSİTESİ
Sosyal ve Beşeri Bilimler Araştırmaları Etik Kurulu

Toplantı Tarihi: 28.12.2022 **Toplantı No: 2022.12**

SOSYAL VE BEŞERİ BİLİMLER ARAŞTIRMALARI ETİK KURULU TOPLANTI KARARI

Yürütücülüğünü Üniversitemiz Sosyal Bilimler Enstitüsü öğretim üyelerinden Doktor Öğretim Üyesi Semin Kazazoğlu danışmanlığında lisansüstü öğrencisi KARDELEN YAMAN tarafından yapılacak olan "SANAL GERÇEKLİK ARAÇLARININ YABANCI DİL OLARAK İNGİLİZCE ÖĞRENEN ÇOCUKLARIN SÖZCÜK EDİNİMİNE ETKİSİ VE ÖĞRENCİLERİN SANAL GERÇEKLİK ARAÇLARININ SINIF İÇİ KULLANIMINA YÖNELİK ALGISI" adlı çalışma ve bu çalışmada kullanılacak veri toplama araçları ve yöntemlerine ilişkin bilgilerde etiğe aykırı herhangi bir bulguya rastlanmamıştır.

Etik Kurul Üyeleri



Appendix 10. Lesson Plans - Control Group

Unit/Topic: Occupations	**Lesson 1**

LESSON OUTCOME

Aims:

Introduce and engage students in the topic of occupations.

Familiarize students with basic vocabulary related to different jobs.

Develop speaking and listening skills.

Objectives:

By the end of the lesson, students will be able to:

Identify and name different occupations.

LESSON STRUCTUTE

Time	**INTRODUCTION**
10 Minutes	- Greet the students and ask them if they know what an "occupation" is. - Show pictures of different occupations and ask students if they can name any of them.
MAIN CONTENT	
25 Minutes	- Introduce new vocabulary using flashcards (doctor, teacher, firefighter, etc.). - Pronounce and repeat each occupation with the class.

	- Display pictures of occupations and ask students to repeat the names after you. - Play a listening game: Describe an occupation and have students identify the corresponding picture.
CONCLUSION	
10 Minutes	- Review the occupations learned during the lesson. - Have a short class discussion about what each occupation does. - Assign a simple coloring activity where students can draw or color their favorite occupation and share with the class.

RESOURCES

Everybody Up 3 Course Book

Pictures of various occupations.

Flashcards with occupation names.

ASSESSMENT

Listen to each student during the class discussion to assess their ability to identify and describe occupations.

Evaluate the completed coloring activity to see if students correctly label their chosen occupation.

REFLECTION

The introduction of occupations went smoothly. Students were actively engaged when seeing pictures of different jobs and participating in the discussion. The listening game was effective in assessing their comprehension. Some students struggled with pronunciation, so I'll incorporate more repetition in the next lesson. The coloring activity encouraged creativity and allowed students to demonstrate their understanding of the vocabulary.

Unit/Topic: Exploring Different Occupations	Lesson 2

LESSON OUTCOME

Aims:

Extend students' vocabulary on occupations.

- Encourage students to use new vocabulary in context.

- Enhance reading and writing skills.

Objectives:

By the end of the lesson, students will be able to:

- Recognize and read names of different occupations.

- Create simple sentences using occupation vocabulary.

- Work collaboratively in pairs.

LESSON STRUCTURE

Time	INTRODUCTION
10 Minutes	- Recap previous lesson's vocabulary by displaying flashcards again. - Ask students if they remember the names of the occupations shown earlier.
	MAIN CONTENT
25 Minutes	- Distribute worksheets with sentences about occupations and blanks for students to fill in the correct occupation name. - Read a sentence aloud and have students guess the missing word.

CONCLUSION	
10 Minutes	- Have students pair up and create their own sentences using occupation vocabulary. - Each pair shares one sentence with the class.

RESOURCES

Everybody Up 3 Course Book

Flashcards with occupation pictures and names.

Worksheets with sentences and blanks for students to fill in.

ASSESSMENT

- Assess completed worksheets for correct occupation vocabulary usage.
- Listen to students' sentences during the class sharing activity.

REFLECTION

The lesson provided opportunities for students to practice reading and writing occupations. They enjoyed creating sentences with their partners and felt confident sharing them. The worksheet activity helped reinforce vocabulary in context. In future lessons, I'll incorporate more interactive games to keep the energy level high.

Unit/Topic: Our Dream Jobs	Lesson 3

LESSON OUTCOME

Aims:

- Encourage students to use vocabulary in context through role play.
- Develop speaking and communication skills.
- Foster creativity and imagination.

Objectives:

By the end of the lesson, students will be able to:

- Engage in role play conversations about occupations.
- Describe their dream jobs using appropriate vocabulary.
- Collaborate with peers to create a short role play scenario.

LESSON STRUCTURE

Time	INTRODUCTION
10 Minutes	- Start with a quick review of the occupations learned in previous lessons. - Ask students if they remember the names of their favorite occupations.
MAIN CONTENT	
25 Minutes	- Show flashcards of different occupations and ask students to choose their dream job.

	- In pairs, have students discuss and plan a short role play scenario where they act out their chosen occupations. - Provide guidance on how to start and structure the role play.
CONCLUSION	
10 Minutes	- Invite pairs to perform their role plays in front of the class. - Encourage creativity and participation from all students.

RESOURCES

Everybody Up 3 Course Book

Flashcards with occupation pictures.

Props or simple costume accessories (optional).

ASSESSMENT

- Observe students' role plays and assess their ability to use occupation vocabulary appropriately.
- Evaluate students' engagement and collaboration during the activity.

REFLECTION

The role play activity was a hit! Students loved taking on different roles and using occupation vocabulary in their conversations. It was a wonderful way to consolidate their learning while encouraging creative thinking. In future lessons, I'll consider extending the role play to involve more complex scenarios.

Unit/Topic: Introduction to Illnesses	**Lesson 4**

LESSON OUTCOME

Aims:

- Introduce the topic of illnesses and health-related vocabulary.
- Engage students in discussions about common illnesses.
- Develop listening and speaking skills.

Objectives:

By the end of the lesson, students will be able to:

- Identify and name common illnesses.
- Listen and comprehend basic descriptions of illnesses.
- Participate in class discussions about health and illnesses.
- Listen and comprehend basic descriptions of occupations.
- Participate in class discussions about occupations.

LESSON STRUCTURE

Time	**INTRODUCTION**
10 Minutes	- Greet the students and ask if they have ever been sick or had an illness. - Show pictures of different illnesses and ask students if they can name any of them.
MAIN CONTENT	
25 Minutes	- Introduce new vocabulary using flashcards (headache, sore throat, stomachache, etc.). - Pronounce and repeat each illness name with the class. - Display pictures of illnesses and ask students to repeat the names after you.

	- Play a listening game: Describe an illness and have students identify the corresponding picture.
CONCLUSION	
10 Minutes	- Review the illnesses learned during the lesson. - Have a short class discussion about how they feel when they have certain illnesses. - Assign a simple drawing activity where students can draw an illustration of an illness and share with the class.

RESOURCES

Everybody Up 3 Course Book

Pictures of different illnesses (e.g., cold, fever, cough, etc.).

Flashcards with illness names.

ASSESSMENT

Listen to each student during the class discussion to assess their ability to identify and describe common illnesses.

Evaluate the completed drawing activity to see if students accurately depict the illnesses they learned.

REFLECTION

The introduction to the topic of illnesses was engaging, and students actively participated in discussions. The listening game helped assess their comprehension. Some students were more familiar with illness names than others, so I'll provide more practice in the next lesson. The drawing activity encouraged creativity and reinforced the vocabulary learned.

Unit/Topic: Exploring Common Illnesses	Lesson 5

LESSON OUTCOME

Aims:

- Extend students' vocabulary on common illnesses.
- Encourage students to use new vocabulary in context.
- Enhance reading and writing skills.

Objectives:

By the end of the lesson, students will be able to:

- Recognize and read names of common illnesses.
- Create simple sentences using illness vocabulary.
- Work collaboratively in pairs.

LESSON STRUCTURE

Time	INTRODUCTION
10 Minutes	- Recap the illnesses learned in the previous lesson by displaying flashcards again. - Ask students if they remember the names of the illnesses shown earlier.

MAIN CONTENT	
25 Minutes	- Distribute worksheets with sentences about illnesses and blanks for students to fill in the correct illness name. - Read a sentence aloud and have students guess the missing word.
CONCLUSION	
10 Minutes	- Have students pair up and create their own sentences using illness vocabulary. - Each pair shares one sentence with the class.

RESOURCES

Everybody Up 3 Course Book

Flashcards with illness pictures and names.

Worksheets with sentences and blanks for students to fill in.

ASSESSMENT

Assess completed worksheets for correct illness vocabulary usage.

Listen to students' sentences during the class sharing activity.

REFLECTION

The lesson provided ample opportunity for students to practice reading and writing illnesses in sentences. They actively participated in the sentence creation activity and shared their sentences confidently. The worksheet activity was effective in reinforcing vocabulary in context. I'll continue to focus on vocabulary reinforcement in the upcoming lessons.

Unit/Topic: Visiting the Doctor	**Lesson 6**

LESSON OUTCOME

Aims:

- Encourage students to use illness vocabulary in context through role play.
- Develop speaking and communication skills.
- Foster empathy and understanding.

Objectives:

By the end of the lesson, students will be able to:

- Engage in role play conversations related to visiting a doctor.
- Describe their feelings and symptoms using appropriate vocabulary.
- Collaborate with peers to create a short role play scenario.

LESSON STRUCTURE

Time	**INTRODUCTION**
10 Minutes	- Start with a quick review of the illnesses learned in previous lessons. - Ask students if they remember the names of the illnesses they studied.
MAIN CONTENT	
	Show flashcards of different illnesses and ask students to choose an illness for their role play scenario. In pairs, have students discuss and plan a short role play scenario where they visit a doctor.

25 Minutes	Provide guidance on how to start and structure the role play.
CONCLUSION	
10 Minutes	Invite pairs to perform their role plays in front of the class. Encourage students to use illness vocabulary appropriately and express their feelings.

RESOURCES

Everybody Up 3 Course Book

Flashcards with illness pictures.

Props or simple costume accessories (optional). Whiteboard and markers

ASSESSMENT

Observe students' role plays and assess their ability to use illness vocabulary and empathy in context.

Evaluate students' engagement and collaboration during the activity.

REFLECTION

The role play activity was highly engaging and relevant to the topic. Students embraced their roles and skillfully used illness vocabulary to communicate with each other. It was heartwarming to see their empathy as they acted out visiting a doctor. This activity encouraged creativity, communication, and understanding of health-related situations.

Appendix 11. Lesson Plans - Experimental Group

Unit/Topic: Occupations	**Lesson 1**

LESSON OUTCOME

Aims:

Introduce the topic of occupations using VR technology.

Familiarize students with different occupations and related vocabulary.

Develop listening and speaking skills.

Objectives:

By the end of the lesson, students will be able to:

Recognize and name various occupations.

Engage in VR experiences to explore different job environments.

Participate in discussions about different occupations.

LESSON STRUCTURE

Time	**INTRODUCTION**
10 Minutes	Introduce the topic of occupations and ask if students know what an occupation is. Show pictures or flashcards of different occupations and ask students to identify them.
MAIN CONTENT	
25 Minutes	Briefly explain what VR technology is and how it can help us explore different job environments. Divide the class into small groups and distribute VR headsets. Allow each group to experience a different occupation virtually.

	After the VR experience, encourage students to share what they saw and felt.
CONCLUSION	
10 Minutes	Discuss the different occupations explored in the VR experiences. Have a class discussion about which occupation they found the most interesting and why.

RESOURCES

Everybody Up 3 Course Book

VR headset with pre-loaded VR experiences related to occupations.

Pictures or flashcards of different occupations.

Whiteboard and markers.

ASSESSMENT

Observe students' engagement during the VR experience and discussions.

Listen to their descriptions of the occupations to assess vocabulary usage.

REFLECTION

The VR experience was captivating for the students, and they eagerly shared their observations after the VR exploration. It was exciting to see them engaged and enthusiastic about learning occupations through technology. This lesson successfully introduced the topic and motivated them to explore further.

Unit/Topic: Exploring Different Occupations	Lesson 2

LESSON OUTCOME

Aims:

Encourage students to think from the perspective of different occupations.

Develop speaking and creative thinking skills.

Enhance vocabulary usage through role play.

Objectives:

By the end of the lesson, students will be able to:

Role-play different occupations and their associated tasks.

Use occupation-related vocabulary in conversations.

Collaborate with peers to create role play scenarios.

LESSON STRUCTURE

Time	INTRODUCTION
10 Minutes	Review the occupations explored in the previous lesson. Ask students if they remember the occupations, they learned and experienced.
MAIN CONTENT	
25 Minutes	Display occupation flashcards and explain that students will become different workers. Assign each student a different occupation and provide relevant props. In pairs, have students create short role play scenarios involving their chosen occupations, using VR tools as inspiration.

CONCLUSION	
10 Minutes	Invite pairs to perform their role plays in front of the class. Encourage students to use vocabulary related to their assigned occupations.

RESOURCES

Everybody Up 3 Course Book

VR headsets with pre-loaded VR experiences related to occupations.

Pictures or flashcards of different occupations.

ASSESSMENT

Observe students' role plays and assess their ability to use occupation vocabulary in context.

Evaluate their creativity in creating role play scenarios.

REFLECTION

The incorporation of VR tools in the role play activity heightened students' engagement and enthusiasm. It was fascinating to see how they integrated VR experiences into their role plays, adding a layer of authenticity to their performances.

Unit/Topic: Creating Virtual Occupation Fair	Lesson 3

LESSON OUTCOME

Aims:

Collaboratively create a virtual occupation fair using VR technology.

Reinforce vocabulary related to occupations.

Foster teamwork and presentation skills.

Objectives:

By the end of the lesson, students will be able to:

Collaborate to design a virtual occupation fair using VR tools.

Present information about different occupations to their peers.

Reflect on what they've learned throughout the unit.

LESSON STRUCTURE

Time	INTRODUCTION
10 Minutes	Review the various occupations students have explored and role-played. Explain that they will now collaborate to create a virtual occupation fair.
	MAIN CONTENT
25 Minutes	Divide the class into small groups, assigning each group different occupations. Provide VR headsets with the virtual occupation fair platform. Guide students to choose visuals and information to showcase in their virtual booths, incorporating VR experiences.

CONCLUSION	
10 Minutes	Each group presents their virtual occupation fair booth to the class using the VR headsets. Reflect on the unit: Ask students to share what they learned and enjoyed most.

RESOURCES

Everybody Up 3 Course Book

Whiteboard and markers.

VR headsets with the virtual occupation fair platform.

ASSESSMENT

Assess the collaboration and creativity displayed in each group's virtual occupation fair.

Observe students' presentations and assess their ability to explain different occupations.

REFLECTION

The culminating virtual occupation fair provided an opportunity for students to apply their knowledge and creativity. The integration of VR tools enhanced the presentation quality and enabled students to share their work in an engaging and interactive manner. Witnessing their enthusiasm as they showcased their virtual booths was a remarkable experience. The use of VR technology has undoubtedly elevated the overall learning journey for both students and teacher alike.

Unit/Topic: Discovering Illnesses and Health Conditions with VR	Lesson 4

LESSON OUTCOME

Aims:

Introduce the topic of illnesses and health conditions using VR technology.

Familiarize students with common illnesses and related vocabulary.

Develop listening and speaking skills.

Objectives:

By the end of the lesson, students will be able to:

Identify and name various common illnesses and health conditions.

Engage in VR experiences to explore different health-related scenarios.

Participate in discussions about health and illnesses.

LESSON STRUCTURE

Time	INTRODUCTION
10 Minutes	Introduce the topic of illnesses and health conditions. Show pictures or flashcards of common illnesses and ask students to identify them.
	MAIN CONTENT
25 Minutes	Explain how VR technology can help us learn about different health scenarios. Divide the class into small groups and distribute VR headsets. Allow each group to experience a different health-related scenario virtually. After the VR experience, facilitate a discussion about what they learned.

CONCLUSION	
10 Minutes	Discuss the different health conditions explored in the VR experiences. Have a class discussion about how to stay healthy and prevent illnesses.

RESOURCES

Everybody Up 3 Course Book

VR headsets with pre-loaded VR experiences related to illnesses.

Pictures or flashcards of common illnesses.

Whiteboard and markers.

ASSESSMENT

Observe students' engagement during the VR experience and discussions.

Listen to their descriptions of the health conditions to assess vocabulary usage.

REFLECTION

The utilization of VR technology in introducing health-related topics was met with excitement by the students. Their active participation and enthusiasm during the VR experiences indicate that the integration of technology can indeed enhance the learning process.

Unit/Topic: Role-Play Health Professionals	Lesson 5

LESSON OUTCOME

Aims:

Encourage students to think from the perspective of health professionals.

Develop speaking and empathy skills.

Enhance vocabulary usage through role play.

Objectives:

By the end of the lesson, students will be able to:

Role-play as different health professionals and their associated tasks.

Use health-related vocabulary in conversations.

Collaborate with peers to create role play scenarios.

LESSON STRUCTURE

Time	INTRODUCTION
10 Minutes	Review the health-related terms and vocabulary learned in the previous lesson. Ask students if they remember any health professionals and their roles.
	MAIN CONTENT
25 Minutes	Display health-related flashcards and explain that students will become different health professionals. Assign each student a different health professional and provide relevant props. In pairs, have students create short role play scenarios involving their assigned roles, using VR tools for inspiration.

CONCLUSION	
10 Minutes	Invite pairs to perform their role plays in front of the class. Encourage students to use vocabulary related to their assigned health professions.

RESOURCES

Everybody Up 3 Course Book

Props or costume accessories related to different health professionals.

Health-related flashcards.

ASSESSMENT

Observe students' role plays and assess their ability to use health-related vocabulary in context.

Evaluate their creativity in creating role play scenarios.

REFLECTION

The incorporation of VR tools in the health professional role play activity elevated the students' engagement and participation. It was fascinating to witness how they integrated VR experiences into their role plays, resulting in authentic and immersive performances.

Unit/Topic: Creating Virtual Health Fair	Lesson 6

LESSON OUTCOME

Aims:

Collaboratively create a virtual health fair using VR technology.

Reinforce health-related vocabulary.

Foster teamwork and presentation skills.

Objectives:

By the end of the lesson, students will be able to:

Collaborate to design a virtual health fair using VR tools.

Present information about different health conditions and professions to their peers.

Reflect on what they've learned throughout the unit.

LESSON STRUCTURE

Time	INTRODUCTION
10 Minutes	Review the health-related topics explored in the previous lessons. Explain that they will now collaboratively create a virtual health fair.
MAIN CONTENT	
25 Minutes	Divide the class into small groups, assigning each group different health conditions or health professions. Provide VR headsets with the virtual health fair platform. Guide students to choose visuals and information to showcase in their virtual booths, incorporating VR experiences.

CONCLUSION	
10 Minutes	Each group presents their virtual health fair booth to the class using the VR headsets. Reflect on the unit: Ask students to share what they learned and enjoyed most.

RESOURCES

Everybody Up 3 Course Book

VR headsets with the virtual health fair platform.

Whiteboard and markers

ASSESSMENT

Assess the collaboration and creativity displayed in each group's virtual health fair.

Observe students' presentations and assess their ability to explain health conditions and professions.

REFLECTION

The culminating virtual health fair was a remarkable way for students to showcase their knowledge and creativity. The integration of VR tools enhanced the presentation quality and enabled students to share their work in an engaging and interactive manner. Witnessing their enthusiasm during the fair was truly rewarding, and the use of VR technology has undoubtedly enriched the overall learning experience for both students and teacher alike.