

**Impact of Students' Attitude toward Using Virtual Reality on Intention to Use Virtual Reality in English Language Learning:
The case of English preparatory class students in Northern Cyprus**

DANIA KARMO

Final International University
June 2023
Kyrenia, TRNC

Dania Karmo

Impact of Students' Attitude toward Using Virtual Reality on Intention to Use Virtual Reality in English Language Learning: The case of English preparatory class students in Northern Cyprus

MBA, 2023

**Impact of Students' Attitude toward Using Virtual Reality
on Intention to Use Virtual Reality in English Language
Learning:
The case of English preparatory class students in
Northern Cyprus**

by

DANIA KARMO

A thesis submitted to the Institute of Graduate Studies in partial fulfilment of
the requirements for the Degree of Master in Business Administration

Final International University
June 2023
Kyrenia, TRNC



**FINAL INTERNATIONAL UNIVERSITY
INSTITUTE OF GRADUATE STUDIES**

APPROVAL

Title: Impact of Students' Attitude toward Using Virtual Reality on Intention to Use Virtual Reality in English Language Learning: The case of English preparatory class students in Northern Cyprus

In line with the decision taken at the Ethics Committee meeting on March 10th, 2023. It was decided that my study was ethically and significantly appropriate for the degree of master education.

Approval of the Examining Committee

Assist. Prof. Dr. Hürcan Tarhan (*Chair*)

Dr. Ahu Acar Güven

Assist Prof. Dr. Kevser Tasel Jurkovic (Supervisor)

Approval of the Institute of Graduate Studies

Prof. Dr. Nilgün Sarp
Director

Dania Karmo

дания.karmo@final.edu.tr

ORCID ID: 0009-0007-7539-3741

© Dania Karmo 2023

Firstly, I would thank Allah The Almighty for giving me the strength and mind to work on this thesis. Secondly, I would like to dedicate my thesis to both my parents.

My father, Mazen Karmo, who constantly provides all the support for my educational and intellectual development. And my mother Shiraz who has been motivating me along my study journey.

ETHICAL DECLARATION

I, Dania Karmo, hereby, declare that this thesis is my original work. I certify that this thesis reflects my own research and analysis in a truthful and complete manner. I fulfilled all the rules of ethics when gathering and processing data, and the findings, conclusions stated in my thesis are correct. All sources used in this thesis are properly cited.

Dania Karmo

ACKNOWLEDGEMENTS

First of all, I am thankful to Allah for permitting me to complete my thesis successfully.

I would like to express my sincere gratitude to everybody who supported me to accomplish my thesis research.

Secondly, my deepest gratitude to my supervisor, Assist. Prof. Dr. Kevser Taşel Jurkoviç for giving me crucial assistance and support during my thesis work. Her knowledge and expertise have been invaluable in developing my study and keeping me performing well and accomplish this work on time.

I would additionally like to thank the study participants, without whom this research would not have been achievable. Their shared contribution and time has been highly appreciated.

I am also appreciative to Assist. Prof. Dr. Aleksandr Zabolotnov, Assoc. Prof. Dr. Şafak Gündüz, and Assist. Prof. Dr. Taraneh Foroutan Yazdian, who served as mentors and guides during my studies and assisted in developing myself into the person I am now.

Finally, I extend my sincere thanks to the academic community and administrative staff of Final International University for their efforts in helping students with their academic and professional development and providing the resources and information that were critical to the project's success.

Also, I am eternally grateful to my friends, especially Rigersa Cara, thank you for all the support and encouragement you gave me, and thank you for the faith you have in me, I am truly lucky to have you in my life.

Lastly, I am forever grateful to my parents for their love, hard work, prayers and support to achieve my academic journey successfully.

ABSTRACT

Technological advancement has created new technologies that have affected the lifestyles of individuals in all aspects of their lives. Since the level of education is an indicator of the development of any country, and since the development of education works to increase the standard of knowledge and civilizations between countries, it has become necessary to use these new technologies in the field of education. Many higher education institutions focus on implementing innovations like virtual reality (VR), especially in the field of English language learning (ELL). It has become important to investigate the usage of technologies such as Virtual Reality for educational purposes. The literature lacks studies that focus on the use of virtual technology, especially in the field of English language learning. The aim of this thesis is to analyse students' VR attitude dimensions such as enjoyment, usefulness and ease of use towards the use of virtual reality as a method of learning English through structural equation modelling, using a model based on the literature. A questionnaire survey was administered to a total of 340 higher education students in English language preparatory schools on B1 and above levels in TRNC. Results showed positive correlations between the variables. The relationships between ease of use and usefulness on VR use intention were found to be positively significant using the linear regression method using SPSS. However, the enjoyment variable was insignificant. The findings of the insignificant relationship between the enjoyment variable and the intention to use VR open the door for further research. Scholars can make a deeper search for new predictors that can elucidate the subtle determinants of students' intentions to engage with VR technologies.

Keywords: Virtual reality, attitude, English language learning, Intention

ÖZ

Teknolojik ilerleme, bireylerin yaşam biçimlerini hayatlarının her alanında etkileyen yeni teknolojiler yaratmıştır. Eğitim düzeyi, herhangi bir ülkenin gelişmişliğinin bir göstergesi olduğundan ve eğitimin gelişmesi ülkeler arasındaki bilgi ve medeniyet standardını yükseltmeye çalıştığından, bu yeni teknolojilerin eğitim alanında kullanılması zorunlu hale gelmiştir. Birçok yüksek öğretim kurumu, özellikle İngilizce dil öğrenimi (ELL) alanında sanal gerçeklik (VR) gibi yenilikleri uygulamaya odaklanıyor. Sanal Gerçeklik gibi teknolojilerin eğitim amaçlı kullanımının araştırılması önem kazanmıştır. Literatürde, özellikle İngilizce dil öğrenimi alanında sanal teknolojinin kullanımına odaklanan çalışmalar bulunmamaktadır. KKTC'de B1 ve üzeri İngilizce hazırlık okullarında öğrenim gören toplam 340 yükseköğretim öğrencisine anket uygulandı. Sonuçlar değişkenler arasında pozitif korelasyon olduğunu gösterdi. Kullanım kolaylığı ve kullanılabilirlik arasındaki sanal gerçeklik kullanım niyeti üzerindeki ilişkiler SPSS kullanılarak yapılan doğrusal regresyon yöntemi kullanılarak pozitif yönde anlamlı bulunmuştur. ancak keyif değişkeni önemsizdi. Zevk değişkeni ile sanal gerçekliği kullanma niyeti arasında anlamlı olmayan bir ilişkinin bulunması, daha ileri araştırmalara kapı açmaktadır. Akademisyenler, öğrencilerin VR teknolojileriyle etkileşime geçme niyetlerinin ince belirleyicilerini aydınlayabilecek yeni tahmin ediciler için daha derin bir araştırma yapılabilir.

Anahtar Sözcükler: Sanal gerçeklik, tutum, İngilizce dil öğrenimi, Niyet

TABLE OF CONTENTS

ETHICAL DECLARATION	vi
ACKNOWLEDGEMENTS	vii
ABSTRACT.....	viii
ÖZ.....	ix
CHAPTER 1	1
INTRODUCTION.....	1
1.1 Problem Statement	3
1.2 Purpose of the Study	4
1.3 Significance of the Study	4
1.4 Research Questions and Hypotheses.....	5
1.5 Assumptions	6
1.6 Limitations	7
1.7 Definition of Key Terminology.....	8
CHAPTER 2	10
LITERATURE REVIEW.....	10
2.1 Virtual Reality	10
2.1.1 Virtual Reality in Education.....	11
2.1.2 Virtual Reality in English Language Learning	12
2.2 Attitude	12
2.2.1 Students attitude toward use VR in English Language Learning.....	14
2.3 Intention to use VR	15
2.3.1 Students' intention to use Virtual Reality in Education and in English Language Learning	16
CHAPTER 3	19
METHOD AND PROCEDURES	19
3.1 Research Design and Proposed Model.....	19
3.2 Population and Sampling	20
3.3 Instruments and Procedures of Data Collection	21

Table 1 (Continued)	23
CHAPTER 4	24
DATA ANALYSIS RESULTS.....	24
4.1 Preliminary Data Analysis	24
4.2 Sample Demographics.....	28
4.3 Reliability and Validity	29
4.4 Correlation Analysis.....	33
4.5 Confirmatory Factor Analysis (CFA)	34
4.6 Structural Equation Modeling (SEM) – Path Analysis.....	38
4.7 Hypothesis Testing	41
CHAPTER 5.....	44
CONCLUSION AND IMPLICATIONS	44
5.1 Discussion.....	44
5.2 Limitations	45
5.3 Recommendations and Future Studies	47
APPENDIX A: SURVEY QUESTIONNAIRE.....	60
APPENDIX B: Ethics committee approval document.....	64

LIST OF TABLES

Table 1: Constructs and Scale items	22
Table 2: Descriptive Statistics	26
Table 3: Collinearity Statistics.....	27
Table 4: Sample Demographics	28
Table 5: Reliability Analysis	30
Table 6: Construct Reliability and Validity Summary	32
Table 8: Goodness of Fit Indics	36
Table 9: Exogenous and Endogenous Constructs.....	38
Table 10: Model fit measurment for independent variables.....	39
Table 11: Model fit measurment for depended variable.....	41
Table 12: Regression Test	42
Table 13: Hypothesis testing using SPSS	42

LIST OF FIGURES

Figure 1: Attitudes toward VR.....	14
Figure 2: Technology Acceptance Model.....	17
Figure 3: Proposed Conceptual model.....	20
Figure 4: Scatter Plot for Linearity.....	27
Figure 5: First order pooled confirmatory factor analysis for attitude dimensions (independent variables).....	35
Figure 6: CFA second order analysis of attitude dimensions.....	37
Figure 7: Pooled confirmatory factor analysis for dependent variable.....	37
Figure 8: Structural Equation Modeling-Path Analysis.....	40

LIST OF APPENDICES

APPENDIX A: Survey Questioner.....	75
APPENDIX B: Ethics Committee Approval Document.....	79

LIST OF ABBREVIATIONS

ATT	Students Attitude
ELL	English Language Learning
ENJ	Enjoyment
EOU	Ease of Use
EPC	English Preparatory Class
FIU	Final International University
IBM SPSS	Statistical Package for the Social Sciences
IBM SPSS AMOS	IBM SPSS Analysis of Moment Structures
INT	Intention to use Virtual Reality
TRNC	Turkish Republic of Northern Cyprus
USF	Usefulness
VR	Virtual Reality

CHAPTER 1

INTRODUCTION

Learning a second language is seen as a valuable asset in the globalised world today. The concept of language has evolved into a universal means of communication, with applications in business, education, and entertainment. Kuhl (2010) has found that learning a new language can enhance memory, problem-solving skills, and creativity. The study by Bialystok and colleagues (2012) conducted at the University of Edinburgh supports that individuals can improve their general cognitive function and strengthen certain cognitive skills by learning a new language.

The English language is an International language that has evolved into an indispensable tool for communication nowadays. With the globe becoming increasingly interconnected, learning English has become a critical ability that may provide individuals with a variety of benefits. For example, learning English increases job opportunities as well as professional certifications. In addition, knowledge of English provides better cultural understanding in diverse settings. According to the linguist David Crystal (2003), "English is a universal asset, the lingua franca of international communication, and the language of chances".

Advanced technology has had a significant impact on society, affecting every aspect of life from how we communicate to how the work can be done and even our lifestyles. In the past few years, technology has had the biggest impact on the improvement of the educational system, resulting in the creation of a new learning environment that assists learners in increasing their knowledge. One of the most recent technologies is Virtual Reality (VR), known as a three-dimensional (3D) environment created by computer technology that can provide a setting similarly to visual simulation along with other senses (Huang, 2020).

Virtual reality technology is currently a new trend in various industries, and education is no exception.

Smart and his colleagues (2007) defined VR as a system that aims to bring simulated experiences to life, providing geography, actions, and physics that give the illusion of being that place. Clustering (2019)'s study proves that when students learn about something, they always want to see it from a different perspective. Recently, virtual reality (VR) has provided various alternative learning opportunities for language learners (Chen, 2016). As Chen (2019) stated, the VR technology can create virtual environments, such as a restaurant, a supermarket, or a museum, in which learners can interact with products, people, and situations as if they were in a real-life setting. Furthermore, as discovered in a meta-analysis of research by Zawilinski and Kim (2020), VR can create gamified elements such as rewards, challenges, and competitions that can increase learners' motivation and engagement of the students.

Dolgunsöz, Yildirim, and Yildirim (2018) argued that learners are motivated to learn the language with the help of virtual reality. According to Kaplan-Rakowski and Wajdyski (2018) the learners showed high positive results and attitudes towards VR as it provided engaging experiences that allowed the learners the opportunity to immerse themselves in foreign cultures and languages.

Attitude also plays an important role in shaping people's opinions and their thoughts (Devine et al., 2002). For example, a study by Cheng and Tsai (2019) measured student attitudes towards using VR in a science course and found that students who used VR technology in the course achieved higher grades than those who did not. Sun, Wang, and Ge (2021) investigated the intentions of Chinese college students regarding utilising virtual reality to learn English. According to the findings of the study, students who had a good attitude

toward virtual reality technology were more likely to intend to use it in their English language learning. Furthermore, students who perceived VR technology to be useful and simple to use were more likely to have favourable attitudes toward it.

In a similar way Zhou, Wu, and Sun (2020) examined Chinese college students' intentions regarding utilising VR to learn English pronunciation. According to the findings of the study, students who had a good attitude toward VR technology and noted it as useful were more likely to prefer to use it in their English pronunciation learning. According to these findings, this thesis focuses on understanding how VR use attitude affects students' VR use intention to learn English language.

The present research consists of five chapters. The first chapter discusses the research's problem statement, purpose, and significance, as well as the research questions and assumptions that drive the study. The second chapter contains a review of the literature on the student's attitude toward using Virtual Reality in English Language Learning, and their relationship to the intention to use VR. The third chapter describes the research methodologies and procedures. The fourth chapter covers the study's results, and the final chapter discusses the conclusions made from the findings.

1.1 Problem Statement

Despite the potential benefits of VR in education, there has been a few research on how students' attitudes toward utilizing virtual reality (VR) affect their desire to use the technology for language learning. Previous studies have identified many factors that influence the adoption of technology in education, such as usefulness, ease of use, and enjoyment. However, these factors may not have the same impact for English language learning based on virtual reality. Understanding the elements that affect students' attitudes and intentions toward using VR for language learning might be extremely useful for educators and technology developers because of the rising popularity and accessibility of VR

technology. The purpose of this study is to better understand how students' attitudes toward virtual reality (VR) influence their intention to use the technology for the purpose of learning the English language. This will help researchers create more efficient and interesting language learning tools and methods.

1.2 Purpose of the Study

The main aim of this research is to provide answers to the research questions and to understand the influence of the three VR attitude dimensions of the Final International University and other universities preparatory school students toward using VR technologies for learning English and their effect on the intention to use virtual reality in learning English.

The thesis can contribute to a better understanding of how students' attitudes towards using VR technology can impact their intention to use it for English language learning. It can also provide insights into how the Technology Acceptance Model can be applied to VR-based language learning tools and practices.

In addition, this thesis aims to provide recommendations to educational institutions on how to use these technologies and to utilise appropriate methods to increase students' intentions to use virtual reality.

1.3 Significance of the Study

This study aims to examine the impact of students' attitude toward the intention to use virtual reality technology to learn English in the case of higher education institutions in the Turkish Republic of Northern Cyprus and to expand the literature on the relationship among individuals' attitude dimensions, namely ease of use, enjoyment and usefulness towards virtual reality technology use intention in English language learning by applying the study model.

The sample of the study, primarily composed of students from various ethnic and cultural backgrounds, provides an opportunity to analyze the potential differences and similarities in attitudes and intentions towards using VR in learning English language. The findings of this study provides valuable insights for advancing the use of VR technology for language learning, enhancing the quality of language learning, informing educational policy and practice, and contributing to the research literature on the use of VR technology in education in a diverse and multicultural environment, such as Northern Cyprus.

1.4 Research Questions and Hypotheses

In order to better understand the impact of higher education students' attitude and intentions in TRNC to use VR for the purpose of English language learning, and also to better understand the theories drawn from the previous studies, for instance, Li and Lalani (2021)'s and Zhang and Cui (2020)'s. The former research found that university students' positive attitudes toward using VR technology for language learning had a significant positive effect on their intention to use it. The latter research has found that attitude dimensions have a positive influence on students' intentions to use VR in education (Zhang & Cui, 2020). Therefore, the following research questions are developed in this thesis:

RQ: What are the factors that influence the VR technology use intention of English Preparatory school students in higher education for learning English as a foreign language in TRNC?

According to previous studies the following research questions are formalised:

RQa: How do attitude dimensions toward using VR technology affect the intention to use VR technology of English Preparatory school students in higher education for learning English as a foreign language in TRNC?

RQb: How does the attitude toward using VR technologies affect the VR use intention of students in TRNC?

In order to provide answers for the research questions, the following hypotheses are developed:

H1: Positive student attitude toward using VR technology to learn English leads to increased intention to use VR technology to learn English in TRNC.

H1a: Enjoyment of VR has a positive effect on students' VR use intention to learn English in TRNC.

H1b: Usefulness of VR has a positive impact toward students' VR use intention to learn English in TRNC.

H1c: Ease of use of VR has a positive effect on the students' VR use intention to learn English in TRNC.

1.5 Assumptions

Hair and his colleagues (2019) stated that a valid and trustworthy questionnaire is required for gathering correct data and drawing appropriate conclusions from the collected data. The data analysis intends to provide a thorough insight of people's attitudes and intentions toward adopting Virtual Reality to learn English. Drawing from various theories and previous research studies, this study provides several assumptions and hypotheses related to the use of Virtual Reality in the educational domain. As the technology continues to advance and become more accessible, VR is expected to find application in many other areas.

Therefore, the following assumption are made for the research:

- A positive attitude toward using VR technology to learn English leads to increased intention to use VR technology to learn English in TRNC. This assumption is adopted

based on Li and Lalani (2021)'s research which found that university students' positive attitudes toward using VR technology for language learning had a significant positive effect on their intention to use it.

- Attitude dimensions, which include ease of use, usefulness, and enjoyment, have positive impact toward using VR use intention. This assumption is supported by previous research that has found that attitude dimensions have a positive influence on students' intentions to use VR in education (Zhang & Cui, 2020).

1.6 Limitations

The study had some limitations that should be identified in order to properly understand and interpret the results.

Firstly, the sample selected for this study consists of students in TRNC more specifically for preparatory English language classes and the majority were from one university. Due to the population of prep students at the desired level, which is B level and above, the study surveyed 344 respondents. This can limit the generalizability of the findings, as the results may not be representative of the entire prep school students in TRNC, and may not accurately reflect the students' attitudes from different socioeconomic backgrounds, age groups, and regions.

Secondly, due to the demand of students for Higher education in TRNC to study in programs where English Language is a medium of education being mainly from Africa and Middle East countries, the majority of the data collection was from students of the mentioned regions. With limited data availability, making generalisations and comparisons with other countries becomes challenging.

In addition, another important limitation arose when many participants, being students themselves, struggled to find time to fill out the forms properly. This timing resulted in

rushed responses, which could compromise the quality and accuracy of the data collected. As a result, the findings of the study may have some errors or lack the depth needed for the comprehensive analysis.

The last limit is the language barrier, which makes it difficult for students who know English on an intermediate level to comprehend and take part in the survey. Therefore, the survey was concerning only students from the highest level (B1 and above) in preparatory school. It is vital to consider these limitations when planning future research in order to improve the generalizability of the findings.

1.7 Definition of Key Terminology

Virtual reality is a technology that creates simulated, interactive, and immersive environments that can be experienced through VR headsets and other devices. This allows users to experience a presence in a computer-generated environment and interact with it through natural gestures and action (Burdea & Coiffet, 2003).

Intention refers to a person's conscious decision and commitment to perform a particular action or activity in the future. It is about a person's willingness to influence their decision (Ajzen, 1991).

Attitude refers to a person's evaluation or emotional reaction to an object, individual, or situation. It includes an individual's beliefs, feelings, and behavioral tendencies towards the object of the attitude. Attitudes can be positive, negative, or sometimes even neutral, and affect a person's cognition, behavior, and decision-making (Eagly & Chaiken, 1993). Attitude dimensions developed by Bunz and his friends (2021) are categorized as ease of use, usefulness, and enjoyment to measure the attitude toward use of virtual reality technology.

Enjoyment is defined as involvement in a challenging event that either involves or produces a favorable emotional state. (Kaspner, 2009).

The degree to which a person thinks using a specific technology would be considered straightforward is referred to as ease of use. (Davis, Bagozzi, & Warsaw, 1989).

Usefulness is defined as the prospective user's subjective likelihood that employing a certain application system would improve the user's performance for the purpose of this study, Learning English as a Second Language in Higher education (Davis, Bagozzi, & Warsaw, 1989).

CHAPTER 2

LITERATURE REVIEW

In this chapter, a review of the literature is presented on intentions and attitudes toward using Virtual Reality in learning the English Language.

2.1 Virtual Reality

Virtual reality is an important branch of computer science that was found in the 1990s and was developed on a large scale as it relies on computer images and graphics technology. Computers can generate the same real scenes in virtual environments and provide opportunities for the user to enjoy the original environment through viewing and touching (Educause, 2020).

According to research conducted by Jonathan (2015), virtual reality is defined as a computer-generated simulation of a 3D environment, which takes the person to a world close to reality, using special electronic devices. The main objective is to achieve a high sense of being present in the virtual environment.

Further to the previous definitions, virtual reality provides an interactive, participatory environment that can work to support many participants in one virtual space remotely. In addition to that, it provides the users with additional power that increases cognitive fidelity (Gigante, 1993). By providing users with a more immersive and authentic virtual world, VR technology can trigger the senses and increase engagement. This enhanced cognitive fidelity allows users to perceive and interact with virtual objects and environments as more similar to their experiences in the physical world, resulting in a more convincing and impactful virtual experience.

Virtual reality has many advantages that were not found in previous technologies, such as a sense of immediacy, presence, and control as well as it appears in the form of a visual

presentation that depends on the movements of the user (Psotka, 1995). For instance, the user can move an object in virtual reality and hold it with his hand and move it from one place to another because usually things are lifted into the physical world from the real world, and the user can manipulate digital things in the same way as the real world, unlike traditional computer control (Fällman, Backman, & Holmlund, 1999).

2.1.1 Virtual Reality in Education

Educational institutions seek to change their direction as trends change in society and in the digital world (Schuck & Aubusson, 2010). Dashko and Dubytska (2019) discussed the idea of virtual reality and its superiority over traditional learning methods. It has become a new educational method that schools and universities are increasingly using by integrating it into the educational system. Governments and stakeholders have promoted the importance and benefits of educational institutions in such technologies, as Powell and Snellman (2004) mentioned that a large number of countries have transformed their economies and encouraged their workers to build their skills on what modern industry requires.

As stated in a previous study, the main goal of applying virtual reality is to increase the students' intentions for education and urged that student interaction with this technology definitely affects education (Alfarsi et al., 2021). A recent study by Chen et al. (2022) found that virtual reality has positive results on most age groups, but advised that it should not focus only on acquiring linguistic knowledge and emotional improvement, but rather on developing skills in the process of language acquisition. Furthermore, another study showed positive results about the application of virtual reality, as it allows the student to meet his needs by allowing correction of errors, repeating steps and stopping when needed (Randy and Thomas, 2000). These studies, collectively, support the idea that the integration of virtual reality into traditional systems can lead to positive results in the educational field.

2.1.2 Virtual Reality in English Language Learning

Virtual reality (VR) has the potential to transform English language learning by providing immersive and interactive experiences that can enhance language acquisition and cultural understanding. VR enables students to participate in real-life situations in a simulated environment, which can help improve their language skills and increase their confidence in English-language communication (Méndez et al., 2020).

VR simulations can simulate real-life scenarios, such as ordering food at a restaurant or participating in a job interview, allowing students to practice their language skills in a realistic and supportive environment (Chen, Huang, & Chen, 2019). In a case study, Lee and Lee (2020) found that VR significantly improved the learners' speaking skills and motivation. Qiu and his colleagues (2021) conducted a systematic literature review from 2008 to 2019 and their findings were that VR is mostly applied in higher education and the effect of VR was shown in learning performance. It proved that task-based learning and game-based learning were the most sufficient learning strategies. Therefore, VR would be effective in English Language Learning.

VR technology provides the ability to receive rapid feedback and enables to fix errors, which is essential for language learning. Assisting with self-correction and progress, learners can get immediate feedback on their usage of vocabulary, grammar, and pronunciation. According to a research by Peterson et al. (2018), VR-based platforms for language learning effectively delivered accurate and timely feedback, improving learners' language ability.

2.2 Attitude

Attitudes are positive or negative feelings about a particular thing, method, or issue (Lutz, 1991). A study conducted by Davis and colleagues in 1989 defined attitude as an individual's

overall evaluation, feelings, and beliefs about a particular technological innovation or development.

To Brown (2001), significant amount of emotional engagement, including feelings, personal identity, and interpersonal interactions, defines attitude. Another study by Clore and Schnall in 2005 suggested that attitudes can be understood as evaluations influenced by positive and negative emotions, or as attitudes toward specific actions or objects.

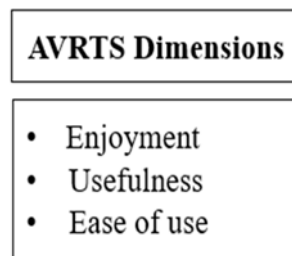
Attitudes have been categorised and conceptualised in different ways. The traditional concept of attitude is divided into three different components in forming and defining the situation: affective, behavioural, and cognitive components (Breckler 1984; Eagly & Chaiken 1993; Fishbein & Ajzen 1975). Rosenberg and Hovland (1960) examined the structure of attitude and proposed a model that consisted of three components: cognitive, affective, and conative. The cognitive dimension encompasses individuals' beliefs and thoughts about the attitude object. The affective dimension captures an individual's emotional appraisal and emotions associated with the behavioral object. The conative dimension is related to the individual tendency to act towards the object of a trait. This study laid the foundation for subsequent research on attitude components and their role in shaping individual attitudes.

Measuring attitudes is essential to better understand their impact on behavioral intentions and consequently, the behavior itself. Bunz and his colleagues (2021) developed The Attitudes toward Virtual Reality Technology Scale (AVRTS) instrument to assess people's attitudes toward VR technology. The authors have started from Davis (1989)'s TAM items and extended the model for VR technology context. The resulting three-factor structure mirrors the two original TAM factors (ease of use; usefulness) as well as a factor added by other research (enjoyment) (e.g., Küçük et al. 2014; Liaw and Huang 2003; Rese et al. 2017; Wojciechowski and Cellary 2013). Accordingly, the AVRTS emerged as a scale anchored in

theory, a type of extension of TAM that could be applied to technologies developed for education (Figure 1).

Figure 1

Attitudes toward VR



Bunz et al. (2021)

2.2.1 Students attitude toward use VR in English Language Learning

There are several variables that can affect learning a foreign language, including motivation, attitudes, anxieties, learning successes, aptitudes, intelligence level, age, and personality (Shams, 2008). It is widely recognized that one of the most significant aspects influencing language learning is the learner's attitude. (Fakeye, 2010). For example, a study by Wang (2014) investigated Chinese university students' perceptions of learning English and found that students with positive attitudes showed higher levels of motivation, engagement and perseverance in learning English. These students were more likely to participate actively in the classroom, seek out language learning opportunities, and demonstrate higher levels of proficiency.

Dörnyei (2005) emphasized the role of attitudes in his book "The Individual Differences in second Language Acquisition" and discussed how learners' attitudes shape their language learning experiences and outcomes. Positive attitudes can lead to more enjoyable and rewarding learning processes, while negative attitudes can create barriers and hinder

progress. Other studies show that Attitudes toward VR can have a significant impact on students' English language learning experiences and outcomes. Students who find VR a useful and effective tool for language learning tend to have better vocabularies, improved listening and speaking skills, and improved language skills (Ma, Liu, & Liang, 2020; Kukulska-Hulme, Chen, & Norris, 2020).

2.3 Intention to use VR

Psychologist Daniel M. Wegner (2002) defines intention as "a mental representation of a desired outcome that directs action toward that outcome." Anscombe (1957) argued that intention refers to mental states that represent a person's commitment to perform a particular action or achieve a specific goal.

Though the advent of VR is giving individuals new experiences, not everyone plans to use the newly developed technology. A user's subjective possibility of using virtual reality technology in the near future is referred to as their intention to use it (Schiopu et al., 2022). Understanding usage intentions helps one better understand the individual and environmental aspects influencing how well-received new technology like VR is (Song et al., 2022). Numerous researchers have looked at the elements that encourage use intentions. For instance, in Huang et al.'s (2023) study, the group who viewed an actual VR experience had stronger intents to embrace VR than those who did not see the film, compared to the group that watched a simple introduction to VR. Based on the previously mentioned literature, the VR display provides richer feel experiences, deepen the recognition and acceptance of virtual reality, and improve the intention of use.

VR provides an immersive environment that allows students to experience scenarios and concepts, and makes them feel present in the virtual world. Research indicates that high

levels of immersion and presence in VR positively impact students' intention, and learning outcomes (Chen et al., 2020; Kay, 2020; Chen & Huang , 2021).

As virtual reality offers unique opportunities for active learning and experience, students can use VR to deliver a realistic and interactive learning experience. The results of a study conducted by Kao and his colleagues in 2019 showed that positive attitudes toward learning value significantly influence students' intentions to adopt VR for educational purposes.

However, there are some barriers and challenges that affect students' intentions toward VR. Although the cost of VR hardware has decreased over time, it remains a major barrier to widespread adoption in educational institutions. Limited access to VR devices and the associated infrastructure can hinder students' intention to use VR (Liu et al., 2020).

Other challenge with VR is the potential for motion sickness and distress due to sensory interactions between virtual and physical world's research shows that some students may experience discomfort, dizziness or nausea while using VR equipment role, leading to their perception that the use of VR may have negative consequences (Triberti et al., 2019). For comfort and to address motion sickness concerns, students can use VR. Despite the aforementioned challenges, VR's advantages and potential uses makes it an important tool to be used in education.

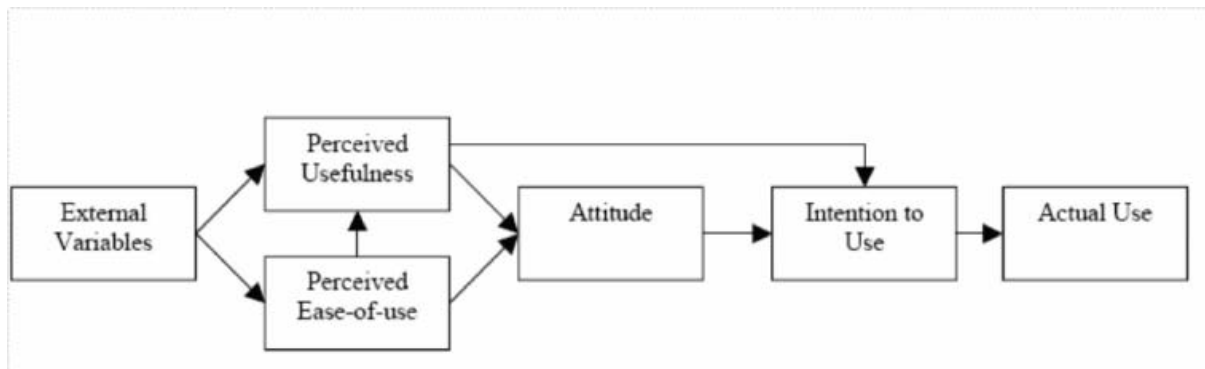
2.3.1 Students' intention to use Virtual Reality in Education and in English Language Learning

Mohamed et al. (2019)'s study claimed that most students prefer to use technology in the education process and will participate if modern technologies are implemented. This can be observed by examining the existing studies on VR use in education. For instance, Davis (1989)'s Technology Acceptance Model (TAM) (Figure 2) has been widely adopted to

investigate students' acceptance of technology by investigating the relationship between perceived usefulness, perceived ease of use and acceptance of information technology.

Figure 2

Technology Acceptance Model



Davis (1989, p.23)

The Technology acceptance model (TAM) argues that perceived usefulness is a strong predictor of user acceptance. When individuals perceive that using a technology would be beneficial and improve their performance, they are more likely to adopt it. Furthermore, perceived ease of use is also found to be an important factor. If individuals believe that using the technology would be effortless and easy to use, they are more likely to accept and use it.

Studies by Kumar and Johnson (2018) and Lee, Chang, and Hou (2019) provide valuable insights into how students perceive virtual reality (VR) as a useful tool to enhance learning experiences. The immersive nature of VR simulations capture student's attention and make the learning process more enjoyable.

According to Ping and his friends (2020), the study participants showed higher levels of enjoyment in using VR in education and expressed a greater intention to use VR as a learning tool for future studies. Grove (1996) also stated that most of the students enjoyed their experiences of VR not just because it looks more like reality, but also, gives students the

opportunity to actively participate in the virtual environment, manipulate objects, and interact with realistic simulations to enhance their sense of presence and engagement.

Chen, Wang, and Wang (2022) suggested that when students perceive VR as user-friendly and straightforward, they perceive fewer barriers and challenges associated with VR adoption. For this reason, using VR leads to more favourable attitudes and increases intention to incorporate VR into their learning experiences. Moreover, if students perceive VR as easy to use, they are likely to be more inclined to adopt it in educational settings (Tang, Zhu, & Li, 2020).

VR provides a simulated environment that immerses students in English contexts, making them feel physically present in an English-speaking environment (Huang, Li, & Zhan, 2019; Lin & Huang, 2020). Students see VR as a powerful tool for language development and are likely to have positive attitudes toward its use among ELL.

CHAPTER 3

METHOD AND PROCEDURES

This chapter describes the research methodology of this thesis in detail. The study adopts a quantitative method to answer the research questions through testing of hypotheses regarding attitude dimensions, ease of use, enjoyment, and usefulness on intention to use VR in English Language Learning.

3.1 Research Design and Proposed Model

A quantitative research approach was adopted to test the proposed hypotheses among the English language preparatory school students of higher education institutions in TRNC. The data collection was cross-sectional and was collected between March and July 2023. Paper-based self-administered surveys were used for primary data collection.

A questionnaire is a research tool made up of a list of questions used to collect data from study participants. Since questionnaires are familiar to most students, their use makes participation in the study relatively easier. Therefore, questionnaires were chosen for data collection in the current thesis.

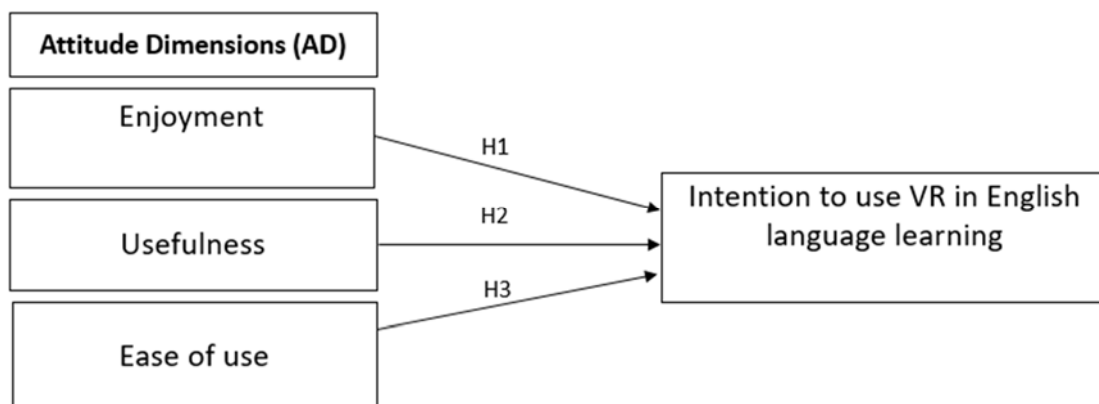
Based on the attitude-intention relationship literature, this study argues that dimensions of VR use attitude will also influence VR use intention. Accordingly, the following model (Figure 3) developed by Bunz et al. (2021) was adapted in this thesis to test the impacts of VR use attitude dimensions, namely Enjoyment (ENJ), Ease of Use (EOU), and Usefulness (USF) and their influence on the intention to use VR in English Language Learning (IVR).

4 variables were examined through 22 items to gather results from individual students regarding their attitudes and intentions to use VR in learning English Language. The research provided a cover letter at the beginning of the questionnaire to assure the respondents about

the anonymity and confidentiality of their responses. The questionnaire began by asking the participant for their consent to be a participant in the study, and those who consent to participate in the survey were directed to the following questions. At the end of the questionnaire, the participants were asked demographic questions such as age, gender, monthly income, nationality, and program after preparatory school (Appendix A).

Figure 3

Proposed Conceptual model



(Adapted from Bunz et al. 2021, P.25)

3.2 Population and Sampling

This quantitative study was conducted in TRNC among the preparatory school students of higher education institutions. Through the use of probability sampling approach, a sample was determined randomly among the students who were at B1 and above English levels at the time of data collection in order to determine higher education English language preparatory school students' attitude toward the intentions to use VR in English Language Learning. In research, determining an appropriate sample size is critical to drawing accurate conclusions about the entire population. However, the exact number of students in higher education institutions is often not readily available due to the dynamic nature of student enrolments,

which makes it difficult to determine the number of students enrolled in the Turkish Republic of Northern Cyprus at the English Preparatory Schools (Cyprus International University, Final International University). The questionnaires were completed from a total of 344 participants.

3.3 Instruments and Procedures of Data Collection

In this thesis, a self-administered questionnaire surveying method was used. All measurement items were adapted from existing literature in order to better fit the specific context of the study and to ensure that they accurately reflect the student's attitudes and intentions towards VR.

VR Attitude dimensions and intentions scales were adapted from the study Bunz et al. (2021)'s AVRTS Independent variables adapted in the study are Ease of use, Enjoyment, and Usefulness presented by Bunz et al. (2021) as VR attitude dimensions and, the dependent variable of the study is Intention to use VR in English Learning Language. Likert scales are widely used in social science research to measure subjective constructs such as attitudes and opinions. They involve asking participants to rate their level of agreement or disagreement with statements on the scale that were adapted from the literature to construct the questionnaire. In order to measure each variable, 5-point Likert scales, ranging from 1-strongly disagree to 5-strongly agree, were used (Appendix A). Table 1 presents the item codes, original questions, adapted questions, and sources of questions used in the survey questionnaire.

Table 1*Constructs and scale items*

Source	Items code	Original question	Adopted question
Enjoyment Bunz et al (2021)	ENJ1	VR is entertaining	Using VR to learn English Language would be entertaining.
	ENJ2	I think VR is fun	I think using VR would be fun
	ENJ3	For me, VR has great entertainment value	For me, using VR would have great entertainment value
	ENJ4	It is fun to discover how to use VR and its elements	It would be fun to discover how to use VR and its elements
	ENJ5	The VR experience is enjoyable	Using VR experience to learn English Language would be enjoyable
	ENJ6	I enjoy VR	I would enjoy using VR to learn English Language
Usefulness	USF1	VR fulfils my work needs	Using VR would fulfil my English Learning needs
	USF2	VR helps meet my goals	Using VR would help to meet my English Language learning goals
	USF3	VR saves me time	Using VR to learn English Language saves my time
	USF4	Using VR improves the equality of my work	Using VR to learn English improves the quality of my English language learning
	USF5	Using VR facilitates improvement of my activities	Using VR to learn English Language facilitates improvement of my English Language learning activities

Table 1 (Continued)

	USF6	For me, VR has great work value	For me, using VR to learn English Language would have a great learning value
Ease of use Bunz et al (2021)	EOU1	It is easy for me to remember how to perform tasks using VR	Using VR would make it easier to learn English Language
	EOU2	I think VR is easy to use	I think VR would be easy to use to learn
	EOU3	Handling the VR motion controls and its elements is easy	Handling the VR motion controls and its elements would be easy in English Language
	EOU4	VR is clear and understandable	Using VR to learn English Language would be clear and understandable
	EOU5	I often become confused when using VR (r)	It would be confusing for me to remember how to perform tasks using VR to learn English Language
	EOU6	I find it complicated to use VR (r)	I would find it complicated to use VR to learn English Language
	EOU7	It is easy to learn how to use VR	It would be easy to learn how to use VR to learn English Language
	EOU8	I need to seek help when using VR (r)	I would need to seek help when using VR to learn English Language
Intention to use VR in English Learning Bunz et al. (2021)	IVR1	I like to use VR for playing	would like to use VR for learning English Language
	IVR2	I am eager to use VR	I would be eager to use VR for learning English Language

CHAPTER 4

DATA ANALYSIS RESULTS

The last section of this thesis presents a comprehensive data analysis starting with demographics analysis, reliability and validity analysis, confirmatory factor analysis (CFA), correlation analysis, and Structural Equation Modeling (SEM) to test the model analysis. IBM Statistical Package for Social Sciences software (SPSS) and IBM SPSS Amos v24 were used for data analysis.

Firstly, reliability analysis was conducted to determine whether the measurement scales are reliable and to check whether the different questions of the construct are consistent through the analysis. Secondly, confirmatory factor analysis (CFA) was used to measure the unobserved constructs and if the unobserved constructs are uniquely different from one another, as well as measure the validity of the proposed variables. Lastly, SEM analysis was used to test the proposed hypotheses in order to test the correlation between the attitude dimensions and intention to use VR.

4.1 Preliminary Data Analysis

The paper-based surveys were distributed physically as hard copy questionnaires to a sample of 344 university students from numerous nationalities currently studying at TRNC in preparatory school. Upon collecting the paper from the students, their answers were manually entered to the SPSS program. Each respondent was given a number to be identified as a participant. There were no errors found when the data set file was checked for technical issues.

Cook's Distance (CD) is one of the most accurate tools for detecting influential individuals or subsets of observations in linear regression for cross-sectional data (Cook, 1977). According

to the CD values of the study data, none of the participants had values greater than 1.00. Therefore, none of the participants were required to be eliminated for being an outlier for the participants. Mahalanobis distance is another statistical measure of the distance between two data points in multidimensional space, accounting for the correlation and variance of the data. It measures interdependent variables and justifies them for datasets with interconnected objects; any p-value that is less than 0.001 is considered to be an outlier (Mahalanobis, 1936). While conducting the linear regression method to determine the Mahalanobis distance and calculating the p-value from the distance to determine if any of the respondents has a lower p-value than 0.001, As the first observation shows, 4 respondents showed a p-value below 0.001. Therefore, the 4 respondents represent outliers. Hence, the respondent was removed as it would have a significant impact on the overall analysis.

The normality test verifies the regular distribution of the parameters and linear combinations of the variables (Alsoufi et al., 2020). There are various techniques that can be conducted to check the normality of the data. To evaluate the normality of the data set, two major data are important to check, namely skewness and kurtosis. As stated by Hair et al., (2014), Skewness values represent the distribution's symmetry, where Kurtosis shows the elevation or a normal distribution, and skewness and kurtosis values should be close to zero. However, any numbers outside of the range of -1 to +1 can be used to identify a fully or partially skewed distribution. In accordance with the result shown in Table 2, skewness statistic values ranged from -0.638 to -0.957 and kurtosis values were between 1.115 and 1.653. Consequently, the distribution is classified as a normal distribution, and the collected data can be analyzed using the statistical measures designed for normally distributed data.

Table 2*Descriptive Statistics*

	N	Sum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ENJ	340	1166.89	3.4320	.52397	-.698	.132	1.316	.264
USF	340	11270.86	3.7378	.58939	-.638	.132	1.115	.264
EOU	340	1294.47	3.8073	.57886	-.834	.132	1.653	.264
IVR	340	1083.560	3.1870	.52616	-.957	.132	1.585	.264

Linearity means that the variables in the regression have a straight-line relationship with the outcome variable. It may be presented using a Scatter/Dot graph by use of SPSS software. Figure 4 shows that EOU and ENJ and EOU and UFL exhibit linearity. IVR also exhibits linear correlations with other constructions but not as linear as the aforementioned variables.

Hair et al. (2014) stated that multicollinearity is defined as the degree to which one variable may be influenced by another variable in the analysis. It can be obtained by using linear regression to examine the Variance Inflation Factor (VIF) and Tolerance values. Hair et al. (2019) signified the minimum value of VIF to be less than 10.0 and tolerance value should be larger than 0.10. To measure the multicollinearity, the linear regression analysis was conducted with variables that were computed by their means and the result is presented in Table 3. Collinearity statistics show both the values of tolerance and VIF are in acceptable range. Therefore, no collinearity issue is reported for the data set.

Figure 4

Scatter Plot for Linearity

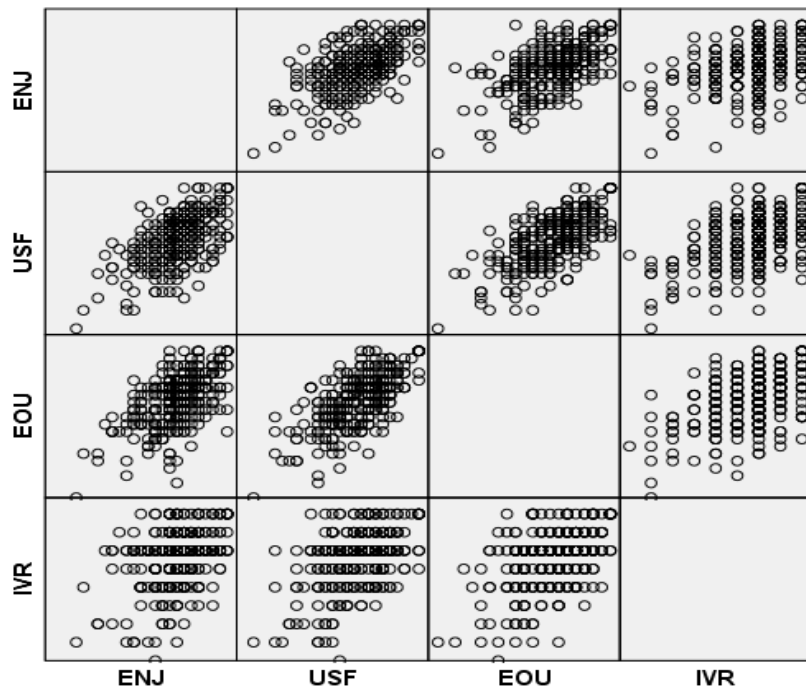


Table 3

Collinearity statistics

Model	Collinearity Statistics	
	Tolerance	VIF
ENJ	.593	1.685
UFL	.500	2.002
EOU	.495	2.018

a. Dependent Variable: IVR

4.2 Sample Demographics

Table 4 provides information about the sample's demographics. It shows that 147 out of 340 survey participants are female, making up 43,2% of the study sample, while 193 participants are male, making 56,8% of the sample. The age distribution of participants is as follows: 56,17% are from 18 to 20 years old, 41,76% are between 21 to 25 years old, and just 2.0% above 25 years old.

As Table 4 shows, students with an income more than 4001 TL and income less than 8000 TL make up the highest percentage 37,6% of the sample of middle income category. Where the income of more than 8001 TL makes 39,4% of the sample. The other two categories of income, less than 2000 TL, and 2001-4000 TL are divided and make up 3,2% and 19,7% of respondents, respectively. As also indicated in Table 4, 32.64% of respondents were native-Arabic speakers and were mainly from Morocco and Sudan consistent with the nationality distribution of the preparatory school students. Native-French speakers make approximately a quarter of the respondents (27,35%) while the rest of the participants had native languages such as Russian, Turkish, and others (5,29%), (10.88%), (23,82%), respectively.

Table 4

Sample demographics

Gender	Frequency	Percent
Male	193	56.8
Female	147	43.2
Age		
18-20 years	191	56.17
21-25 years	142	41.76
Above 25	7	2.0
Monthly household income		

Table 4 (Continued)

Below <2000 TRY and below	11	3.2
>2001-<4000 TRY	67	19.7
>4001-<8000 TRY	128	37.6
>8001 TRY and above	134	39.4
Native Language		
Arabic (Algerian, Sudanese, Syrian, Yemeni, Moroccan, Egyptian, Libyan, Saudi Arabia, Palestinian)	111	32.64
Russian (Russian, Kazak, Turkman, Uzbek, Kyrgyz, Ukrainian)	17	5.29
Turkish (Turkish, Cypriot)	37	10.88
French (Malian, Burundian, Ivorian, Congolese, Cameroonian, Nigerian)	93	27.35
Others (Ethiopian, Eritrean, Pakistani, European)	81	23.82

4.3 Reliability and Validity

IBM SPSS and SPSS Amos softwares are used to test reliability and validity. The quality of research is assessed using reliability. It demonstrates how accurately a methodology or test measures variables. Concerning a measure's consistency (Middleton, 2020). Internal reliability may be tested using Cronbach's alpha values, which is regarded as satisfactory for values more than 0.60. (Hair et al., 2014; Robinson et al., 1991). According to Bunz study and his friends, Cronbach's Alpha values for “ease of use” (alpha=.858), “usefulness” (alpha=.857), and “enjoyment” (alpha=.919) and overall reliability of .910. However, in Table 5, the instruments' Cronbach's Alpha is 0.786 that is considered to have internal reliability, since the alpha values were above the commonly accepted cut-off values of 0.60

(Bagozzi & Yi, 1988). Table 5 also shows Cronbach's Alpha values for each variable separately. Initial Cronbach's alpha values are determined as follows: Enjoyment (0.667), Usefulness (0.729), Ease of Use (0.111) and Intention to use VR (0.645). Since the Cronbach's alpha value for EOU is below the accepted value and it is not in the acceptable range, scale items were further examined and EOU5, EOU6, and EOU8 are deleted. As a result of deleting the items, the alpha value for EOU scale became 0.744 which suggests internal consistency.

Table 5

Reliability Analysis

Variables	Items	No. of Items	Cronbach's Alpha
Instrument	All items	19	0.786
Enjoyment	ENJ	6	0.667
Usefulness	UFL	6	0.729
Ease of Use	EOU	5	0.744
Intention to use VR	IVR	2	0.645

The effectiveness of the items used to measure the construct is referred to as validity (Ghauri & Gronhaug, 2005). Validity can be measured by discriminant validity, face validity, and convergent validity. When measuring scales are gathered from the literature and evaluated by

experts before being used in a research, face validity is satisfied (Hair et al., 2019). The questions in the study survey have been drawn from the literature and reviewed by academicians.

The degree to which a latent variable discriminates from other latent variables is known as discriminant validity (Fornell & Larcker, 1981). It is evaluated by examining the relationships between the values of Average Variance Extracted (AVE), Maximum Shared Variance (MSV), Average Shared variance (ASV), and the square root of Average Variance Extracted (AVE²). A construct is considered to be valid when the (MSV) and (ASV) are lower than AVE and when the AVE² value is greater than the inter-construct correlations. The findings presented in Table 6 highlight a key concern regarding the lack of discriminant validity of the measures examined. Despite careful analysis, none of the theories appears to meet established criteria for discriminatory validity. These results raise important questions about the accuracy of the measured values and prompt an in-depth investigation into the possible causes of this phenomenon. One possible explanation for the lack of discriminant validity could be due to the overlapping dimensions of the concepts under investigation where it is difficult to distinguish between two or more dimensions of conceptual validity which appears to be in the larger relationship. Consequently, the correlation between these concepts increases, blurring the uniqueness and specificity of each concept. This can lead to potential misinterpretation and misinterpretation of the overall measurement model. Another factor that may contribute to poor discriminant validity is the homogeneous nature of the research sample.

If the participants in the sample share their backgrounds, experiences, or sophisticated perspectives, differences in their responses to the dimensions of the concepts may be minimal. This inherent similarity in responses in a homogeneous group may further compound the

difficulties associated with discriminant validity. Shared perspectives and experiences among participants may lead to inadvertent overlap of responses, hindering the ability to effectively distinguish between concepts. This aspect emphasizes the need for modeling varied and disparate with different perspectives and backgrounds to ensure that different concepts can be reliably distinguished equally given emphasis.

Convergent validity is important in evaluating the validity of a measure by determining the correlation between the measure and other measures that assess the same construct. The convergent validity of a measure is determined by investigating its Average Variance Extracted (AVE) value, which should ideally be above 0.50. As shown in Table 6, the AVE values for ENJ, UFL, EOU, INT are below 0.50. This indicates that these constructs have convergent validity issues, meaning that there is more error present in the items than variance explained by the latent construct (Hair et al., 2014). However, According to Fornell and Larcker (1981)'s study, if the composite reliability (CR) is above 0.60, and the average variance extracted (AVE) is less than 0.50, the convergent validity of the construct is still accepted to be adequate. Hence, EOU, ENJ, UFL, INT still show convergent validity.

Table 6

Construct reliability and validity summary

	CR	AVE	MSV	MaxR(H)	EOU	ENJ	UFL	INT
EOU	0.748	0.373	0.799	0.750	0.611			
ENJ	0.662	0.258	0.714	0.696	0.845	0.508		
UFL	0.730	0.313	0.799	0.735	0.894	0.815	0.559	
INT	0.645	0.476	0.503	0.646	0.709	0.600	0.679	0.690

4.4 Correlation Analysis

Bivariate correlation indicates the strength of one factor over another. If the correlation coefficient is between 0.10 and 0.29, it indicates a weak connection; 0.30 to 0.49 indicates a moderate correlation; and 0.50 to 0.99 indicates a strong correlation (Cohen, 1998). The mean of all the variables was calculated in order to apply the Bivariate correlation analysis to obtain the internal correlation between the variables. As presented in Table 7, all of the variables have a positive correlation that is statistically significant at the 0.01 level (2-tailed). Enjoyment has a strong correlation with usefulness at 0,580 as well as with ease of use at 0,585. On the other hand, there is a strong correlation between usefulness and ease of use at 0,668; however, the intention to use VR has a moderate correlation with variables of ease of use, enjoyment, and usefulness at 0,597, 0,382, and 0,471, respectively. Consequently, all the variables have positive and significant correlations with each other.

Table 7

Inter-Construct Correlation

	ENJ	UFL	EOU	IVR
Enjoyment	1			
Usefulness	.580**	1		
Ease of Use	.585**	.668**	1	
Intention to use VR	.382**	.471**	.497**	1

** . Correlation is significant at the 0.01 level (2-tailed).

4.5 Confirmatory Factor Analysis (CFA)

Whilst the analysis process, it was found that there were multiple loadings during the factor analysis of the data using Exploratory Factor Analysis (EFA), which happens when an item is highly linked with more than one factor. As a result, it was difficult to comprehend the underlying component structure and develop a trustworthy measurement model. The troublesome problematic items were eliminated in order to resolve this issue. Therefore, CFA was conducted by AMOS software to refine the measurement model. By evaluating a hypothesized measurement model, CFA helps to evaluate the fitness of the data and validate the refined measurement model based on the observed data. A pooled Confirmatory Factor Analysis (CFA) was used to confirm the variables of the study. Some items were needed to be eliminated before the analysis could be carried out. The following Items EOU5, EOU6, and EOU8 were deleted from the data set to prevent the multiple loadings. A pooled Confirmatory Factor Analysis (CFA) is a tool for evaluating the connections between multiple measured variables that are gathered from the same individuals. Instead of analyzing each individual's data separately, a pooled CFA combines all the data and analyzes it together. (Kline, 2016). As Brown stated in 2015, the main goal of pooled CFA is to establish whether a collection of observed variables can be explained by a smaller set of underlying, unobserved variables. The pooled CFA technique is used to assess the connections between all variables simultaneously. Figure 5 represents the pooled CFA analysis for the independent variables. While figure 7 shows the pooled CFA analysis for the dependent variable which is Intention according to this study. The model fit is determined by using Goodness-of-Fit (GOF) refers to a statistical measure used to assess how well the observed data fit a particular theoretical model. (Agresti, 2007). The model to be suitable, the specific criteria must be satisfied. Each of the criteria is focusing on a different component of the model. As Gaskin and Li (2016) said, excellent goodness of fit model consists of the following values:

CMIN/DF should be greater than 1, CFI greater than 0.95, SRMR less than 0.08, RMSEA less than 0.06, PClose greater than 0.05. Tables 8 and 9 show that all of the indices meet the requirements for a model fit. As a result, the model has achieved good model fit.

Figure 6 shows the second order analysis for the construct Attitude Dimensions. AD has loaded to its sub-dimensions with regression weights greater than .50 and the relation between the sub-dimensions and AD are significant. Goodness of fit is statistically significant, and all other goodness of fit indices indicate a model fit. Based on the following. CMIN/DF=1.883, RMR=0.046, AGFI=0.905, TLI=0.912, RMSEA=0.051. This conclude that there is construct validity for second order analysis for Attitude Dimensions.

Figure 5

First order pooled confirmatory factor analysis for attitude dimensions (independent variables)

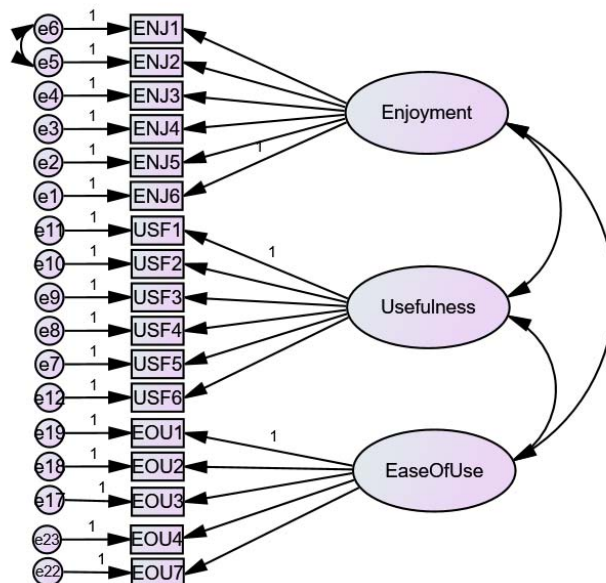


Table 8*Goodness of Fit Indices*

<i>Measure</i>	<i>Estimate</i>	<i>Threshold</i>	<i>Interpretation</i>
<i>CMIN</i>	<i>216.527</i>	<i>--</i>	<i>--</i>
<i>DF</i>	<i>115</i>	<i>--</i>	<i>--</i>
<i>CMIN/DF</i>	<i>1.009</i>	<i>Between 1 and 3</i>	<i>Excellent</i>
<i>CFI</i>	<i>0.926</i>	<i>>0.95</i>	<i>Acceptable</i>
<i>SRMR</i>	<i>0.046</i>	<i><0.08</i>	<i>Excellent</i>
<i>RMSEA</i>	<i>0.051</i>	<i><0.06</i>	<i>Excellent</i>
<i>PClose</i>	<i>0.422</i>	<i>>0.05</i>	<i>Excellent</i>

Gaskin and Lim (2016)

Figure 6

CFA second order analysis of attitude dimensions

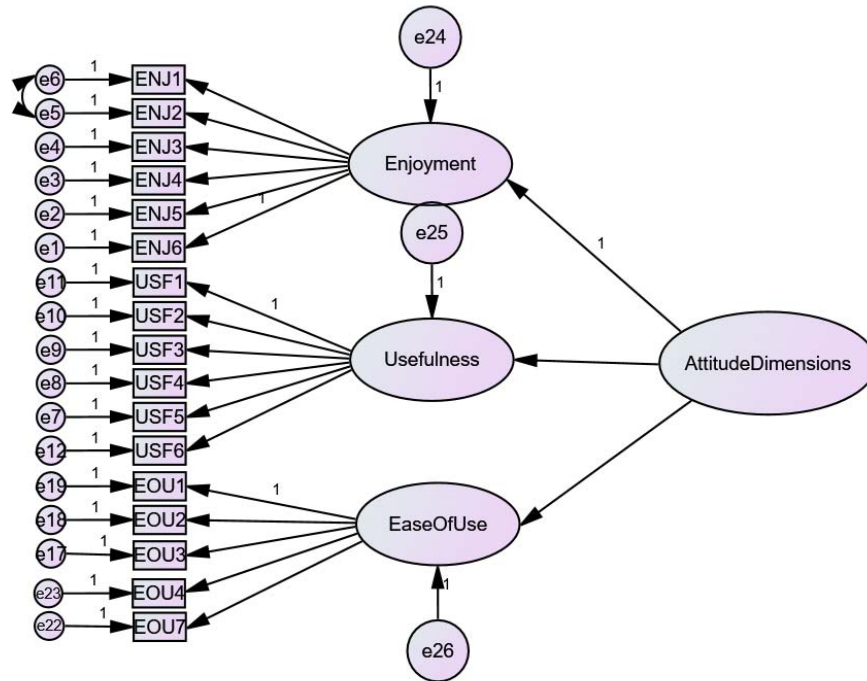


Figure 7

Pooled confirmatory factor analysis for dependent variable

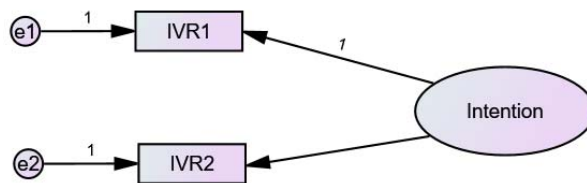


Table 9*Goodness of Fit Indices*

<i>Measure</i>	<i>Estimate</i>	<i>Threshold</i>	<i>Interpretation</i>
<i>CMIN</i>	<i>115.224</i>	<i>--</i>	<i>--</i>
<i>DF</i>	<i>102</i>	<i>--</i>	<i>--</i>
<i>CMIN/DF</i>	<i>1.2</i>	<i>Between 1 and 3</i>	<i>Excellent</i>
<i>CFI</i>	<i>1.00</i>	<i>>0.95</i>	<i>Excellent</i>
<i>SRMR</i>	<i>0.001</i>	<i><0.08</i>	<i>Excellent</i>
<i>RMSEA</i>	<i>0.004</i>	<i><0.06</i>	<i>Excellent</i>
<i>PClose</i>	<i>0.055</i>	<i>>0.05</i>	<i>Excellent</i>

Gaskin and Lim (2016)

4.6 Structural Equation Modeling (SEM) – Path Analysis

Structural Equation Modeling (SEM) is a statistical modeling technique widely used in the social sciences and other disciplines to investigate complex relationships between observed and latent variables, enables researchers to test theoretical models, estimate model parameters, and measure them how well the model fits the data (Bollen, 1989). Is considered as a subset of confirmatory factor analysis. As Hair et al. (2014) stated that SEM allows a researcher to assess the meaningful contribution of each separated scale item and determine reliability by examining the effect that the scale reflects on the notion. Structural Equation

Modeling also allows for the identification of experimental errors whilst model testing and allows for the exploration of predetermined relationships to determine the nature of the link between factors. Ullman and his friend Bentler (2012) describe SEM as an approach that combines exploratory factor analysis (EFA) with multiple regression to specify the inter-relationships between observable and latent variables; it is required to use structural equation models. SEM investigates the correlations between variables. The quality of fit of the hypothesized model may be determined by analyzing the covariance matrix suggested by the model and the estimated parameters within the observed matrix. Moreover, structural equation models may incorporate latent variables into the analysis. Latent variables are constructs that are evaluated indirectly by evaluating numerous measured variables, sometimes known as indicators (Hair et al., 2019, p.608). Additionally, as latent constructs, SEM uses both exogenous and endogenous factors. Exogenous factors are defined as independent variables, as shown in Table 10, Enjoyment (ENJ), Ease of use (EOU), and Usefulness (UFL) while endogenous constructs are classified as dependent variables Baron and Kenny (1986), Whereas intention (IVR) are conceptualized as an endogenous variable.

Table 10

Exogenous and endogenous constructs

Exogenous constructs	Endogenous Constructs
Enjoyment	Intention to use VR
Ease of use	
Usefulness	

With the help of the IBM SPSS AMOS v24 software and the Maximum Likelihood Estimation (MLE) approach, A covariance-based path analysis is used to assess

recommended model fit and test hypotheses. Figure 8 shows the measuring model. Exogenous variables are linked to one another by correlation curves, and relationship variables are linked together with one-way arrows. Error terms are also included to create item variables and predictor variables. Furthermore, in Table 11, all of the values meet the criterion for an excellent model fit. Therefore, the model fit is successful.

Figure 8

Structural Equation Modeling-Path Analysis

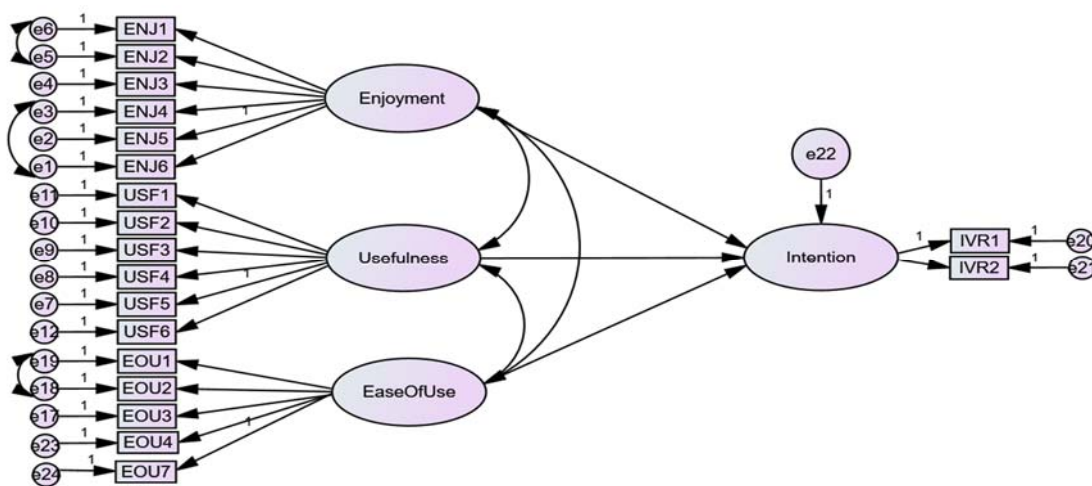


Table 11*Model Fit Measures*

<i>Measure</i>	<i>Estimate</i>	<i>Threshold</i>	<i>Interpretation</i>
<i>CMIN</i>	<i>227.724</i>	<i>--</i>	<i>--</i>
<i>DF</i>	<i>143</i>	<i>--</i>	<i>--</i>
<i>CMIN/DF</i>	<i>1.592</i>	<i>Between 1 and 3</i>	<i>Excellent</i>
<i>CFI</i>	<i>0.946</i>	<i>>0.95</i>	<i>Acceptable</i>
<i>SRMR</i>	<i>0.046</i>	<i><0.08</i>	<i>Excellent</i>
<i>RMSEA</i>	<i>0.042</i>	<i><0.06</i>	<i>Excellent</i>
<i>PClose</i>	<i>0.910</i>	<i>>0.05</i>	<i>Excellent</i>

Gaskin and Lim (2016)

4.7 Hypothesis Testing

Regression test allows researchers to analyze relationships between one independent and one dependent variable (Erik et al., 2014). SPSS Program and Amos were used analysis the regression test in order to evaluate the hypotheses testing in the study. However, as SPSS demonstrates accurate results compared to AMOS software, the linear regression analysis was conducted using SPSS. Standardized Coefficients (B), standard error (S.E), and

significance level are used to justify the proposed hypotheses (p). The following table 12 presents the regression tests results according to SPSS.

Table 12

Regression test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.281	.244	.083	5.251	.000
ENJ	.096	.077	.074	1.244	.214
USF	.261	.075	.226	3.465	.001
EOU	.332	.072	.303	4.617	.000

a. Dependent Variable: IVR

The following table 13 presents the summary of the hypothesis tests results.

Table 13

Hypothesis Testing

Hypotheses	Results
H1: Positive student attitude toward using VR technology to learn English leads to increased intention to use VR technology to learn English in TRNC	Supported
H1a: Enjoyment of VR has a positive effect on students' VR use intention.	Not supported
H1b: Usefulness of VR has a positive impact toward students' VR use intention.	Supported
H1c: Ease of use of VR has a positive effect on the students' VR use intention.	Supported

The outcomes of this analysis highlight the accurate impacts of the independent variables on the dependent variable. SPSS and AMOS were both used to test the linear regression

analysis. However, since the SPSS results were more accurate following the interpretations as shown in the tables above. Table 12 shows the following result, Students attitudes has a significant positive effect on intention to use VR ($\beta=0.083$, $Sig= 0.000$, $t=5.251$). Therefore, hypothesis H1 is supported. Enjoyment has an insignificant positive effect on intention to use VR ($\beta=0.074$, $Sig= 0.214$, $t=1.244$). Therefore, hypothesis H1a is not supported. The results indicate that usefulness has a significant positive effect on intention to use VR ($\beta=0.226$, $Sig = 0.001$, $t=3.465$). Therefore, hypothesis H1b is supported. The results also indicate that ease of use has a significant positive effect on intention to use VR ($\beta= 0.303$, $Sig= 0.000$, $t=4.617$) Hence, hypothesis H1c is supported.

CHAPTER 5

CONCLUSION AND IMPLICATIONS

5.1 Discussion

In this concluding section, findings of the research are discussed, including the study limitations, and provide recommendations for future studies.

This study investigated the reasons for students' attitudes regarding their intention to use virtual reality. Reviewing previous research on VR intention use, this research focuses on determining whether situational dimensions (enjoyment, usefulness, and ease of use) influence students' intention towards using VR technology in learning English.

Using quantitative data collected from English preparatory school students in higher education institutions in TRNC. The findings of the study are consistent with established theories about the relationship between technology acceptance and attitudes. The positive relationship between students' positive attitudes towards the use of VR for English learning and their increased intention to adopt this technology highlights the importance of attitudes in attitude formation. This model is consistent with the Technology Acceptance Model (TAM), which suggests that positive attitudes toward technology can lead to higher intentions to use it (Davis, 1989). Educational institutions in the TRNC should take advantage of this finding and create a positive environment for the integration of VR in language learning.

Also the study indicate that, contrary to initial expectations, the level of enjoyment from using VR technology does not affect students' intention to use VR to learn English great influence. Although enjoyment may be an important factor in user interactions, its effect on intention to adopt seems to be overshadowed by other determinants. This finding is echoed by the study conducted by Venkatesh and Bala (2008), where interest was not found to be a

strong predictor of technology adoption intention. It is important to consider that factors such as perceived usefulness and ease of use play a more important role in determining students' intention to use VR.

The results of the study support that the usefulness of VR technology positively affects students' attitudes towards language learning. This relationship is consistent with TAM, which emphasizes the central role played by the perceived usefulness of technology adoption (Davis, 1989). Students who view VR as a valuable tool to enhance their English proficiency tend to exhibit higher intentions to incorporate it into learning methods.

The study's results also provide support to the theory that students' intentions of using virtual reality (VR) technology for English learning are greatly influenced by how simple it is to use. As ease of use is acknowledged as a factor in adoption (Davis, 1989), this is in line with the TAM's principles. User-friendly VR systems and flexible interfaces can lower barriers to entry, enabling students to incorporate VR into their learning processes.

The correlation analysis shows and proves that there is a strong relationship between the dimensions of attitude and intention as similarly tested before by Bunz et al. (2021). This finding highlights the need for further examination of the effectiveness of virtual reality as a language learning tool and provides valuable insights into the complexities of students' attitude towards technology-enriched learning environments.

5.2 Limitations

One of the limitations of this thesis is the small sample size used for data collection. The study only had a sample of 340, which may limit the generalizability of the findings. Previous research has emphasized the importance of a large and diverse sample to ensure representation of the target population (Smith & Johnson, 2018; Brown et al., 2019). A larger

sample would provide a stronger insight into student attitudes on the intention to use virtual reality (VR) in English language teaching, including a wider range of language learners with different skills, learning styles and cultural backgrounds.

Another limitation concerns the awareness of the VR technology, as many participants do not have knowledge about the VR technology or the usage process of this particular invention.

One of the limitations of this study is the language barrier between the study participants.

For participants who may be unfamiliar with the specific terminology and language of the questionnaires, resisting complete comprehension of questionnaires can be a challenge the presence of unfamiliar vocabulary can create barriers, potentially limiting their capacity to provide responses that truly reflect their thoughts and experiences. This issue can lead to misinterpretation and incorrect responses, potentially compromising the quality of the data collected, and affecting the integrity of the results. Also, due to the time limitation, the students did not have enough time to translate and have a clear understating of the questions.

A significant limitation of this study arises from the lack of information about the total number of students enrolled in TRNC in English preparatory schools. Without a clear understanding of the size of the target population, it becomes challenging to select a sample that accurately reflects the characteristics and diversity of the entire population. This limitation can lead to uncertainties in the generalizability of the study's findings to the broader context. Determining an appropriate sample size is an important part of any research study. However, without knowledge of the entire population, insufficient sample size can result in low statistical power and high error rates, reducing the reliability and significance of the study results.

5.3 Recommendations and Future Studies

Conducting longitudinal studies is preferred to understand the student's attitude toward the application intention of VR over time. By conducting numerous research in different fields of populations, researchers can gain insight into how attitudes toward VR develop and whether positive first impressions persist over time. Furthermore, it is important to include more diverse language learners in future studies to capture the influence of individual characteristics on attitudes towards VR. Factors such as language proficiency, prior experience with technology, and cultural background may shape students' perceptions and responses to VR-based language learning. Examining these different student backgrounds would provide a more comprehensive understanding of the effects of VR on different student populations. Comparative research directly comparing students' perceptions of VR-based language learning with other language teaching methods such as traditional classroom instruction or computer-assisted language learning provides a new avenue for research. The study recommends that the questionnaire to be translated into several languages as a way of overcoming the language barrier limitation, resulting in more accurate and meaningful data collected. Facilitating understanding for participants and validating their discourses, contributes to the overall validity, inclusiveness, and potential impact of the research. This approach is consistent with the principles of ethical research and enhances the study's ability to draw insights from multiple participants.

As the study had a discriminant validity issue, researchers must carefully refine the conceptual definitions of the constructs and consider more diverse and representative samples to ensure that the measurement instruments accurately capture the intended distinctions between the constructs. Questionnaires in multiple national languages are highly recommended to improve the measurement scale in the study. By doing so, researchers can

not only ensure that the questions are well understood but can also obtain culturally relevant and authentic answers, ultimately leading to more robust measurement results.

Evaluating different teaching strategies and instructional designs in VR-based language learning is essential to have a greater impact on learners' behaviour. By identifying the most effective and engaging teaching strategies, researchers can create engaging and dynamic language learning experiences that positively impact learners' attitudes and motivation.

In conclusion, this thesis contributes to the ongoing discourse on VR in language learning. It emphasizes the importance of considering various determinants of learners' perceptions and the importance of VR in language learning.

References

- AlFarsi, G., Yusof, ABM, Rusli, MEB, Tawafak, RM, Malik, SI, & Mathew, R. (2021, December). The student's Behavior Intention using Virtual Reality in Learning Environments. In *2021 22nd International Arab Conference on Information Technology (ACIT)* (pp. 1-5). IEEE.
- Alsoufi, A., Alsuyihili, A., Msherghi, A., Elhadi, A., Atiyah, H., Ashini, A., Ashwieb, A., Ghula, M., Ben Hasan, H., Abudabuos, S., Alameen, H., Abokhdhir, T., Anaiba, M., Nagib, T., Shuwayyah, A., Benothman, R., Arrefae, G., Alkhwayildi, A., Alhadi, A., Elhadi, M. (2020). Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. *PLOS ONE*, *15*(11), e0242905. <https://doi.org/10.1371/journal.pone.0242905>
- Anscombe, G. E. M. (2000). *Intention*. Harvard University Press
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*, 74-94.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Bialystok, E., Craik, F. I., & Luk, G. (2012). Bilingualism: consequences for mind and brain. *Trends in Cognitive Sciences*, *16*(4), 240-250.

- Bunz, U., Seibert, J., & Hendrickse, J. (2021). From TAM to AVRTS: development and validation of the attitudes toward Virtual Reality Technology Scale. *Virtual Reality*, 25 (1), 31-41.
- Burdea, G. C., & Coiffet, P. (2003). *Virtual reality technology*. New York: Wiley.
- Carlson, B. M. (2002). Embryology in the medical curriculum. *The Anatomical Record*, 269(2), 89-98.
- Chen, B., Wang, Y., & Wang, L. (2022). The Effects of Virtual Reality-Assisted Language Learning: A Meta-Analysis. *Sustainability*, 14 (6), 3147.
- Chen, H., & Huang, J. (2021). The effects of presence, flow, and visual attention on college students' intention to use virtual reality for English learning. *Computers & Education*, 168, 104219.
- Chen, I. J., Huang, Y. M., & Chen, N. S. (2019). Enhancing English as a foreign language learners' speaking performance in virtual reality classrooms. *Interactive Learning Environments*, 27(3), 308-324.
- Chen, Y.L. (2016) The effects of virtual reality learning environment on student cognitive and linguistic development. *Asia-Pac. Educ. Res*, 25, 637–646.
- Cheng, K. H., & Tsai, C. C. (2019). The effectiveness of virtual reality in science education: A meta-analysis. *Educational Research Review*, 27, 180-192.
- Clore, GL, & Schnall, S. (2005). The Influence of Effect on Attitude.
- Clustering, A. S. (2019)International Arab Conference on Information *Technology (ACIT)*. *Higher Education*, 165, 170.

- Cohen, J. (1998). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates Publishers.
- Cook, R. D. (1977). Detection of influential observation in linear regression. *Technometrics*, 19(1), 15-18.
- Crystal, D. (2003). *English as a global language*. Cambridge university press. Dashko, L., Dubytska, O.: Virtualna realnist yak instrumentarii ediuteinmentu v movnii osviti (Virtual reality as an instrument of edutainment in language study).
- Davis, F. B. R. & Warsaw, P. (1989). User acceptance of computer technology: A comparison of two theoretical models *Management Science*, 35(8), 98.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Devine, P. G., Plant, E. A., & Harrison, K. (2002). The role of attitude objects in attitude functions. *Journal of Experimental Social Psychology*, 38(3), 224-237.
- Dimitropoulos, K., Manitsaris, A., & Mavridis, I. (2007). Building Virtual Reality Environments for Distance Education on the Web: A Case Study in. In *Medical Education*,” *Computer Journal of International Journal of Social Sciences*.
- Dolgunsöz, E., Yildirim, G., & Yildirim, S. (2018). The effect of virtual reality on EFL writing performance. *Journal of Language and Linguistic Studies* , 14 (1), 278-292.
- Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. Routledge.

- Educause. (2020) EDUCAUSE Horizon Report, Teaching and learning edition. Retrieved, April 1st, 2021 from www.educause.edu/horizonreport-2020.
- Elearning Vs. Traditional Learning for Learners Satisfaction. *E-learning*, 29(3), 388-397.
- Fakeye, D. (2010). Students' personal variables as correlates of academic achievement in English as a second language in Nigeria. *Journal of Social Sciences*, 22, 205–211.
- Falah, J., Harrison, D. K., Charissis, V., & Wood, B. M. (2013). July. The characterisation of a virtual reality system to improve the quality and to reduce the gap between information technology and medical education. In *International Conference on Virtual, Augmented and Mixed Reality* (pp. 122-131). Springer, Berlin, Heidelberg.
- Falah, J., Khan, S., Alfalah, T., Alfalah, S. F., Chan, W., Harrison, D. K., & Charissis, V. (2014). August. Virtual Reality medical training system for anatomy education. In *Science and Information Conference (SAI), 2014* (pp. 752-758). IEEE.
- Fällman, D., Backman, A., & Holmlund, K. (1999). VR in education: An introduction to multisensory constructivist learning environments. In *Conference on University Pedagogy (Umea University, Umea, Sweden, February 18-19)*.
- Farley, S. D., & Stasson, M. F. (2003). Relative influences of affect and cognition on behavior: Are feelings more related to blood donation intentions?. *Experimental Psychology*, 50(1), 55.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. <https://doi.org/10.1177/002224378101800104>

- Gaskin, J., & Li, Y. (2016). Evaluating model fit in PLS-SEM: The importance of parsimony, goodness-of-fit, and simulation modeling. *Journal of Business Research*, 69(10), 4554-4563. doi: 10.1016/j.jbusres.2016.04.007.
- Ghauri, P., & Gronhaug, K. (2005). *Research Methods in Business Studies*. Harlow, FT/Prentice Hall.
- Gigante, M. A. (1993). Virtual reality: definitions, history and applications. In *Virtual reality systems* (pp. 3-14). Academic Press.
- Ginani, F., Gadelha, R., & Augusto, G. (2012). Use of clinical cases in a virtual learning environment as an approach to teaching Human Embryology. *Int. J. Morphol*, 30(4), pp.1395-1398
- Klimoski, R., & Palmer, S. (1993). The ADA and the hiring process in organizations. *Consulting Psychology Journal: Practice and Research*, 45(2), 10-36. <https://doi.org/10.1037/1061-4087.45.2.10>
- Gupta A (2007) Psychosocial learning environments of technology-rich science classrooms in India. Paper presented at annual conference of Australian Association for Research in Education, Perth
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate Data Analysis*. Pearson.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis (8th ed.)*. Cengage Learning.
- Horwitz, E. K. (2001). Language anxiety and achievement. *Annual Review of Applied Linguistics*, 21, 112-126.
- Huang, H.L.; Hwang, G.J.; Chang, C.Y. Learning to be a writer: A spherical video-based virtual reality approach to supporting descriptive article writing in high school chinese courses.

- Huang, Y. M., Li, Y. C., & Jhan, J. L. (2019). Investigating the effects of immersive virtual reality on EFL learners' English speaking skills. *Interactive Learning Environments*, 27(7), 899-913.
- Huang, Y., Li, L., Lee, H., Browning, M. H. E. M., & Yu, C. (2023). Surfing in Virtual Reality: An Application of Extended Technology Acceptance Model with Flow Theory.
- Kaplan-Rakowski, R., & Wojdyski, T. (2018). Students' attitudes toward high-immersion virtual reality assisted language learning. *Future-Proof CALL: language learning as exploration and encounters—short Papers from EUROCALL, 2018*, 124-129.
- Kasper, J. D., Black, B. S., Shore, A. D., & Rabins, P. V. (2009). Evaluation of the validity and reliability of the Alzheimer Disease-related Quality of Life Assessment Instrument. *Alzheimer Disease & Associated Disorders*, 23(3), 275-284.
- Kazemainy, F., Barjesteh, H., Golagahei, N., & Nasrollahi Mouziraji, A. (2020). Agile development of a custom-made vocabulary mobile application: A critical qualitative approach. *Teaching English as a Second Language (Formerly Journal of Teaching Language Skills)*, 38(4), 43-93.
- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.).
- Kozma, R. B. (2011). ICT, education transformation, and economic development: An analysis of the US National Educational Technology Plan. *E-Learning and Digital Media*, 8(2), 106-120.

- Kumar, S., & Johnson, E. (2018). Investigating the impact of virtual reality on student engagement and learning outcomes. In Proceedings of the 51st Hawaii International Conference on System Sciences.
- L. Jonathan, Unity Virtual Reality Projects, Hand Book, 2015.
- Lee, C., Chang, C., & Hou, H. (2019). The effect of virtual reality on students' learning motivation and achievement. *Journal of Educational Technology & Society*, 22(2), 75-84
- Legault, A., & Inzlicht, M. (2013). Self-determination, self-regulation, and the brain: Autonomy improves performance by enhancing neuroaffective responsiveness to self-regulation failure. *Journal of Personality and Social Psychology*, 105(1), 123-138
- Li, L., & Lalani, F. (2021). Investigating university students' attitudes toward using virtual reality technology for learning English. *International Journal of Emerging Technologies in Learning (iJET)*, 16(1), 110-126.
<https://doi.org/10.3991/ijet.v16i01.12046>.
- Lin, C. H., & Huang, Y. M. (2020). Integrating virtual reality into English listening comprehension instruction: Effects on learners' performance and perceptions. *Interactive Learning Environments*, 28(1), 88-104.
- Lin, Y., & Chen, Y. L. (2019). Exploring the effect of virtual reality on English as a foreign language learners' listening comprehension. *Journal of Educational Technology & Society*, 22(4), 226-237.

- Liu, D. Y., Sivilotti, P. A., & Wu, B. H. (2020). Exploring factors influencing college students' intention to use virtual reality for learning: A comparative study between China and the United States. *Computers & Education*, 152, 10385
- Lutz, RJ (1991). The role of attitude theory in marketing. *Perspectives in consumer behavior* .
- Mahalanobis, P. C. (1936). On the generalised distance in statistics. Proceedings of the National Institute of Sciences of India, 49-55.
- Manyika, J., Chui, M., Miremadi, M., Bughin, J., George, K., Willmott, P., & Dewhurst, M. (2017). Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages. McKinsey Global Institute.
- Méndez, J. A., Bermúdez, M., Mejías, M., & Rivas, A. (2020). Enhancing language learning with virtual reality: A systematic review. *Computers & Education*, 146, 103773.
- Merriam-Webster. (n.d.). Technology. In Merriam-Webster.com dictionary. Retrieved April 14, 2021, from <https://www.merriam-webster.com/dictionary/technology>.
- Mohamed, M. A., Fallahi, A., El-Sokkary, A. M., Salehi, S., Akl, M. A., Jafari, A., ... & Cheng, C. (2019). Stimuli-responsive hydrogels for manipulation of cell microenvironment: From chemistry to biofabrication technology. *Progress in Polymer Science*, 98, 10114
- Owston, RD (1997). Research news and comment: The world wide web: A technology to enhance teaching and learning?. *Educational researcher* , 26 (2), 27-33.
- Perrin, A. (2018). Social media use in 2018. Pew Research Center.

- Peterson, M., Lin, L., & de Barba, P. (2018). Learning vocabulary through mobile app gamification: investigating the effectiveness of the Duolingo mobile app. *Journal of Computer-Assisted Learning*, 34(8), 817-828.
- Ping, L., & Liu, K. (2020). Using the technology acceptance model to analyze K-12 students' behavioral intention to use augmented reality in learning. *Texas Education Review*.
- Powell, WW, & Snellman, K. (2004). The knowledge economy. *annu. Rev. sociol.* , 30 , 199-220.
- psotka, J. (1995). Immersive training systems: Virtual reality, education, and training. *Instructional science*, 23(5), 405-431.
- Qiu, X.Y.; Chiu, C.K.; Zhao, L.L.; Sun, C.F.; Chen, S.J. Trends in VR/AR technology-supporting language learning from 2008 to 2019: A research perspective. *Interact. Learn. Environ.* 2021, 1–24.
- Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1991). Criteria for scale selection and evaluation. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 1-16). Academic Press.
- Rosenberg, M. J., Hovland, C. I., McGuire, W. J., Abelson, R. P., & Brehm, J. W. (1960). Attitude organization and change: An analysis of consistency among attitude components.(Yales studies in attitude and communication.), Vol. III.
- Schiopu, A. F., Hornoiu, R. I., Pădurean, A. M., & Nica, A. (2022). Constrained and Virtually Traveling? Exploring the Effect of Travel Constraints on Intention to

- Use Virtual Reality in Tourism. *Technology in Society*, 71, 102091.
<https://doi.org/10.1016/j.techsoc.2022.102091>.
- Schuck, S., & Aubusson, P. (2010). Educational scenarios for digital futures. *Learning, media and Technology*, 35(3), 293-305.
- Shams, M. (2008). Students' attitudes, motivation and anxiety towards English language learning. *Journal of Research*, 2, 121–144.
- Smart, J., Cascio, J., & Paffendorf, J. (2007). Metaverse roadmap: Pathway to the 3D web. Metaverse: A Cross-industry public foresight project. Retrieved from <http://www.metaverseroadmap.org/MetaverseRoadmapOverview.pdf>
- Song, B., Zhang, M., & Wu, P. (2022). Driven by Technology or Sociality? Use Intention of Service Robots in Hospitality from the Human–Robot Interaction Perspective. *International Journal of Hospitality Management*, 106, 103278.
<https://doi.org/10.1016/j.ijhm.2022.103278>.
- Sun, X., Wang, Q., & Ge, L. (2021). Understanding Chinese college students' intentions to use virtual reality in English language learning: An extension of the Technology Acceptance Model. *Journal of Educational Computing Research*, 59(5), 909-926.
- Tang, X., Zhu, E., & Li, J. (2020). Investigating the factors influencing college students' intention to use virtual reality for learning: An extension of the technology acceptance model. *Interactive Learning Environments*, 28(2), 206-220.
- Triberti, S., Repetto, C., Riva, G., & Pravettoni, G. (2019). The use of virtual reality in healthcare: A bibliometric analysis. *Journal of Medical Internet Research*, 21(12), e15024.

- Ullman, J. B. (2001). Structural equation modelling. In B.G. Tabachnick & L.S. Fidell (Eds.), *Using multivariate statistics (4th ed.)*. Needham Heights, MA: Allyn and Bacon.
- Wegner, D. M. (2002). *The Illusion of Conscious Will*. MIT Press.
- Zaharuddin, F. A., Ibrahim, N., Mahidin, E. M., Yusof, A. M., & Ezaneerusli, M. (2019). Virtual reality application for stress therapy: Issues and challenges.
- Zawilinski, L. M., & Kim, Y. (2020). Virtual Reality (VR) in English Language Learning: A Meta-Analysis of Research 2016-2019. *Journal of Educational Technology & Society*, 23(1), 1-17.
- Zhang, Y., & Cui, G. (2020). Students' intention to use virtual reality in online education: An extension of the technology acceptance model. *Interactive Learning Environments*, 28(8), 1026-1040.
<https://doi.org/10.1080/10494820.2019.1701627>
- Zhou, H., Wu, H., & Sun, X. (2020). Exploring Chinese college students' intentions to use virtual reality in English pronunciation learning. *International Journal of Emerging Technologies in Learning*, 15(20), 97-111

APPENDIX A: SURVEY QUESTIONNAIRE

Dear Participant,

This research project is being conducted by **Dania Karmo**, an **MBA** student of Final International University under the supervision of Assist. Prof. Dr. Kevser Taşel Jurkoviç. This study aims to investigate the Impact of Students' Attitude toward Using Virtual Reality on Intention to Use Virtual Reality in English Language Learning: The case of English preparatory class students in Northern Cyprus. This survey is intended for participants 18 years or older specifically for B1 and below English level students. The survey will be available between 13.03.2023 and 13.04.2023. You are expected to participate in this survey study only once. Participants of this survey will remain anonymous. In addition to being anonymous, no information is required to identify you and you cannot be identified by the answers you supply. The data collected in the study will be kept safely in an encrypted file on a computer and will be used for academic purposes only. Participation in this study is voluntary. None of the steps in the survey should cause personal discomfort. However, if you feel uncomfortable for any reason, you are free to quit the survey at any time, without explaining the reason. There will be no negative consequences in case you choose not to complete the survey. The survey was adopted and modified from From TAM to AVRTS: development and validation of the attitudes toward Virtual Reality Technology Scale.

Thank you in advance for participating in this study. If you need any further information about the study or if you have any question you would like to ask, you can contact me on email:*danial.karmo@final.edu.tr* or by phone: +905338581948.

Thank you,

* **Virtual Reality** is a computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as VR glasses (Freina & Ott. 2015).

I accept to participate in this research.

Yes

No

1. To what extent do you agree with the following statement regarding Enjoyment of using VR to learn English Language:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1. Using VR to learn English Language would be entertaining	1	2	3	4	5
2. I think using VR would be fun	1	2	3	4	5
3. For me, using VR would have great entertainment value	1	2	3	4	5
4. It would be fun to discover how to use VR and its elements	1	2	3	4	5
5. Using VR experience to learn English Language would be enjoyable	1	2	3	4	5
6. I would enjoy using VR to learn English Language	1	2	3	4	5

2. To what extent do you agree with the following statement regarding Usefulness of VR to learn English Language:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1. Using VR would fulfil my English Learning needs	1	2	3	4	5
2. Using VR would help to meet my English Language learning goals	1	2	3	4	5
3. Using VR to learn English Language saves my time	1	2	3	4	5
4. Using VR to learn English improves the quality of my English language learning	1	2	3	4	5
5. Using VR to learn English Language facilitates improvement of my English Language	1	2	3	4	5
6. For me, using VR to learn English Language would have a great learning value	1	2	3	4	5

3. To what extent do you agree with the following statement regarding Ease of use of VR

usage to learn English Language:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1. Using VR would make it easier to learn English Language	1	2	3	4	5
2. I think VR would be easy to use to learn English Language	1	2	3	4	5
3. Handling the VR motion controls and its elements would be easy in English Language	1	2	3	4	5
4. Using VR to learn English Language would be clear and understandable	1	2	3	4	5
5. It would be confusing for me to remember how to perform tasks using VR to learn English	1	2	3	4	5
6. I would find it complicated to use VR to learn English	1	2	3	4	5
7. It would be easy to learn how to use VR to learn English Language	1	2	3	4	5
8. I would need to seek help when using VR to learn English Language	1	2	3	4	5

4. To what extent do you agree with the following statement regarding Intention to use

VR in English Language learning:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1. would like to use VR for learning English Language	1	2	3	4	5
2. I would be eager to use VR for learning English Language	1	2	3	4	5

5. Gender

Male

Female

6. Monthly Household Income:

Less than 2000 TL

2001 TL – 4000 TL

4001 TL - 8000 TL

8001 TL and above

7. Age:

8. Nationality:

9. Program of study after Preparatory class:

APPENDIX B: Ethics committee approval document



İÇ YAZIŞMA / INTER OFFICE MEMORANDUM

Gönderilen/To: Dania Karmo

Tarih/Date: 17/03/2023

Gönderen/From: Prof. Dr. Hüseyin YARATAN
Rector

Ref/Sayı:100/050/REK.001

Konu/Subject: About ethical approval

In line with the decision taken at the Ethics Committee meeting on March 10th, 2023, it was decided that your study was ethically and scientifically appropriate.

Distribution: Chair of the Ethics Committee

Ethics Committee Decision:

Decision no / Karar Sayısı: 2023/007/04

Dania Karmo's application to the Ethics Committee titled "Impact of Students' Attitude toward Using Virtual Reality on Intention to Use Virtual Reality in English Language Learning: The case of English preparatory class students in Northern Cyprus", a proposed study to be carried out under the supervision of Asst. Prof. Dr Kevser Taşel Jurkoviç was discussed. With the justification, purpose, approach and methods stated in the application, the proposed research was found ethically and scientifically appropriate.

SK/HY

