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Perspectives of Middle School Teachers About the Use of Virtual Reality for Learning Spanish

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This is to certify that the doctoral dissertation by

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Walden University
2023

Abstract

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Betty Ukera-Kajoh

MS, Walden University, 2011

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Foreign language education in the United States has historically produced poor outcomes, with very few language learners achieving communicative competence. The increasing global demand for multilingual professionals makes the issue a salient one. The purpose of this basic qualitative study was to explore the perspectives of U.S. middle school Spanish teachers about the use of virtual reality (VR) as an instructional tool for developing communicative competence in Spanish language. The research question, which was informed by Canale and Swain's communicative competence theory, and educational technology theory by Huang, et al., addressed middle school Spanish teachers' perspectives regarding their use of VR as an instructional tool for developing communicative competence in Spanish language learning. Data were collected by conducting semistructured interviews of eight Spanish teachers who had worked at the same public middle school for at least two years and who had used VR as an instructional tool. Data were analyzed using a six-step thematic analysis protocol. Participants perceived VR to be an effective instructional tool for use in the Spanish language classroom. They viewed the technology as a means of increasing student participation and collaboration and promoting self-expression and student-led learning while simultaneously targeting multiple communicative competencies. However, VR use can be challenging when not supported by school and district leaders. The study may foster positive social change by yielding new insights on complex issues hampering the adoption and use of innovative technologies such as VR.

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Dedication

And now to the King Eternal, Immortal, Invisible, the only true God, who has made out of my life more than I could ever dream or imagine possible; be honor, glory and Majesty forever and ever! My heart rejoices in the Lord; in the Lord my horn is exalted. My mouth boasts in your deliverance for there is no one holy like the Lord; there is no Rock like my God! To you alone I dedicate this achievement!

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Chapter 1: Introduction to the Study

The emerging literature on virtual reality (VR) highlights the technology's role in the digitization of human experiences. Researchers in disciplines including sports, health care, military, and the business world have studied the technology (see Choi et al., 2020; Jensen & Konradsen, 2018; Kaliraj & Thirupathi, 2021; Koivisto & Hamari, 2019; Suh & Prophet, 2018). However, the use of VR for learning in middle school settings remains underresearched (Kavanagh et al., 2017; Velev, 2017). In this study, I explored the perspectives of middle school teachers on the use of VR as an instructional tool for developing communicative competence in the Spanish language. The utilization of VR for learning different content areas in educational settings holds great promise. An analysis of existing literature shows that when learners participate in multisensory learning activities in virtual worlds, the brain interprets those virtual interactions as concrete experiences and releases cognitive and physiological responses that mirror responses to real-world experiences (Barrett et al., 2020; Lee, 2019). Additionally, VR tools have been associated with increased learner satisfaction rates, higher engagement, higher knowledge retention, and the consumption of larger amounts of learning materials (Choi et al., 2020).

Research shows that 21st-century students are very enthusiastic about experimenting with immersive learning technology (Kaplan-Rakowski & Wojdynski, 2018). However, despite these findings, very few middle school Spanish teachers in the United States integrate VR into learning Spanish in their classrooms (Kaliraj & Thirupathi, 2021; Nicolaidou et al., 2021; Parmaxi, 2020; Peixoto et al., 2021; Xie et al.,

2019). In this chapter, I provide the background for the problem under investigation in this study and discuss the purpose of the study. I also present the research questions (RQs), the conceptual framework, the nature of the study, and pertinent definitions. The chapter also includes discussion of the assumptions, scope and delimitations, limitations, and significance of the study. Finally, I summarize the main points of the chapter and provide a transition to Chapter 2.

Background

The ubiquitous use of VR in entertainment (e.g., gaming and video-streaming), live events (e.g., concerts and sports), military, business, and health care is well documented in the literature with statistically significant positive outcomes (Jensen & Konradsen, 2018; Koivisto & Hamari, 2019; Suh & Prophet, 2018). Businesses are deploying VR technology to provide consumers with immersive virtual tours of goods and services. Similarly, the health care industry is using VR technology for staff training (Hannans et al., 2021) and skill practice (Ke et al., 2020), pain management, and mental health therapy. Recently, there has been a shift in the focus of VR research, with new studies emerging on the use of VR for language learning (Berns & Reyes-Sanchez, 2021; Klimova, 2021; Parmaxi, 2020; Peixoto et al., 2021).

Researchers who have studied the use of VR for learning have concluded that the immersive nature of experiences in virtual worlds causes the brain to interpret virtual interactions as concrete experiences and release cognitive and physiological responses comparative to real-world experiences (Barrett et al., 2020; Lee, 2019). This finding is consequential because it implies that the realism of VR learning experiences is so strong

that the brain cannot distinguish between reality and simulation making it possible for learners to seamlessly transfer skills and memories acquired through virtual experiences to the real world. The presence of avatars coupled with the multiple-user features within the VR environment affords learners the opportunity to engage in collaborative learning and shared cognition (Jalo et al., 2020). VR environments also contain 3D learning artifacts that allow learners to engage in an authentic exploration of phenomena leading to personalized construction of meaning and divergent thinking integrating VR technology (Wang et al., 2020).

These findings are not unique to education; however, although other sectors are embracing this technological innovation to facilitate efficiency in their business operations and improve staff performance, there seems to be apprehension in education with only a limited number of teachers incorporating VR in their classrooms (Barrett et al., 2020; M. Chen et al., 2021). The results of several studies illustrate that immersive VR technology could become a valuable addition to existing methods of instruction for foreign language acquisition, especially for less successful students (Berns & Reyes-Sanchez, 2021; Klimova, 2021; Parmaxi, 2020; Peixoto et al., 2021). However, my goal was to explore the perspectives of middle school Spanish language teachers in the United States about the use of VR as an instructional tool for language learning and how those perspectives influence their use or unwillingness to use VR in their classrooms.

Problem Statement

The general social problem that compelled this research is that foreign language education in the United States has historically been characterized by poor performance,

with only 1% of classroom language learners achieving communicative competence (Carrera, 2018). The specific problem that was investigated in this study was the unknown perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing communicative competence in the Spanish language. Existing literature shows a relationship between how teachers perceive technological innovations (as useful and easy to use) and how willing they are to deploy such technology for teaching and learning in their classrooms (Nicolaidou et al., 2021; Vongkulluksn et al., 2018; Xi, 2021). Yet, few researchers have systematically examined middle school teachers' perspectives about the use of VR technology for language learning, especially of Spanish. Furthermore, most of the existing literature about the use of VR for language learning is on language learning in higher education settings rather than middle school settings (Alfadil, 2020; Alsaffar, 2021; Barrett et al., 2020; M. Chen et al., 2021).

Additionally, existing research on language learning in middle schools (Melchor-Couto, 2017; Park, 2018; Van Ginkel et al., 2019) have centered on English as a Foreign Language (EFL), and not so much on other second languages like Spanish. Due to the novelty of educational VR applications, many researchers studying their application in learning settings have focused on the functionality and affordances of VR tools rather than the perspectives of stakeholders like middle school teachers (Kaplan-Rakowski & Wojdynski, 2018; Nicolaidou, et al., 2021; Xi, 2021). The present study may contribute to educational technology research by providing insight on how middle school teachers perceive the use of VR technology for language learning, which is a critical component

of their decision to adopt VR technology for teaching and learning in middle school settings. Additionally, this study addresses a gap in the literature about the instructional use of VR for developing communicative competence in the Spanish language. The recommendations from this study have pedagogical and policy implications.

Purpose of the Study

The purpose of this basic qualitative study was to explore the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing communicative competence in Spanish language learning. Communicative competence includes vocabulary development, speaking fluency, writing proficiency, and listening comprehension (Canale & Swain, 1980). The key phenomenon that was investigated in this study was the use of VR as an instructional tool for developing communicative competence in Spanish language learning. I explored this phenomenon among middle school teachers in public schools in the United States who used VR applications for Spanish instruction in their classrooms.

Research Questions

The overarching RQ was, What are the perspectives of middle school Spanish teachers about their use of VR as an instructional tool for developing communicative competence in Spanish language learning? Subquestions (sub-Qs) included the following:

Sub-Q1: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for vocabulary development in Spanish language learning?

Sub-Q2: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing speaking proficiency in Spanish language learning?

Sub-Q3: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing writing proficiency in Spanish language learning?

Sub-Q4: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing listening comprehension in Spanish language learning?

Conceptual Framework

The conceptual framework for this study included the communicative competence framework (Canale & Swain, 1980) and the educational technology theory (Huang, et al., 2019). I selected Canale and Swain's (1980) framework to conceptualize communicative competence in this study because it features linguistic, sociolinguistic, strategic, and discourse components that represent the four critical skills of speaking, writing, reading, and listening needed to facilitate effective communication. These were the four constructs I used to develop my RQs. Linguistic competence includes knowledge of lexicon (vocabulary), syntax (sentence building), and phonology (pronunciation). The sociolinguistic component indicates a learner's knowledge of form and meaning and the ability to apply the conventions or rules of the target language to execute a communicative goal. The discourse component refers to the ability of a learner to discern cultural expectations of a given language whereas the strategic component of

communicative competence involves the learner's ability to retrieve the correct linguistic and sociolinguistic items for speaking task. Savignon (1983, 2002) used Canale and Swain's framework in an experimental study to assess the relationship between the various components of communication competence. Savignon found that the four components of communicative competence act in unison to enable language learners to execute speaking tasks. In the current study, I applied Canale and Swain's framework of communicative competence to gather qualitative data about middle school Spanish teachers' perspectives on the instructional use of VR for teaching each component of communicative competence.

I also drew from educational technology theory in conducting the study. The theory provides valuable insights into the nature of educational technology and the ways in which technology should be optimized to facilitate learning. This theory conceptualizes educational technology as the invention and ethical deployment of practices, software, and hardware applications to facilitate learning (Huang et al., 2019). Existing literature on the application of technology for learning shows a positive impact on learners' motivation, technology literacy, engagement, knowledge acquisition, and academic achievement (Huang et al., 2021). In the 21st century, the use of educational technology for learning is considered a responsive and critical component of providing career preparedness for learners who must work in a technology-driven society (Abrams et al., 2018; Huang et al., 2019). However, the deployment of educational technology for learning faces many challenges including low technology literacy in both teachers and students (Mercader & Gairin, 2020), and sometimes a high resistance to change or a lack

of consensus among stakeholders about the value of adopting a particular technology within an educational context (Davis, 1989; Granic & Marangunic, 2019). In some situations, the use of educational technology is also inhibited by the absence of essential technology infrastructure and devices needed to appropriate technology affordances, such as smart badges or artificial intelligence (Huang et al., 2019). The benefits and challenges associated with educational technology may also apply to the use of VR as an instructional tool. Thus, my research embraced the conventional approach to exploring educational technology as a part of the study's conceptual framework.

Nature of the Study

I used a basic qualitative research design in line with the research paradigm of interpretivism to explore middle school Spanish teachers' perspectives on the use of VR as an instructional tool for Spanish language learning. Interpretivism allows for a multilayered interpretation of a single phenomenon. The interpretivism paradigm was chosen because of its potential to uncover people's feelings, emotions, thoughts, and perceptions (see Myers, 2019). I sought to describe middle school Spanish teachers' perspectives on the use of VR tools, which necessitated delving into their deep emotions, attitudes, and feelings concerning VR technology. In this situation, the focus offered by interpretivism was optimal given its usefulness for analyzing subjective research phenomena.

Qualitative research is well suited for in-depth investigations of emerging topics (Saunders et al., 2020). Furthermore, qualitative methodology is well suited to the exploration of individuals' perspectives of, and experiences with, a phenomenon through

the collection and analysis of in-depth, narrative information (Merriam & Tisdell, 2016).

Quantitative methodology would have not been adequate for this investigation because its

focus is on examining patterns and causal relationships between two variables (Creswell

& Creswell, 2018). In the present study, I sought to explore the perspectives of middle

school Spanish teachers about the use of VR technology as an instructional tool for

developing communicative competence in Spanish language learning.

In this study, I used a basic qualitative design to answer the RQs. According to

Worthington (2013), a basic qualitative research design is best used to examine how

individuals interpret their experiences, how they construct their world, and what meaning

they derive from their experiences. Furthermore, a basic qualitative design is most

appropriate when the study does not meet the criteria for other formal designs such as

ethnography, phenomenology, and grounded theory (Worthington, 2013).

The key phenomenon that was investigated in this study was the use of VR as an

instructional tool for developing communicative competence in Spanish language

learning. Data were collected from eight middle school Spanish teachers in public

schools across the United States who used VR applications for Spanish instruction in

their classrooms. I conducted semistructured interviews via the Zoom videoconference

platform. The interviews followed a researcher-developed interview protocol, with

interview questions designed to elicit information that could be used to answer the RQs.

The interviews were approximately 30–45 min long, and the audio was recorded. I

followed Braun et al.'s (2004) six-step process to thematically analyze the data.

Definitions

Communicative competence: The ability to proficiently execute a variety of communicative tasks including speaking, listening, writing, and using appropriate vocabulary in a given language (Vance, 2021; Xie et al., 2019; Yang et al., 2020).

Discourse component of communicative competence: The ability of a learner to discern cultural expectations of a given language (Canale & Swain, 1980).

Linguistic competence: The knowledge of lexicon (vocabulary), syntax (sentence building), and phonology (pronunciation; Canale & Swain, 1980).

Sociolinguistic competence: The knowledge of form and meaning and the ability to apply the conventions or rules of the target language to execute a communicative goal (Huang et al., 2019).

Strategic component of communicative competence: The ability to retrieve the correct linguistic and sociolinguistic items for a speaking task (Canale & Swain, 1980).

Virtual reality (VR): For the purpose of this study, the simulation of 3D real or imagined worlds in which a person can execute sensory and motor tasks (Peixoto et al., 2019).

Assumptions

By the very nature of qualitative research, the assumption that data collected is rich in details about the participants' subjective experiences is necessary to gain a deep understanding of the topic (Patton, 2015; Ravitch & Carl, 2016). Therefore, one of the assumptions of this study was that participants would answer interview questions

honestly and knowledgeably and to the best of their ability. This assumption was essential in the context of this study because all qualitative research depend on the truthfulness of participant perceptions as these cannot be demonstrated to be true (Denzin & Lincoln, 2011; Houghton et al., 2010). Another assumption was that the researcher would be reflexive in the data collection process. Reflexivity refers to the practice of acknowledging and being aware of the researcher's own biases, assumptions, and values, and how they could influence the data collection, analysis, and interpretation process. By being reflexive, I took steps to minimize the impact of my subjectivity on the data, and ensured that the analysis and findings were grounded in the data itself rather than being a reflection of my preconceived notions. This assumption was essential to minimize subjectivity and ensure rigor and quality. For the conclusions of this data to be perceived as adding value, the qualitative data analysis process must be assumed to be a genuine and reliable means of creating meaning from data.

Scope and Delimitations

This study was limited to eight middle school Spanish teachers who had integrated VR into their classrooms. Due to the exploratory and descriptive nature of this study, the narrow scope was necessary to answer the RQs. This study was also delimited to middle school Spanish teachers in the United States. Thus, this study may only be transferable to middle school Spanish teachers who teach in public schools across the United States.

Two theories that are related to this study but were not investigated are the theory of artificial intelligence in education (Brna et al., 1993) and the theory of human-

computer interaction (Nardi, 1996). I opted not to use the theory of the artificial intelligence in education because it focuses more on the design of technologies for education than the outcomes of their use for language instruction (Issroff & Scanlon, 2002). The theory of human-computer interaction was not investigated in this study because it focuses more on how the technologies are used rather than their effectiveness in improving educational outcomes (Issroff & Scanlon, 2002).

Limitations

Limitations of qualitative research refer to elements of the design that are beyond the researcher's control. One of the specific challenges with the use of basic qualitative design is selection bias (Abutabenjeh & Jaradat, 2018; Meltzoff & Cooper, 2018). Selection bias refers to the differences that exist among participants before their involvement in a study. Selection bias is caused by the inability of the researcher to randomly assign participants (Abutabenjeh & Jaradat, 2018; Meltzoff & Cooper, 2018). Given that respondents were chosen using a convenience sampling technique, this issue seemed salient at the planning stage of this study. However, due to the fact that the purpose of this study was not to make generalizations but to understand the phenomenon as it affects this specific population, the selection bias did not have a significant impact on the validity of the study.

Another significant challenge faced during this study was history bias. History bias refers to a plethora of extraneous factors that may occur during a study and influence participants (Pannucci & Wilkins, 2011). The recruitment of participants from different locations across the United States posed a challenge for data collection due to different

time zones, conflicting schedules, and personal emergencies. I controlled this bias by asking all the interviewees whether they felt comfortable participating in the interviews. I also gave them the option to choose the time slots that were most convenient them and was open to rescheduling if a personal emergency arose.

It was possible that participants of this study would represent various educational institutions with different policies towards the adoption and use of innovative technology such as VR. Whereas some schools promote an innovative organizational culture and encourage teachers to apply modern technologies in classroom settings, others might refrain from introducing any experiments, thus slowing down the introduction of VR tools in second language learning. The respondents' different educational institutions could have influenced the degree of agreement between the respondents on the different aspects of VR use for second language learning. I addressed this limitation by recruiting middle school Spanish teachers from public school systems rather than from a combination of public and private schools. I also developed a clear interview guide to ensure that all participants were asked the same clear, standardized and open-ended questions to ensure consistency in data collection and analysis. Finally, I used a thematic data analysis approach, to ensure that all data collected was analyzed in a consistent manner. This helped to reduce variations in responses and ensured that all participants shared their opinions.

Significance

The significance of this study rests on its contribution to knowledge generation about the use of VR within the discipline of educational technology (Callahan et al.,

2012). The study has the potential to deepen stakeholders' understanding of some of the complex issues affecting the adoption and use of innovative technologies such as VR in the classroom. This study may also have a social impact by informing policy on how VR technology could be optimized to improve foreign language outcomes in middle school learning settings. Foreign language education in the United States has historically been characterized by poor performance with only 1% of classroom language learners achieving communicative competence (Carrera, 2018). The limited language proficiency is problematic given that, with the globalized economy of the 21st century, the demand for multilingual professionals continues to rise in the United States (Huang et al., 2019). Research shows that 1 in every 4 U.S. diplomats fails to meet the foreign language proficiency requirement for their job (New American Economy, 2016). This study could extend the literature needed to accelerate the adoption of VR as an instructional tool for language learning. Insights from this study could become instrumental to designing effective interventions to enhance outcomes in Spanish language learning in middle school settings.

The available evidence provides a compelling reason to believe that the current study could be significant and valuable both from theoretical and the practical perspectives. For instance, in reviewing the literature no studies were found on the effect of VR applications on vocabulary development, speaking proficiency, writing proficiency, and listening comprehension from the perspective of middle school Spanish teachers. There is an evident research gap in the literature that was addressed by the current study. The significance of the current research from the theoretical perspective is

primarily connected to its investigation of the influence of VR tools on second language learning from the perspective of middle school Spanish teachers, something that has not been previously been explored in the academic literature. The recommendations that I offer, based on the study findings, could be valuable from a practical perspective in clarifying the ways in which VR tools affect vocabulary development, speaking proficiency, writing proficiency, and listening comprehension of middle school students who study Spanish. These recommendations could be instrumental for stakeholders in designing effective learning interventions to facilitate second language learning.

Summary

The general social problem is that foreign language education in the United States has historically been characterized by poor performance, with only 1% of language learners from U.S. classrooms achieving communicative competence (Carrera, 2018). The specific problem investigated in this study was the unknown perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing communicative competence in the Spanish language. Literature about the perspectives of middle school teachers on this topic is still emergent. Therefore, in this basic qualitative study I explored the perspectives of middle school Spanish teachers about their use of VR as an instructional tool for developing communicative competence in Spanish language learning.

The participants were eight middle school Spanish teachers in public schools across the United States who had used VR applications for Spanish instruction in their classrooms. To collect data, I conducted semistructured interviews on Zoom. The

interviews followed a researcher-developed interview protocol, with interview questions designed to elicit information that were used to answer the RQs. The interviews lasted approximately 30-45 min, and the audio component was recorded. Data were analyzed using a six-step thematic analysis (Braun et al., 2014). Chapter 2 includes an extensive review of the literature related to the research topic.

Chapter 2: Literature Review

Introduction

The purpose of this basic qualitative study was to explore the perspectives of middle school teachers about the use of VR as an instructional tool for developing communicative competence in Spanish language learning. In education, there is a growing body of evidence showing that integrating VR into learning experiences has positive effects on student engagement, achievement, and overall satisfaction with the learning process (Bergman et al., 2021; Berti, 2021; Kizim & Mamak, 2020; Li & Choi, 2021; Weng et al., 2021). However, little is known about the perspectives of middle school Spanish language teachers on the instructional use of VR for developing communicative competence in Spanish language (Koivisto & Hamari, 2019; Lee et al., 2020; Suh & Prophet, 2018). The use of VR as a catalyst for the digitization of human experiences is well documented in academic literature with positive outcomes, especially in the sports, entertainment, military, and business worlds (Jensen & Konradsen, 2018; Koivisto & Hamari, 2019; Suh & Prophet, 2018).

A working definition of VR is that it is the simulation of 3D real or imagined worlds within which a person can execute sensory and motor tasks (Peixoto et al., 2021). Communicative competence is the ability to understand and effectively execute communicative tasks for a variety of purposes in a given language (Aslonova, 2020; Canale & Swain, 1980; Vance, 2021, Whyte, 2019). In this chapter, I discuss the history, development, and application of VR in education. I also explore the perspectives of Spanish language teachers on the usefulness of VR for developing communicative

competence in vocabulary, writing, listening, and reading. Finally, I summarize the

literature review findings and conclusions to highlight the gap I addressed in this study. I

also discuss the literature search strategy and the conceptual framework for the study.

<div style="text-align:center">**Literature Search Strategy**</div>

I conducted a thorough inquiry of VR in education focusing on peer-reviewed

research published in the past 5 years and accessible in databases. The Walden University

Library databases I searched included Sage, IEEE Xplore, ProQuest Central, PubMed,

Research Gate, ERIC, EBSCO, Taylor & Francis, and Science Direct. I also used the

search engine Google Scholar. I used Boolean logic operators (see Shibata et al., 2020) in

my searches. The following key words and phrases were used for the search: *technology*

AND *language learning*, *virtual reality* AND *teachers' perspectives or attitudes*, *virtual*

reality AND *learning*, *immersive virtual reality* AND *language learning*, *simulated*

learning AND *learning outcomes*, *head-mounted devices* AND *education* or *Spanish*

language acquisition, or *second language communicative ability* or *virtual reality* AND

communicative competence.

The literature search yielded tens of thousands of sources dating as far back as the

1930s about the development and application of VR in different disciplines. I applied

filters to distill the search results into a workable subset of current studies about the

development and application of VR for learning and training. The search results were

then copied and pasted into Reciteworks.org to flag duplicate sources and ensure

compliance with the *Publication Manual of the American Psychological Association*,

Seventh Edition. A subset of the retrieved sources was further examined and determined

to be relevant in grounding this study. Types of literature analyzed included peer-reviewed articles, papers from conference proceedings, theses, books, and online blogs or websites. Due to the nature and purpose of this study, older sources dating several decades were also included if they offered an overview of the origins and development of the use of VR as an educational technology.

Conceptual Framework

For the study's conceptual framework, I used two theories including the communicative competence framework (Canale & Swain, 1980) and the educational technology theory (Huang, et al., 2019). The educational technology theory has its philosophical underpinnings in technological determinism (Veblen, 1919) and the instrumentalism theory of technology (Feenberg, 1991). Technological determinism theory was first developed by Veblen (1919), who recognized that using technology allowed "the machine to throw out anthropomorphic habits of thought" (p. 89). Technological determinism strives to deliver developments in technology as a significant part of history and social change (Veblen, 1919). Technological determinism provides a lens for determining the outcome of cultural values and social structure; a key premise is that technology is a key governing force within society and changes how individuals interact (Pleasants et al., 2019). Those who endorse technological determinism do not view the amount of technology used as having an impact on technology use. Instead, individuals who consider technology as part of daily human activity believe that the use of technology is the basis for all human activity (Hallstrom, 2022).

The second theory that I used was Feenberg's (1991) philosophy and critique of

technology, which formed the instrumentalism theory of technology. The theory

establishes a positive view of technology yet is critical regarding the impact that

technology has on an individual and their society. This theory contends that technology

and society influence each other, with Feenberg suggesting that,

> What human beings are and will become is decided in the shape of our tools, no
>
> less than in the action of statesmen and political movements. The design of
>
> technology is thus an ontological decision fraught with political consequences.
>
> The exclusion of the vast majority from participation in this decision is
>
> profoundly undemocratic. (p. 3)

The instrumental theory offers the most widely accepted view of technology. It is based

on the notion that technology is the tool purposefully used to serve users. However, this

technology is not interactive as it is a neutral tool without evaluative content of its own

(Delanty & Harris, 2021).

The technological determinism theory and the instrumentalism theory of

technology offered support for the use of Canale and Swain's (1980) theory of

communicative competence. This study was situated at the intersection of linguistics and

educational technology; therefore, Canale and Swain's theory was applied to

conceptualize communicative competence while instrumentalism and determinism

technology theories clarified how the perception of technology affects the ways in which

it facilitates learning. In the most general view, educational technology refers to all the

technological gadgets and applications that are used to facilitate learning (Huang et al.,

2019). Educational technologies that are used in contemporary classrooms take different forms, including artificial intelligence, VR, online communication, and many others.

Canale and Swain (1980) proposed a framework of communicative competence that is comprised of four components: linguistic, sociolinguistic, strategic, and discourse. Other linguistic theories conceptualize language learning in more broad and abstract terms as an innate ability native to all humans (Chomsky, 1965), or a skill that is acquired through exposure to comprehensible input (Krashen, 1988). Such abstract views of communicative competence make it difficult to isolate the language constructs that are affected by the use of VR for data collection on teachers' perspectives. Canale and Swain, however, conceptualize communicative competence in four measurable constructs of linguistic, sociolinguistic, strategic and discourse components that represent the four critical skills of speaking, writing, reading, and listening, making it possible to measure teachers' perspectives on the use of VR to teach each (Canale & Swain, 1980).

Linguistic competence includes knowledge of lexicon (vocabulary), syntax (sentence building) and phonology (pronunciation). The linguistic component of communicative competence indicates the ability of the learner to correctly organize ideas for oral production and recognize aurally when others do so correctly in the target language (Canale & Swain, 1980). Canale and Swain (1980) further proposed the discourse component of communicative competence, which indicates a learner's knowledge of form and meaning and ability to apply the conventions or rules of the target language to execute a communicative goal. The third component of communicative competence, according to Canale and Swain (1980), is the sociolinguistic component,

which refers to the ability of a learner to discern cultural expectations of a given language. The strategic component of communicative competence involves the learner's ability to retrieve the correct linguistic and sociolinguistic items for speaking task shown in Figure 1.

Figure 1

Communicative Competence Framework
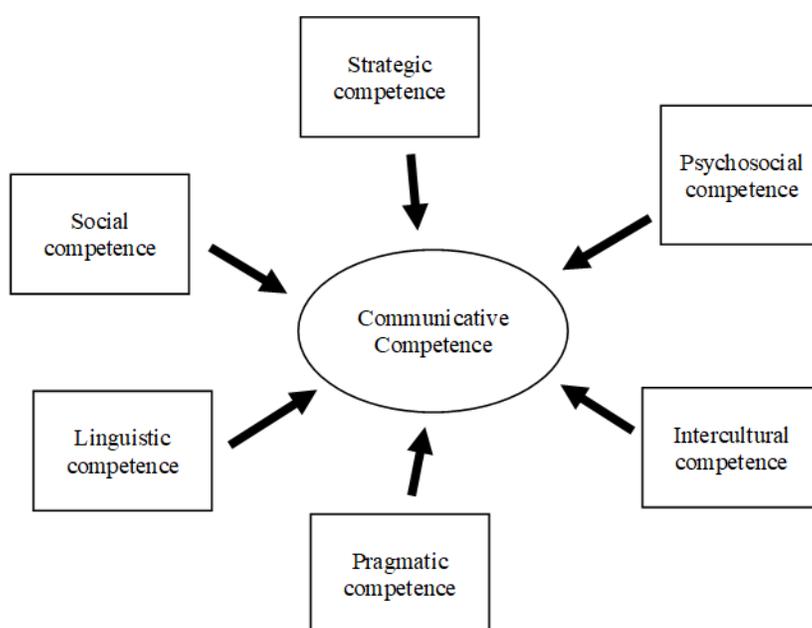
Note. Researcher created based on Northwest Augmentative Communication Society

Technological Determinism

Technological determinism theory asserts that technology is the primary driving force behind the development of any civilization, and it is inherently autonomous with its own ends (Bardakci & Kocadağ Ünver, 2020). This term was coined by Veblen (1919) and is considered a reductionist theory, technology informs human activity in a society

including social interactions, cultural values and plays a major role in shaping its

economy, and organizational structures. There are three types of technological

determinism, namely (a) hard determinism, (b) soft determinism, and (c) neutral

determinism (Bardakci & Kocadağ Ünver, 2020). Adherents to "hard determinism"

believe that technological advancements are unaffected by the social context in which

they occur because of three factors: (a) technology regulates social activities, (b) society

is organized to meet the needs of technology, and (c) the outcomes (resulting from

technological developments) are outside of society's control. Hard determinists argue that

because technology informs the important aspects of human activity it has an absolute

control effect on human activities.

The soft determinists find this view of technology problematic and deviate

slightly in the sense that while they believe technology is a catalyst for social

development, society does have the potential to make judgments about the use of

technology, therefore we cannot overlook the role of the human agent when

conceptualizing technology (Kühn, 2019). According to the soft determinism point of

view, eliminating the human factor from the complex ecology of technological

development is problematic because it is human agents who negotiate and struggle for the

innovation and deployment of technology. Therefore, the allocation of resources, the

design of curriculum, and the attempts to mitigate patterns of exclusion can only be done

effectively if they are politically and sociologically grounded (Kühn, 2019).

The main criticism of this theory is two-fold, first by asserting that the

advancement of technology happens regardless of social context it ignores the human

factor and free will to invent, use or refuse to use any technological invention. This may be the reason the soft determinists emerged. The second argument against this theory is the assertion that technology informs human culture and activity. A society's culture and structure are determined by so many factors besides technology therefore to attribute everything to one principal is problematic. Teachers play a critical role in the process of technology adoption within their classrooms. This theory relates to the present study because it provides a basis for engagement with the participants in this study regarding their perspectives on the instructional use of VR for developing communicative competence in Spanish. Exploring their perspectives on the use of VR as an instructional tool for developing communicative competence in the Spanish language provided useful insight into their motivation or reluctance to use VR and also filled a gap in literature about the use of VR for language learning.

Canale and Swain's framework (1980) of communicative competence was used by Savignon (1983) in an experimental study to assess the relationship between the various components of communication competence. Savignon (1983) found that the four components of communicative competence act in unison to enable language learners execute speaking tasks efficiently regardless of context or purpose. Savignon (2002) then recommended a curriculum that supports the development of all components proposed by Canale and Swain's (1980) framework. There was evidence to suggest that the use of VR for language learning has positive effectives on the development of the four strands of communicative competence, vocabulary, oral production, listening comprehension and written expression (Klimova, 2021; Nicolaidou et al., 2021; Nobrega & Rozenfeld, 2019;

Peixoto et al., 2019; Xie et al., 2019), however, very limited number of teachers were seen to be appropriating this technology to enhance learning outcomes in language. This study applied the Canale and Swain's (1980) framework of communicative competence to explore the perspectives of middle school Spanish teachers about the effectiveness of VR in improving students' vocabulary development, speaking proficiency, writing proficiency, and listening comprehension. By focusing the exploration of teachers' perspectives on the use of VR to teach these four measurable constructs, it was more practical to measure exactly what was explored in this study.

Instrumentalism Theory of Technology

Feenberg's (1991) instrumentalism theory of technology states that technology is a collection of inventions completely under human control with no agency of its own. Kranzberg (1995) developed the laws of technology forming the instrumentalism theory of technology. Based on these principles, the use of technology is only as good as the individual who uses it. The principles include

> technology is neither good, bad, nor neutral, invention is the mother of necessity, technology comes in all shapes and sizes, nontechnical factors take precedence in technology-policy decisions, technology is a very human activity, and so too is the history of technology. (Kranzberg, 1995, p. 544)

VR is an example of this. VR would not have been possible without the development of VR computers, and even if it had, its application would not be as diverse and effective as it is now without the invention of computers. This law demonstrates the need to deploy technology to advance language learning and education in general.

Kranzberg (1995) claimed that human beings' focus on inventing instruments (technology) was borne out of a search for solutions to daily activities, such as improving production efficiency and making mundane tasks easier. This theory relates to the present study because if middle school Spanish teachers do not take it upon themselves to incorporate technology into Spanish language learning, then no matter the affordances of VR, there will never be appropriated to advance language learning. This is why it was so critical to explore the perspectives of the target population about the use of VR as an instructional tool for developing communicative competence is Spanish language learning.

Literature Review Related to Key Concepts

Extant literature reviewed was examined for specific concepts related to this study's topic of interest. The themes extracted provided an outline of sorts to organize the literature in such a manner that allowed for an overview of recently published information related to VR value as a pedagogical instrument and instructional tool. This chapter's literature was examined for evidence of integrating VR into learning experiences and if it had a negative or positive effects on student engagement, achievement, and overall satisfaction with the learning process (Berti, 2021). The extracted themes included historical context of VR in digitizing human experiences, VR in health care, VR and experiential learning, VR in second language learning, VR tools for vocabulary development, VR tools for improving oral and written language production, VR and listening comprehension, VR and affective components of learning, VR and contextualized learning, and attitudes towards VR.

Historical Context of Virtual Reality as a Means of Digitizing Human Experiences

The earliest successful attempts at inventing immersive VR dates back to over half a century ago beginning with the work of Sutherland (1968), who conceived VR simulation as an alternate space within which users could control matter (e.g., sit in chairs, drive vehicles, eat food, restrain with handcuffs and/or effect fatal injuries with bullets). Sutherland (1968) believed that with adequate programming, simulated reality could practically become a wonderland with limitless possibilities for users. Cipresso et al. (2018) examined the literature associated with VR and found the majority of the research was focused on its clinical applications, behavioral aspects, and technological developments.

Before Sutherland (1968), other scientists attempted to develop simulation technology; for example, in 1938, Charles Wheatstone invented the "Stereoscope," which tourists used to view panoramic photos (Lowood, 2022). Wheatstone found that when 2D pictures were placed side-by-side and viewed simultaneously through a glass viewer known as a stereoscope, it created a 3-D effect in the viewer's brain (Lowood, 2022). After Wheatstone, a scientist named William Gruber created a more advanced and less cumbersome version of the stereoscope called the "View-Master." This invention premiered at the World Fair in New York City in 1939, sparking what was then known as virtual tourism. Earlier reels included panoramic pictures of tourist sites such as the Grand Canyon and other paintings.

Early Adaptations of Virtual Reality, 1950–1980

Following the premier of Gruber's invention in 1939, an anatomy professor by the name David Bassett collaborated with Gruber for 17 years to develop the *Stereoscopic Atlas of the Human Anatomy* (Bassett, 1959; Lowood, 2022). This innovation impacted medical training and practice because students preferred the 3D images from the atlas of the human anatomy to the cadavers that had characterized medical education until then (Bassett, 1959). Similarly, at about the same period as Bassett's atlas of human anatomy, a cinematographer by the name Morton Heilig improved on virtual simulation technology by introducing sensory stimulating elements such as stereo speakers, 3D displays, fans, and smell generators among other things (Heilig, 1962; Lowood, 2022). Heilig named his invention the "Sensorama," and the entertainment industry became so enamored with it that in 1955, when the first Disneyland opened, Disney acquired the right to use this new invention to show reels of Disney Characters in 3D (Helig, 1962).

In 1961, the Philco Corporation developed an even more advanced version of the stereoscope viewer by incorporating motion tracking and video components into it (Greenwald et al., 2017; Lowood, 2022). They called their invention the "Headsight," and it was connected to a remote camera to help the military access and survey hazardous situations remotely. In 1965, an aviation engineer by the name Thomas Furness invented the first flight simulation device called the "Super Cockpit" (Lowood, 2022). Furness's invention impacted military aviation training in no small measure because it enabled trainee-pilots to have immersive flying practice without the characteristic danger associated with being thousands of feet in the air. By the late 60s, virtually reality

technology began to gather momentum for consumer market-penetration as the stereoscopic-photo-viewers became a sought-after toy by every child (Lowood, 2022).

When Sutherland, in collaboration with several agencies including the United States Department of Defense, the office of Naval Research and Harvard Computation Laboratories, developed the "Ultimate display" and called it "The Sword of Damocles" it seemed the era of VR as we know it today was born (Sutherland, 1968; Lowood, 2022). Immediately after launching "The Sword of Damocles," many disciplines began to experiment with VR technology to see how they could adapt and apply it to facilitate training efficiency and performance. In the commercial aviation industry, General Electric a world leading aviation corporation adopted and improved flight simulation technology by introducing multiple screens that gave trainee-pilots an immersive sense of being airborne (Lowood, 2022).

Within the education community, scientists such as Myron Krueger (Krueger, 1977; Krueger & Froehlich, 1994) of Connecticut University developed applications to facilitate different virtual experiences including communication and interactivity between users (Lowood, 2022). Krueger named his invention the "Videoplace." Krueger's invention was one of the earliest mentions of VR in relation to education, but no further research is found about the impact of the videoplace as an instructional tool. In the 80s VR technology penetrated the consumer market and many commercial VR devices such as the "Data glove" and "Eyephone" emerged (Cipresso et al., 2018). This was the decade where these new technologies were commercialized. The Data glove was a hand worn device equipped with hand tracking sensors capable of identifying movement and

gestures while the eyephone was a head mounted device that immersed users into the virtual world. At the exit of the 80s, a "Binocular-Omni-Orientational Monitor," shortly known as BOOM, was invented (Cipresso et al., 2018) and featured an optical system encased in a box and attached to a sensor-tracking arm. Users were able to access a wider range of view and execute hand-movements with the device.

Advancement of Virtual Reality in the Last 2 Decades

From 1990 to 2010, VR technology became progressively stable, and more disciplines were increasingly adopting it including the medical sciences (Parsons et al., 2027 2017), skill training and gaming (Cipresso et al., 2018) construction engineering (Song et al., 2019), cinematography, aviation, and the military (Wohlgenannt et al., 2020). From 2010 to 2020, the use of VR technology became even more ubiquitous after the release of affordable and portable head mounted devices that facilitate absolute immersion like Sony PlayStation VR, HTC Vive, Facebook's Oculus Rift in the market (Cipresso et al., 2018). Today, it is nearly impossible to imagine an area of human endeavor without the use of VR. I will discuss some of these areas in-depth below.

Virtual Reality in Health Care

Empirical evidence showed that VR was deployed extensively for a variety of applications in medicine and health care including in surgical training, post-traumatic therapy, autism support, pain management, and preservice nursing education (Cipresso et al., 2018). In a meta-review of twenty-five articles published on the diagnosis and treatment of mental health disorders, Riva et al. (2017) found that VR technology compared favorably to other approaches for the treatment of mental health disorders. In a

similar review of empirical studies published between 2007 and 2017 on the application

of VR as a treatment tool for some mental health disorders including anxiety and eating

disorders. Findings from multiple studies demonstrated how VR exposure-based

treatments reduced anxiety disorders (Porras-Garcia et al., 2021; Parsons et al., 2027

2017). Researchers also investigated the effects of VR based exposure on patients

diagnosed with anorexia nervosa and body image disturbances (Cipresso et al., 2017).

Researchers reviewed other areas of health care impacted by VR technology as an

assessment and treatment of neurodevelopment disorders (Karami et al., 2020; Marin-

Morales et al., 2019). In a comprehensive meta-analysis, Karami et al. (2020) evaluated

33 articles published on the effectiveness of VR as a rehabilitation and training tool for

individuals diagnosed with autism spectrum disorder. The authors found remarkable

improvements in daily living skills, cognitive skills, emotional recognition skills, social

and communication skills in the experimental group. This finding was consistent with

Marin-Morales et al., (2019) who investigated the transfer of skills acquired in VR

practice to real life performance. The authors observed that the experimental group was

able transfer the motor and cognitive skills they practiced in VR to real life. These

findings highlighted the potential of VR technology as training tool for children with

autism spectrum disorder.

VR technology has also made inroads into rehabilitative medicine. Studies

reviewed the training of an injured or impaired organ in order to restore motor ability

(Postolache et al., 2021; Rito et al., 2021). The application of VR for rehabilitative

therapy, determined an effective habilitative tool when combined with traditional

rehabilitation procedures. Researchers examined the utilization of VR tools employed for

motor function recovery, finding that such cases of post-traumatic stress disorder (PTSD)

treated by VR were more likely to manage their PTSD symptoms (Postolache et al.,

2021; Rito et al., 2021). Other investigations regarding the applications of VR technology

in health care included the use of VR to facilitate responsive patient care through

embodied training of preservice nurses (Ding et al., 2019; Hannans et al., 2021; Tanja-

Dijkstra et al., 2017). These scholars credited VR technology for managing pain daily in

dressing change of hemorrhoid surgery wounds (Ding et al., 2019) and in patients

undergoing dental treatments such as extractions (Tanja-Dijkstra et al., 2017).

Current research has shown mixed results concerning the use of VR for the

treatment of numerous physical and mental health illnesses (M. Chen et al., 2021;

Birckhead et al., 2021). Many experts who support its use claimed that the convenience

in VR allowed therapist to reach and treat patients who normally would not have access

to therapy. Populations such as those living in rural communities, who have limited

access to health care facilities, who have limited financial resources, or lack

transportation benefit most from VR therapy and medical visits. However, those who

have negative opinions regarding VR suggested that such individuals usually lack the

resources to afford the VR equipment necessary for treatment (Ding et al., 2019; Tanja-

Dijkstra et al., 2017).

A common misconception in health care services related to VR treatment is the

use of telehealth. Telehealth while popular especially during the COVID-19 pandemic,

only provides communication interface failing to offer an intuitive mode of interaction

with information for therapeutic treatment (Odeh et al., 2018). However, researchers examined the use of virtual environments in medical visualization and assessment in neuropsychological rehabilitation and found this method of remote or augmented training is very effective in training medical and therapeutic care workers in both surgery and mental health care (Rouleau et al., 2019).

Virtual Reality and Experiential Learning

Experiential learning was noted as being a learner-centered pedagogical philosophy that advocates for learning through authentic and contextualized experiences (Laverick et al., 2020; Radu et al., 2017). The immersive affordances of VR have potential to facilitate experiential learning because it allows instructors to provide access to resources and experiences that would otherwise be inaccessible without the affordances of VR technology. In a systematic review of 75 empirical studies and 23 system-descriptive studies published between 2000 and 2018 about context-aware technology application for language learning, Lee (2019) found that although most of the studies indicated positive affective, linguistic, sociocultural, and cognitive effects on participants, there were validity and credibility issues with the research methods used. There was also found to be a disproportionate focus on student perception of the technology rather than its effects on learning outcomes.

In another experimental study, Ke et al. (2020) observed 17 graduate assistants to investigate the effects of a VR-based learning environment on their performance in a teaching training program. In a similar mixed methods study comparing the difference in learning gains between using VR videos to teach about a significant historical event and

using 360 degrees video to teach about the same event, Calvert, and Abadia (2020) compared the impact. Findings indicated that VR educational narratives significantly enhanced the affective and cognitive factors that influence learning, including presence, engagement, empathy, and knowledge transfer. Although these findings showed that VR-based learning environments enhance performance and facilitate learning gains, they also highlighted the need to conduct additional research about the use of VR as an educational tool.

Bailey et al. (2022) also investigated the effects of VR technology on the development of children's inhibitory control and social compliance behaviors. Inhibitory control (IC) refers to the ability of a child to restrain the natural impulse to respond to stimuli while social compliance is the ability of a child to behave according to set expectations and rules. Both skills are essential for success in preschool and building healthy relationships in the early years. Bailey et al. (2022) found that the experimental group was socially more compliant and had demonstrated more inhibition than the control group. These findings highlight the potential of VR technology as a transformative instructional tool and align with my study which is also performance based.

Markowitz et al. (2018) conducted four experiments on 270 participants to evaluate the impact of VR on student attitude about climate change with a focus on ocean acidification. In a virtual underworld, the participants embodied coral avatars and experienced firsthand the process and impact of rising seawater acidity on ocean biodiversity (Markowitz et al., 2018). As corals, the participants movement was hindered

except to reach out and gather food for their coral bodies. To assess the impact of this experience, participants were asked to respond to six open ended questions about ocean acidity. Students demonstrated gains in knowledge about the process and impact of ocean acidity on biodiversity and had a lot of empathy for ocean biodiversity (Markowitz et al., 2018). This research provided evidence that VR simulations facilitate knowledge gain and attitudinal change in students.

Virtual Reality in Education

Existing literature confirmed that the successful application of educational technology results in significant gains in student learning, including increasing their motivation, improving technology literacy, increasing their engagement, knowledge retention, and improved ability to apply what is learned (Berti, 2021; Mercader & Gairin, 2020). In the long-term perspective, the use of educational technology translated into enhanced career preparedness of students (Abrams et al., 2018; Berti, 2021). However, experts felt the use of educational technology was not without its challenges (Huang et al., 2019; Mercader & Gairin, 2020). One of the most well-known barriers to the utilization of educational technology is lack of technical and pedagogical skills by teachers to adopt the technologies for learning in their classrooms (Mercader & Gairin, 2020).

Another barrier found hampering the benefits associated with educational technology was an unwillingness to embrace change on the part of school administrators and teachers (Berti, 2021). Then, there was a lack of consensus on the part of stakeholders, if teachers for example failed to believe that a particular technology

delivered value, and therefore these teachers became reluctant to learn how to utilize it,

thus sabotaging the value such technology might have added to their teaching skill sets

(Kühn, 2019). In some situations, the use of educational technology was also hampered

by poor infrastructure that cannot support the effective utilization of modern

technologies, such as smart badges or artificial intelligence tools (Huang et al., 2019). It

seems justified to conclude that the benefits and challenges associated with educational

technology could apply to VR as well.

Virtual Reality in Second Language Learning

A consistent recommendation from almost all of the literature reviewed was for

additional research to be conducted to assess the pedagogical value of VR as an

instructional tool (Abadia, 2020; Melchor, 2018; Park, 2018; Jensen & Konradsen, 2018;

Parmaxi, 2020; Peixoto et al., 2021; Van Ginkel et al., 2019). This study is a response to

those recommendations. Teachers are the custodians of educational technology and as

asserted by the soft determinists and instrumentalists, human beings play key role in the

innovation and deployment of technology therefore exploring their perspectives on a

given technology is critical to the development and useful application of that technology.

This study has the potential to fill the gap in literature by exploring the perspectives of

Spanish teachers about the use of VR as an instructional tool for Spanish language

learning in a middle school setting.

Studies showed VR provided positive and successful outcomes in second

language learning with researchers and yet also explained how VR does have barriers

associated with second language learning (Berns & Reyes-Sanchez, 2021; Klimova,

2021). These experts sought to examine the potential of VR to facilitate non-native language learning by discussing pertinent barriers and enablers associated with the technology. Much of the results illustrated that the authentic and immersive environments offered by VR tools delivered impressive benefits in non-native language learning owing to increased autonomy of learners, higher academic achievements thereby providing a chance to customize an approach to learning (Berns & Reyes-Sanchez, 2021; Klimova, 2021). However, researchers further noted that the integration of these applications occurred in a slow manner owing to the lack of technical skills, high costs, and other critical barriers. The research depicts a general picture of recent developments in the field of using VR tools in non-native language learning by outlining the main benefits and barriers associated with the technology, which are supposed to be universal (Berns & Reyes-Sanchez, 2021; Klimova, 2021).

Furthermore, the main goal of Berns and Reyes-Sanchez's (2021) explorative-descriptive study and Klimova's (2021) theoretical study were to examine the effectiveness of VR mobile digital applications in facilitating foreign language learning. The scholars discovered in both studies that despite the abundance of VR applications, most of them were not customized to the needs of foreign language learners; moreover, the majority of these applications focus on novel teaching techniques and new types of interactions without embracing the full potential of VR (Berns & Reyes-Sanchez, 2021; Klimova, 2021). However, Berns and Reyes-Sanchez (2021) found through their research that even though VR-assisted foreign language learning is a promising instrument in

education, there were still not enough effective mobile VR applications that could be applied in foreign language learning settings

Research using meta-analysis (Wang et al., 2020), experimental (Hannans et al., 2021), phonomyography (M. Chen et al., 2021), and quantitative methods (Rientis et al., 2020) established the effects of facets associated with VR on language learning. The findings from the combined studies suggested that there were significant benefits in the use of VR for language learning. Hannans et al. (2021) examined the effects of VR on nurses' attitudes towards patients' care. Using a sample of 77 nursing students, researchers determined whether the employment of VR tools could facilitate the acquisition of skills, knowledge, and attitudes in nursing students by enhancing their empathy. The inferences made by the scientists demonstrated that the exposure of nursing students to VR immersive experiences had made them more empathetic, encouraging participants of the experiment to embrace the principles of patient-experience-centered care. This finding established how VR applications could deliver learning outcomes beyond the acquisition of knowledge via the alteration of students' attitudes, which could be a solid basis for effective language learning (Hannans et al., 2021).

Wang et al. (2020) examined how existing knowledge of the role of 3D virtual worlds in facilitating language learning with an emphasis on the interaction with theoretical bases within virtual worlds and the significance of various moderating variables that had been analyzed in empirical studies during the period between 2008 and 2019. The scholars found that the utilization of 3D virtual worlds is associated with significant linguistic and affective gains in language learning, which are moderated by a

plethora of variables with the type of learning activities being the most significant one. The article is valuable for the current study because it illustrates the effectiveness of a particular type of VR technology in language learning by analyzing a substantial amount of empirical evidence and, thus, safeguarding findings from bias risks.

Chen et al. (2021) described teachers' perspectives of teaching the Chinese language with the help of spherical video-based VR. The scholars discovered that in accordance with teachers, such VR tools offered observational opportunities to students, enhanced their writing skills, promoted motivation, contributed to student-centric learning, improved collaborative learning, cultivated students' values, and shaped learners' self-identity as "writers" (M. Chen et al., 2021). The findings of the research are valuable to this study because they illustrate a plethora of benefits associated with the use of VR applications in language learning.

Rienties et al. (2020) employed a quantitative tradition to examine the relationship between teachers' technological, pedagogical, content knowledge (TPACK) levels and their attitude towards technology integration for learning as well as teachers' attitudes towards the use of VR within a sample consisting of 401 teachers. It was found that depending on their TPACK self-efficacy levels, teachers had a skeptical attitude towards the use of VR technology as an instructional tool. This finding is significant to the present study because teachers' attitudes towards technology affect their willingness to use such technology.

Furthermore, researchers provided systematic literature reviews examining previous studies that discussed the use of VR in language learning (Huang et al., 2021;

Parmaxi, 2020; Peixoto et al., 2021). First a systematic literature review conducted by

Parmaxi (2020) presented best practices in the utilization of VR tools in language

learning by critically reviewing 25 scholarly manuscripts that had been published during

the period between 2015 and 2018 in 17 high-impact conference proceedings and

academic journals. Parmaxi (2020) concluded that VR presents unprecedented benefits

for language learning owing to its immersive nature and a potential to accelerate the

acquisition of knowledge. The researcher also noted that challenges related to

pedagogical grounding and technical issues inhibit the integration of this technology in

teaching methods and resources that are currently used in second language classrooms.

Along with other reviews described in this chapter, this study is valuable for my study

owing to an exhaustive description of many important issues pertaining to the utilization

of VR tools in language learning.

  Peixoto et al. (2021) examined recent developments of the PRISMA method

aimed in the use of immersive VR tools in foreign language education in an attempt to

determine the most important features, technologies, educational methods, and gaps. The

study's conclusions, which are based on the critical review of 16 articles that had met the

review's inclusion criteria, posited that there is a positive relationship between VR and

foreign language learning and that the utilization of VR is linked to improved motivation

and satisfaction of foreign language learning. The research provides recent evidence of

the effectiveness of VR tools in second language learning, which justifies the need for

further research on the ways to apply VR technology in foreign langue learning settings

(Peixoto et al., 2021).

Huang et al. (2021) presented results of their systematic literature review, which examined 88 relevant articles in an attempt to determine the most important trends pertaining to the use of augmented reality and VR applications in language learning. The scholars found that most VR studies that focus on language learning discuss the ways of immersing learners into virtual worlds, describe the experiences of university students, confirm the benefits of VR for improving students' academic achievement, motivation, and perceptions towards VR, and emphasize the need for providing extensive training for instructors and examining learner-centered factors, including engagement and satisfaction. The review summarizes recent developments in the research of VR in language learning and, thus, is valuable for comprehending the main tendencies characterizing the growing popularity of the usage of VR tools in second language learning.

Overall, the research on the use of VR in language learning showed a focused success in its applicability for assistance with such methods of learning (Berns & Reyes-Sanchez, 2021; M. Chen et al., 2021; Hannans et al., 2021; Klimova, 2021; Rientis et al., 2020; Wang et al., 2020). While the current research focused on diverse topics associated with VR methods for teaching languages, the overriding results of these studies showed positive student outcomes with its application and use (Berns & Reyes-Sanchez, 2021; M. Chen et al., 2021; Hannans et al., 2021; Klimova, 2021; Rientis et al., 2020; Wang et al., 2020). Further justification of VR use in language learning was supported by Huang et al. (2021), Parmaxi (2020), and Peixoto et al.'s (2021) literature reviews which showed similar positive outcomes.

Virtual Reality Tools for Vocabulary Development

Researchers established VR as a promising tool for student vocabulary development (Alfadil, 2020; Legault et al., 2019; Nicolaidou et al., 2021; Xie et al., 2019). In a quasi-experimental study that involved 40 undergraduate students of foreign language, Nicolaidou et al. (2021) sought to explore the influence of a VR tool on foreign language learning and apply pre-and post-tests to evaluate the engrossment, immersion, and engagement in members of the control and experimental groups. The findings of the study indicated a statistically significant difference between the means of students' pre-test and post-test scores and their vocabulary performance. In contrast, the indicators of immersion, engagement, and engrossment were substantially higher in members of the experimental group. The results of this research are relevant from the perspective of the problem under investigation because they illustrate the potential of VR tools to facilitate language learning and increase learning engagement.

Alfadil (2020) explored the impact of the VR game *The House of Languages* on the vocabulary acquisition of 64 intermediate students enrolled in the study of EFL at a U.S. university. The quasi-experimental design allowed the researcher to examine the learning process using VR as an intervention for traditional EFL instruction (Alfadil, 2020). The findings showed that students who used the *House of Languages* VR game had more significant achievement in vocabulary development than those taught in a traditional classroom, which was measured by the scholar using independent t-tests. Consequently Alfadil's (2020) study provided insight into the potential of VR technology

as an instructional tool for foreign language instruction, contributing to the basis for a

need to explore the effectiveness of VR for foreign language immersion.

Legault et al. (2019) described a mixed counterbalance found within eight

research studies that examined differences in second language vocabulary performance of

students who were learning a foreign language using immersive VR and word-word

paired association tools. Studies were published from 2010 to 2017 and used varied

samples such as Berns et al. (2013) 85 Spanish speakers who had learned German for 8

months prior to VR training, Chen (2016) testing nine participants between 21 and 55

years old from across Europe, Asia, and African learning EFL, and Levak and Son (2017)

selecting 18 English speakers learning Croatian and 17 Croatian speakers learning

English. It was found that in all eight studies, the accuracy of trials completed after

applying immersive VR was significantly higher than the accuracy of practices carried

out after the word-word paired association intervention; moreover, this effect was

especially strong in less successful students. The research findings illustrate that

immersive VR tools could become a valuable addition to the existing methods of

improving vocabulary development of less successful students during second language

lessons.

Xie et al. (2019) used a role-playing experiment to explore the effect of the VR

tool on the oral proficiency of 12 students, with eight men and four women, who were

enrolled in an advanced Chinese course at a state university within the United States. The

sample consisted of two Chinese language learners and ten English-native speakers. The

researcher examined how VR tools (Google Cardboard and Expeditions) were used in

developing a communicative competence of students learning Chinese as a second

language (Xie et al., 2019). The outcome found that both the vocabulary and the content

of students' oral presentations were significantly higher when using Google Cardboard

and Expeditions. Studies inferred that the use of VR tools could be an effective

mechanism for encouraging active learning and facilitating students' preparations to

improve oral proficiency in second language learning (Xie et al., 2019).

Virtual Reality Tools for Improving Oral and Written Language Production

Researchers who examined how VR tools improved oral and written language

production found these tools enhanced learning motivation, stimulated innovative

learning and enhanced oral language skills in second language learners (Alemi &

Khatoony, 2020; Alsaffar, 2021; Nobrega & Rozenfeld, 2019). Additionally, studies

showed evidence that VR was an effective tool in language development both in short

and long-term outcomes (Dolgunsoz et al., 2018). For example, Nobrega and Rozenfeld

(2019) investigated the effects of VR instruction on the oral comprehension, oral

production, written comprehension, and written production of a sample of students from

two French language classes located in a Brazilian public school in Sao Paulo. The

authors discovered high engagement rates and increased motivation within students when

using VR tools, whereas all the four linguistic competencies had been significantly

improved following the introduction of the VR application. The findings of the research

imply that VR could be integrated into second language teaching because VR tools have

a potential not only to increase students' linguistic competencies in terms of oral

production, written production, written comprehension, and oral comprehension, but also to enhance their learning motivation and engagement.

Alemi and Khatoony (2020) applied paired samples t-tests to evaluate the effect of a VR game using a humanoid robot on the pronunciation of 18 intermediate EFL learners in Iran. The results of their experiment demonstrated a significant difference between the students' pronunciation scores in pre- and posttests, which illustrates the evident effectiveness of the intervention in improving students' oral language production. The research confirms that VR-assisted games could be a powerful mechanism for stimulating innovative learning and enhancing pronunciation of second language learners.

Alsaffar (2021) presented the results of an experiment that sought to evaluate the usefulness of VirtualSpeech software in preparing five international students who were enrolled in the Academic English Program at Saint Michael's College for their oral presentations, thus improving participants' oral language production skills. The experiment's results showed that both teachers and students observed improvements in oral language production skills following the use of VirtualSpeech; moreover, students also reported increased confidence levels when speaking English. Findings of the research provide compelling evidence of the effectiveness of a specific VR tool (VirtualSpeech) in enhancing oral language development of second language students.

Dolgunsoz et al. (2018) used a sequential exploratory mixed method to investigate the effect of VR tools on the writing skills of 24EFL students enrolled at Bayburt University, in Bayburt Turkey. The participants were between ages 18 to 19 years, were intermediate English learners, successfully passed an English preparation class with the

past year and volunteered for participation in this study. The researchers concluded that whereas the VR experience produced few short-term benefits, it helped enhance written language production in the long-term perspective. The authors also found that students positively perceived the exposure to the intervention despite occasional complaints about technical issues (Dolgunsoz et al., 2018). Such research convincingly proved that VR tools could be applied to enhance writing performance of second language students if teachers and school administrators overcome technical barriers to technology use.

Virtual Reality and Listening Comprehension

Focus on VR and listening comprehension was another avenue researchers determined to be important (Peixoto et al., 2019; Tai & Chen, 2021; Yang et al., 2020). Peixoto et al. (2019) researched if there was a relationship between VR exercises and listening comprehension of second language students. The researchers shared how the application of VR tools in classroom settings improved students' motivation when learning a second language and potentiated the learning curve concerning listening comprehension skills. This source is valuable for the proposed research because it shows that besides improving the vocabulary development and written production of second language students, a popular research area in contemporary research, VR tools could also enhance their listening comprehension skills. Yang et al. (2020) presented research related to a critical examination of the effect of the VR Life English intervention using a population of 72 low-achieving and disadvantaged junior high school students from a ninth-grade class in a central Taiwan public school, on communicative ability development. This sample of 36 males and 36 females were from disadvantaged learning

environments due to limited resources available to the school. The researchers
emphasized that the intervention helped enhance English communicative ability of
students, enhanced their sense of presence, and improved satisfaction, thus translating
into evident benefits for learners. The study confirms the potential of VR to become an
advantageous mechanism for improving listening and language production skills of
second language learners (Yang et al., 2020).

Tai and Chen (2021) described their experiment with 72 7th grade students in
Taiwan that aimed to evaluate the influence of VR through mobile-rendered head-
mounted displays on students' listening comprehension skills. Results of the interviews,
listening comprehension tests, and a questionnaire illustrate substantial improvements in
students' listening comprehension and retention following an exposure to the VR
intervention, which could be explained by the ability of the VR tool to activate students'
prior knowledge, improve engagement, increase motivation, enhance satisfaction, and
facilitate the acquisition of knowledge. The research confirms the findings of other
studies concerning the unique role that could be played by VR applications in
strengthening listening comprehension capabilities of second language students (Tai &
Chen, 2021; Yang et al., 2020).

Virtual Reality and Affective Components of Learning

The affective components of learning through the use of VR were shown as a
helping tool to enhance learning by allowing students to interact with their lessons and
experience it in different ways (Calvert & Abadia, 2020; Kaplan-Rakowski &
Wojdynski, 2018; Lee, 2019). Instead of just reading about a subject, researchers found

students able to see the things they were learning, which helped students understand complex topics. Kaplan-Rakowski and Wojdynski (2018) investigated 22 university students from an urban Polish University who had a minimum basic knowledge of the English language and their perceptions of VR-assisted language learning (VRALL) using a survey as the main data collection method. The authors found that 82% of the participants described their VRALL learning experience as engaging and expressed a willingness to participate in VR-assisted language learning, which implies that VRALL lessons could be highly effective as immersive and engaging exercises for learners. These findings highlighted the impact of VR on the motivation and engagement for learning as necessary prerequisites for facilitating the acquisition of knowledge in a classroom (Kaplan-Rakowski & Wojdynski, 2018).

Calvert and Abadia, (2020) compared the impact of immersing 19 high school and 17 university students, all located in Australia, in a narrative VR educational experience with teaching 16 high school students and 15 university students using a 360-degree video about a significant historical event. Findings indicated that VR educational narratives significantly enhanced the affective and cognitive factors that influence learning, including presence, engagement, empathy, and knowledge transfer. These finding showed the ability of VR tools to influence affective and cognitive factors related to learning is one of the main factors predetermining their effectiveness in supporting second language teaching (Calvert & Abadia, 2020).

Lee (2019) attempted to review recent developments in context-aware technology in foreign language learning, finding that although most of the studies had positive

affective, linguistic, sociocultural, and cognitive effects on participants, validity and credibility issues were associated with the research methods used. Furthermore, there was a disproportionate focus on student perception of the technology rather than its effects on learning outcomes (Lee, 2019). This study is relevant to my research topic because it highlights the need for more studies that focus on the use of VR as an instructional tool, illustrating that the existing knowledge of the problem under investigation is still poor and fragmentary.

Virtual Reality and Contextualized Learning

Through multiple studies, researchers found that VR bridged the gap between educators and learners. With VR, distance learning tools placed educators and students together in the same room with digital representations of themselves from which teachers were able to teleport into the VR world and guide students through their experiences (Christoforou et al., 2019; Ke et al., 2020). The researchers recognized that to enhance student learning and engagement, VR education transformed the way educational content was delivered. The findings showed that in creating a virtual world, users not only viewed it but also interacted with it (Christoforou et al., 2019; Ke et al., 2020). Being immersed in such learning motivated students to fully understand and thereby require less cognitive load to process the information.

Ke et al. (2020) observed 17 graduate assistants, recruited from multiple disciplines at a public college of education at Florida State University to investigate the effects of a VR-based learning environment on their performance in a teaching training program. Findings showed that the VR-based learning environment was favorable for the

improvement of participants' competencies in the fields of demonstrative instruction and interactive teaching and their increased empathy, although the study also pointed at the high competition between functional intelligence and physical reality within the VR environment (Ke et al., 2020). The implication of this finding showed how affordances of VR technology fostered interaction in real time and increase student language production, which are critical components of language immersion.

Christoforou et al. (2019) investigated the effectiveness of the VR application Mondly in promoting contextualized learning for 18 undergraduates' foreign language students learning Italian at a public university in southern Europe. Although the authors found no statistically significant difference between the experimental and control groups, they highlighted the need for further research on the potential of VR to provide contextualized learning, explaining the findings of their study by a small sample size. The findings justified a need to conduct further research into the effects of using VR as an instructional tool to simulate contextualized language learning (Christoforou et al., 2019).

Attitudes Towards Virtual Reality

Much of the current research related to VR technology used in teaching focused on the general application of this modality within the classroom. VR-integrated immersion-based teaching was noted in several studies focused on teachers' willingness to incorporate VR into teaching English Language Learners (Karacan & Akglu, 2021; Xie et al., 2022). Even so, studies have evolved over time to discuss the related perceptions of middle school teachers on VR use in the classroom, both general and language learning. Researchers found that teachers' perceptions of VR technology were a

determining factor in their decision to use or not to use the technology for instruction. If middle school teachers perceived VR as a useful tool for their productivity, they were more inclined to deploying the technology for language instruction (Barret et al., 2020; Sagnier et al., 2020). While these studies relate to the attitudes of middle school Spanish teachers under investigation, the general assumption is that all educators, including Spanish teachers, have the same prevailing perception. However, studies directly associated with the use of VR for language instruction found that students receiving VR-assisted language instruction were significantly more likely to improve their language skills than student learning in traditional settings (Barrett et la., 2020; B. Chen et al., 2022; Xie et al., 2022), thereby providing additional justification to pursue further research on the pedagogical value and perception of VR as an instructional tool for language learning.

Barret et al. (2020) conducted a qualitative study on 33 Chinese language learners at the Sino-British University of eastern Mainland China to investigate their attitudes towards a multi-user VR learning environment called Hubs by Mozilla. The authors hypothesized that the immersive affordances of VR will have a statistically significant positive association with its acceptance as a technology. Participants were given a single lesson using Oculus Rift and a touch system connected to Hubs. Immediately following the lesson, participants were asked to complete a quiz that involved eight items, including matching symbols to 3-D objects, and using a virtual pen to complete writing tasks in Chinese. Results showed an agreeable attitude towards VR use for learning Chinese, while the perceived ease of use of VR was negatively impacted by poor interactivity. The

results did not show the statistically significant positive associations hypothesized by the authors (Barret et al., 2020).

Summary and Conclusions

In this chapter, I discussed the literature on the history and use of VR as an instructional tool for language learning. From its earliest generations, VR technology has been known for its 3D displays that create immersive experiences for its users. In the 1940s, VR technology was credited for introducing the experience of viewing photo reels in 3D, which spiked the virtual tourism hype following its launching at the World Fair in New York City in 1939. Between the 1950s and the 1980s, VR technology underwent various transformations and penetrated different disciplines, including medicine, allowing users to execute motor and sensory tasks in 3-D. Subsequently, VR gained penetration into aviation and the military, among other disciplines, as a training tool.

A large corpus of literature on the instructional use of VR for language learning was more focused on assessing the effects of VR on constructs such as student engagement, student achievement, and student satisfaction rather than communicative competence. A limited number of publications explored user attitudes and teachers' perspectives about the use of VR for language learning. One of the recurring themes in almost all the studies is a need to develop appropriate VR applications for different content areas with apparent pedagogies on how to integrate VR technology into learning the various content areas. Additionally, some of the literature reviewed featured small sample sizes, which meant their validity and reliability were problematic (Lege & Bonner, 2020). More studies were conducted on the higher education demographic than

on public middle school or kindergarten through Grade 12 educational contexts (Peixoto et al., 2021).

A consistent recommendation from almost all of the literature reviewed was for additional research to be conducted to assess the pedagogical value of VR as an instructional tool (Abadia, 2020; Jensen & Konradsen, 2018; Melchor, 2018; Park, 2018; Parmaxi, 2020; Peixoto et al., 2021; Van Ginkel et al., 2019). This study is a response to those recommendations. Teachers are the custodians of educational technology. As asserted by the soft determinists and instrumentalists, human beings play a vital role in the innovation and deployment of technology. Therefore, exploring their perspectives on a given technology is critical to developing a valuable application of that technology. The aim of this study is to fill a gap in literature by examining the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for Spanish language learning in a middle school setting.

The methodology and research design will be introduced in Chapter 3. This chapter illuminates all processes necessary to find information to answer the posed RQs. This chapter will include information on the sampling and population, the recruiting process, instrumentation, data collection and data analysis. Additionally, discussions of trustworthiness and ethical considerations will also appear in this chapter.

Chapter 3: Research Method

Introduction

The purpose of this basic qualitative study was to explore the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for

developing communicative competence in Spanish language learning. I begin this chapter by describing the research design and rationale. I also address the role of the researcher. The methodology is discussed in detail, including the participant selection logic, inclusion and exclusion criteria, instrumentation, and procedures. The data analysis plan and the justification of choices form another important section, followed by the ethical considerations and protocols for the study. Then, I address issues of trustworthiness and ethical considerations. The chapter concludes with a summary of key points.

Research Design and Rationale

The overarching RQ was, What are the perspectives of middle school Spanish teachers about their use of VR as an instructional tool for developing communicative competence in Spanish language learning? The sub-Qs included the following:

Sub-Q1: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for vocabulary development in Spanish language learning?

Sub-Q2: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing speaking proficiency in Spanish language learning?

Sub-Q3: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing writing proficiency in Spanish language learning?

Sub-Q4: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing listening comprehension in Spanish language learning?

The central phenomenon of this study was the use of VR as an instructional tool for developing communicative competence in Spanish language learning. In this study, I used a basic qualitative design to answer the RQs. According to Worthington (2013), a basic qualitative research design is best used to examine how individuals interpret their experiences, how they construct their world, and what meaning they derive from their experiences. Furthermore, a basic qualitative design is most appropriate when the study does not meet the criteria for other formal designs such as ethnography, phenomenology, and grounded theory (Worthington, 2013).

For this basic qualitative study, I followed the interpretivist research tradition. The interpretivism paradigm was chosen because of its potential to uncover people's feelings, emotions, thoughts, and perceptions (Myers, 2019). The rationale for the chosen research methodology follows from the notion that qualitative research methods allow for the exploration of individuals' perspectives of, and experiences with, a phenomenon through in-depth, narrative information (Merriam & Tisdell, 2016). Furthermore, qualitative methods provide for the investigation of phenomena where there is a high level of uncertainty in relation to the variables of importance (Creswell & Creswell, 2018). Without such certainty, quantitative approaches are uneven until the independent variables are discovered by trial and error. A quantitative method was not adequate for

this study because the focus of quantitative methods is on examining patterns and causal relationships between two variables (Creswell & Creswell, 2018).

Other qualitative research designs were not appropriate, given the purpose of the study. For example, a grounded theory design was not appropriate because grounded theory is used when the research purpose is to develop a new theory through constant comparative analysis (Merriam & Tisdell, 2016). A narrative design was not appropriate for this study because narrative research involves collecting information about a phenomenon through unstructured storytelling (Merriam & Tisdell, 2016), which would not have provided an in-depth understanding of participants' perceptions of using VR to teach Spanish to middle school students. An ethnographic design was also not appropriate for this study because ethnography focuses on a phenomenon in a cultural context (Merriam & Tisdell, 2016). Finally, phenomenology was not appropriate because phenomenological designs involve discovering the essence of lived experiences from participants' prereflective perceptions (Merriam & Tisdell, 2016). In the end, I chose a basic qualitative design for this study because qualitative research methods, such as interviews, are designed to capture rich, detailed data that can provide insights into how individuals make sense of the world around them. Additionally, such qualitative research allows for flexibility and adaptability in the research design, which makes it appropriate for studying people's perspectives and experiences.

Role of the Researcher

For this study, I assumed the role of observer-participant. In the case of semistructured interviews, I served as both an observer and participant who engaged with the interview subjects (Roulston & Choi, 2018). I was embedded in the process, using a natural social environment to gather data from the participants. Due to my partial role as a participant in the process, there was a potential risk of bias. There was also a risk in relation to my social competencies required to create a natural environment for the interview to be conducted (DeJonckheere & Vaughn, 2019).

I recruited persons whom I knew for the study, provided that they met the inclusion criteria. There were no issues with supervisory or instructor relationships because I had no authority over the participants. There were no conflicts of interest or power differentials involved during the development of this research proposal.

Methodology

The research design was a major determinant of the methodology followed in this study. In this case, semistructured interviews from a purposive sample of middle school Spanish teachers provided data for a thematic analysis that contributed to responding to the RQs. In this section, I provide an overview of the participant selection logic, sources of data, procedures for recruitment, participation, and data collection, and data analysis.

Participant Selection Logic

The target population was middle school Spanish teachers who have used VR for instruction in their classrooms. The sample for this study was drawn from middle school teachers across the United States who have used VR to support Spanish language

teaching. A sample of participants was obtained using a purposive sampling technique. Purposive sampling is a non-probability technique that researchers use to purposely select a sample of individuals who are known to have knowledge about or experience with the phenomenon of interest (Etikan et al., 2016). Sample selection was based on the following inclusion criteria:

- Spanish teachers in middle school settings.

- Spanish teachers who had worked at the same middle school organization for at least 2 years.

- Spanish teachers who had used VR as an instructional tool for Spanish language instruction in the classroom.

- Spanish teachers working in the United States of America; and

- Persons who agreed to allow the researcher to record the audio portion of the interview.

The exclusion criteria were as follows:

- Spanish teachers who had never taught Spanish in a middle school setting.

- Middle school Spanish teachers teaching in private schools

- Spanish teachers who had not worked at the same middle school organization for 2 years.

- Spanish teachers who had not used VR as an instructional tool for Spanish language instruction in the classroom;

- Spanish teachers currently working outside of the United States; and

- Spanish teachers who do not consent to a recording of the interview.

Procedures for identifying potential participants began with postings on social media channels relevant to the target educator community, followed by self-selection (see Appendix A for recruitment information posted on social media). The potential participants contacted the researcher using information from the post in order to begin the recruitment and selection process. The researcher answered any questions and asked the candidate if they were willing to participate. If they indicated that they would, the participant information sheet found in Appendix B was sent to them by email, and a date for the interview was scheduled. The potential candidates reviewed the participant information sheet and indicated agreement to participate based on the stated terms in the informed consent. Ensuring the provision of informed consent was completed prior to conducting an interview with a participant.

The projected sample size was 8-12 middle school Spanish teachers. However, the final sample size was determined by data saturation, which is the point where no new information emerges from the interviews (Fusch & Ness, 2015). According to Hennink and Kaiser (2022), data saturation is typically reached with 5-24 participants. The final sample size used to achieve saturation for this study was eight participants.

Instrumentation

Semistructured interviews were used to collect data from the selected sample to address the four sub-Qs derived from the central RQ. The use of semistructured interviews in this study is supported by Brinkmann (2020) who posited that the method of open-ended exploration is appropriate to better understand the beliefs, attitudes, and perspectives of participants. Participants were the choice to be interviewed on Zoom,

Google Meet, or Skype to reduce any threat to the interviewer and interviewees. All eight

participants chose to be interviewed on zoom. The decision to use an online video

meeting platform was made with consideration of the ongoing public health restrictions

and advisories due to the COVID-19 pandemic. Even before the pandemic, conducting

video interviews online was an accepted practice and viable alternative to face-to-face

interviews (Roberts et al., 2021). The interview protocol, available in Appendix B,

consists of open-ended questions in relation to the RQs, as well as any probing questions

that were used to facilitate further discussions.

The interview protocol was developed by the researcher based on the RQs and the

issues of interest raised in the systematic literature review. The interview protocol was

also guided by the framework of communicative competence developed by Canale and

Swain (1980). The interview protocol includes questions and prompts about the

participants' experiences with the use of VR as an instructional tool for Spanish language

instruction in middle school.

Procedures for Recruitment, Participation, and Data Collection

I posted messages on social media pages, including those on Facebook, LinkedIn,

and Twitter, where Spanish teachers living in the United States were likely to see them

(see Appendix A). Interested candidates contacted the researcher via email and were

provided with the participant information sheet. Candidate who agreed to participate after

reviewing the informed consent document, responded by email indicating that they

agreed to the terms found in the participant informed consent document and were willing

to volunteer as interview participants. Snowball sampling was used because not enough

participants were secured using purposive sampling. To solicit additional participants through snowball sampling, participants were asked to share the information post about the study with their networks. Even at that, not enough participants were recruited to achieve saturation. Therefore, geographic boundaries also had to be increased from Southeast Texas to across the United States after obtaining the appropriate approval to do so from Walden University's Institutional Review Board (IRB).

Semistructured interviews were used to collect data from the selected sample to address the RQs. Eight interviews were conducted via Zoom for convenience. The decision to use an online video meeting platform was made with consideration of the ongoing public health restrictions and advisories due to the COVID-19 pandemic. Even before the pandemic, conducting video interviews online was an accepted practice and viable alternative to face-to-face interviews (Roberts et al., 2021). The interview instrument, available in Appendix B, consists of open-ended questions in relation to the RQs, as well as any commentary that provoked additional responses from the participants.

Data Analysis Plan

I collected data by conducting semistructured interviews. The interview responses were analyzed following Braun et al.'s (2014) six-step thematic analysis. The six-step thematic analysis involved "preparing and becoming familiar with the data, developing initial codes, uncovering themes, evaluating themes to discard themes that were irrelevant and merging similar themes, categorizing and defining themes, and reporting findings" (Maguire & Delahunt, 2017, p. 3354). In the first step, the researcher prepared the data

for analysis by transcribing the recorded interview responses, reading and re-reading the transcripts in order to become familiar with the data. During the second step, the researcher conducted the first cycle of coding using initial codes to highlight words and phrases that directly aligned with the RQs (Saldaña, 2016). In the third step, the researcher conducted the second cycle coding using a pattern coding technique to organize the initial codes into themes based on their similarity (Saldaña, 2016). In the fourth step, the researcher evaluated the themes that emerged in the third step to assess their relevance to the RQs. This included removing themes that were not relevant or merging smaller themes that were similar in content (Braun et al., 2014). In the fifth step, I selected which themes to include as the final themes and named them (Braun et al., 2014). In the sixth step, the researcher developed a narrative of the results and presented them using supporting excerpts from the transcripts (Braun et al., 2014).

ATLAS.ti software was used to help organize the data during the coding and theming process. Discrepant data were not difficult to manage in a qualitative study such as this because they provided greater insights into what works, and how others could make it work. Therefore, any discrepant information between participants was reported, and presented as different or opposing aspects of a theme, or parts of different themes altogether. Discrepant information in a scholarly literature based on findings from data typically indicate a need for further examination and analysis of the phenomenon under study (Elliott et al., 1999). Discrepant information has been reported and analyzed in the discussion section of the fourth chapter which is focused on the results from the study.

Issues of Trustworthiness

In qualitative research, the concepts of validity and reliability are evaluated based on the trustworthiness of results. The criteria for trustworthiness include credibility, transferability, dependability, and confirmability (Korstjens & Moser, 2018). The following sections describe the measures taken to strengthen the credibility, transferability, dependability, and confirmability of this study.

Credibility

Credibility refers to the internal validity of the study, and whether the measures and intended constructs are operationalized in a way that reflects the researcher's intentions in the study (Meltzoff & Cooper, 2018). Some appropriate strategies to ensure credibility include the use of triangulation, prolonged contact, member checking, saturation, and reflexivity (Meltzoff & Cooper, 2018). The credibility of this study was enhanced through member checking. Member checking involved sharing interview transcripts with participants to ensure that the transcribed information is accurate (Korstjens & Moser, 2018). The credibility of this study was further enhanced through saturation. Specifically, interviews were conducted until no new information was emerging from the interview sessions (Korstjens & Moser, 2018).

Transferability

Transferability refers to the external validity of the study, or the extent to which the findings are applicable elsewhere (Oswaldo, 2021). The small sample size and purposive selection strategy used in this study may limit the transferability of the results as selection bias may be a potential threat, and/or the sample size may not be

representative of the targeted population. This is acknowledged within the process. It is

also why the information about the contexts and settings of the participants' use of VR in

the classroom were captured from the participants to help make informed decisions about

the applicability of any results. The transferability of this study has been enhanced by

including thick descriptions of participants' contexts (Korstjens & Moser, 2018). This

thick description of participants' contexts have provided for a better understanding of

where similar situations may reflect similar phenomena.

Dependability

Dependability is the qualitative counterpart to reliability, and it refers to the

likelihood that repeating this research in the same way, in the same or similar setting,

would have similar outcomes and findings (Oswaldo, 2021). The key to ensuring both

reliability and dependability is planning, reflection, and documentation (Oswaldo, 2021).

Dependability in this study is provided by the intensive process of detailing each step and

phase of the research, each data point captured, and how these have been analyzed and

interpreted. Such documentation of the intentions, process, and results of a research study

leaves what is essentially an audit trail of where data will be found, how it will be

operationalized and processed, and ultimately, what led to findings. The current study

includes extensive documentation of each step through journaling.

Confirmability

Confirmability is the qualitative counterpart to objectivity in empirical studies

(Oswaldo, 2021). It refers to the inclusion of researcher-oriented bias or agendas that can

manifest in the research (Oswaldo, 2021). Confirmability is impacted by the use of

qualitative approaches where the researcher has a role as both an observer and a participant (Oswaldo, 2021). Ensuring confirmability requires strategies such as reflexivity as well as ongoing self-awareness of the researcher. Any events, instances, or indications of issues which could have had an impact on the confirmability of this study have been documented for posterity.

Ethical Procedures

Minimizing harm is critical to ethical research. Most institutions have adopted standards that include a review and approval process to ensure that researchers adhere to ethical procedures (Litchfield & Young, 2020). In this section, I discuss the informed consent process, other permissions, privacy and confidentiality measures, and the means of data dissemination.

Research involving human subjects is bound by ethical considerations, including formal assessment by the IRB of the institution, and generally applicable laws and standards. One of these standards is the use of an informed consent agreement to ensure participants are volunteering at their own free will. The process of providing informed consent involves providing the participants with detailed information about the research project, including the goal and objectives, the role of the participant, and an exhaustive list of their rights as participants (Iphofen & Tolich, 2018). Potential participants for the current study were informed of their right to withdraw from the research at any point of time and were provided with the contact information of the researcher. There was no in-person meeting with participants, therefore the confirmation of consent was done via email communication. Emails were sent to participants containing the text of the

participation information document found in Appendix B. The potential participant then

acknowledged receipt of the consent document, and their agreement with the terms. The

consents of participants were also confirmed at the beginning of the interview.

Participants were also reminded of the right to withdraw at the beginning of the

interview, and the provision of privacy and confidentiality in relation to their personal

information and interview responses.

Another ethical consideration involved the form of data capture. To thematically

analyze the qualitative data, I needed textual data. The easiest way to generate textual

data was to create a transcript from the audio recording of the interview. Without audio

recordings of interviews, an interview would be reduced to notes taken by the researchers

during the interview process and the researcher's impressions, which may be biased by

the researcher's interpretation. Participants' consents to record the audio component of

the interview was sought and obtained as part of the data collection process.

Permission was not required by any of the social media groups used for recruitment in

this study. Participants were drawn from different schools and locations across the United

States. Therefore, social media groups that are local to the United States including

Facebook, Instagram, LinkedIn, and Twitter were used. Institutional permission was

obtained from the IRB of Walden University (approval no. 10-18-22-0260401) prior to

the start of the data collection for this research. I waited to select participants until after I

had received all necessary approvals to begin.

Protecting the privacy of human participants is a critical ethical consideration in

qualitative studies (Miller et al., 2012). Data that was collected which is private and

confidential includes name and contact information, gender, and work experience. This data has been kept confidential using alias identification methods, however there is limited probability that demographic details would result in the breach of privacy or confidentiality.

The protection of confidential data includes the use of password protected files, password protected accounts for email and videoconferencing, the identification of participants by number, and the separation of data collection from the personal data of participants such as the informed consent agreement. The access to data will be restricted to the researcher and the supervisor. Both digital data and any paper documents will be destroyed 5 years after the completion of the study.

The data, and any findings from this data, will be disseminated in the form of a publicly available dissertation. Furthermore, these results may be presented at various conferences or events. There is little risk, however, of a breach of privacy or confidentiality for participants as they will not be identified by name or characteristics, and public presentations of the information and analysis will be synthesized and not attributable to any individuals. Other ethical issues such as doing a study within one's own work environment; conflict of interest or power differentials; and justification of incentives do not apply to this study.

Summary

This is a basic qualitative research study that followed the interpretivist research tradition. The rationale for this qualitative research design is the nature of the research gap, which indicates that the importance of VR use for second language learning and

teaching have yet to be investigated. Qualitative approaches are appropriate for the investigation of phenomena with a high level of uncertainty regarding the usefulness of VR in teaching Spanish. This research focused on exploring the perspectives of participants about the instructional use of VR for language learning. The role of the researcher is necessarily both participant and observer due to the use of semistructured interviews as the instrument for data collection. The central phenomenon under study is communicative competence, a composite measure of proficiency in a second language developed by Canale and Swain (1980). The methodology describes the purposive participant selection logic driven by information postings about the study, and self-selection of volunteers. Sample selection involved the inclusion of educators who teach Spanish in middle school settings in across the United States who have been at the same public school for at least 2 years, with the opportunity to use VR in their classrooms, and have agreed to allow the researcher to record the audio portion of the interview. The exclusion criteria are the inverse of each inclusion criteria. The sample size for this study was eight participants.

The trustworthiness of the findings for this study, and the data upon which these are based are credibility, transferability, dependability, and confirmability. Ethical considerations include the provision of informed consent, privacy, and confidentiality of personal information of participants, and the right to withdraw from the study at any time and for any reason. In this case, a consent form was not signed, but rather the candidates sent digital messages of agreement with the terms and information. This information was

repeated at the beginning of the interviews. Chapter 4 includes the results of the six-step

thematic analysis.

Chapter 4: Results

Introduction

The purpose of this basic qualitative study was to explore the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing communicative competence in Spanish language learning. The use of a basic qualitative design allowed for the investigation of individual middle school Spanish teachers' perspectives through the collection of in-depth narratives. The participants' narratives contributed to the development of themes that have the potential to expand the body of knowledge on some complex issues affecting the use of VR in middle school classrooms. The primary RQ for this study was, what are the perspectives of middle school Spanish teachers about their use of VR as an instructional tool for developing communicative competence in Spanish language learning? The sub-Qs were

Sub-Q1: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for vocabulary development in Spanish language learning?

Sub-Q2: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing speaking proficiency in Spanish language learning?

Sub-Q3: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing writing proficiency in Spanish language learning?

Sub-Q4: What are the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing listening comprehension in Spanish language learning?

This chapter contains the presentation of the data analysis and results for to this qualitative study. I describe the context of the study in the Setting and Demographics sections. The data collection, data analysis, and trustworthiness procedures are then detailed. The results are presented in the form of themes, narratives, and excerpts from the data. A summary is provided to conclude the chapter.

Setting

The initial geographic area planned for this study was southeastern Texas; however, participant selection and data collection processes did not yield a sufficiently large sample, so the sampling frame was expanded to the entire United States. To complete participant recruitment, I made use of online platforms and the snowballing technique. The reason for opting for online platforms instead of in-person recruitment and interviews was because this study was conducted during the COVID-19 pandemic when public health restrictions and advisories were still being issued due to ongoing fears of spreading emerging mutations of the virus (Center for Disease Control & Prevention, 2020). Making use of online recruitment and interviews through Zoom helped prioritized the participants' health and minimized their personal time commitment. The practice of using online video interviews was found to be as effective as face-to-face interviews even before the pandemic, according to researchers. (Roberts et al., 2021). Conducting these interviews via zoom allowed for geographical flexibility such that I could recruit

participants from anywhere across the United States. Online interviews also allowed participants to express their opinions freely, due to the anonymity provided by disabling the video component of zoom resulting in more helpful insights. Additionally, scheduling and conducting the interviews cost less time and effort as there was no need for travel and accommodation expenses.

Demographics

I selected a sample of eight Spanish middle school teachers for this study. The participants were selected from various local social media groups via purposive sampling. The inclusion criteria were the following: Spanish teachers in middle school settings who had worked at the same middle school organization for at least 2 years, who had used VR as an instructional tool for Spanish language instruction in the classroom, and who were working in the United States. Participants had to agree to be recorded via audio during their interview. The exclusion criteria were Spanish teachers who had never taught Spanish in a middle school setting, who had not worked at the same middle school organization for 2 years, who had not used VR as an instructional tool for Spanish language instruction in the classroom, who currently worked outside of the United States, and who did not consent to a recording of the interview. The eight participants were from different parts of the United States, with five from the South, two from the Southwest, and one from the Northeast. Four taught seventh grade, one taught sixth grade, one taught seventh and eighth grades, and the remaining two taught eight grades.

The participants' years of teaching experience ranged from 2 to 20 with an average of 6.5 years. Five participants had experience using the VR application Google

Expedition to teach Spanish; two participants, Mondly; and one participant, Aurasma.

The participants' demographic information is summarized in Table 1.

Table 1

Demographic Information

Participant	Level taught	No. of years of teaching experience	VR application used in teaching
1	6th	20	Aurasma
2	7th and 8th	4	Google Expedition
3	7th	5	Google Expedition
4	8th	4	Google Expedition
5	7th	7	Google Expedition
6	7th	2	Google Expedition
7	8th	7	Mondly
8	7th	3	Mondly

Note. VR = virtual reality.

Data Collection

Semistructured individual interviews were used to collect data via zoom conferencing platform online. After obtaining the approval of the university IRB, I began participant recruitment. Purposive sampling was used to recruit participants. I determined a set of inclusion and exclusion criteria to select participants with relevant insights and experiences regarding the phenomenon under investigation. The selection criteria were initially posted on local social media platforms like Facebook, LinkedIn, Twitter and

Instagram targeting educators in Southeastern Texas. However, due to challenges in

obtaining a sufficient sample to reach saturation after about 2 months of trying to recruit,

a request for change in procedures was submitted to the IRB and an approval was

obtained to extend the recruitment region to across the United States. The updated

recruitment information was posted on social media and eventually, a sample of 4 middle

school teachers responded to the social media posts and volunteered for the study; the

remaining four were recruited through snowball sampling.

I contacted each participant and verified their teaching role, place of employment,

years of teaching experience, and use of VR as a teaching tool. During the initial contact

with the participants, I detailed the nature and purpose of the study, as well as the terms

and conditions of participation. The terms and conditions of participation were written in

the informed consent form, which was sent to the participants via email. Only

participants who replied to the email containing the informed consent form with the

phrase, "I consent to participate in the study," were interviewed. Eight participants joined

the individual interviews. The interviews were then scheduled to accommodate

participant availability and conducted via Zoom Meeting. I conducted eight interviews

using the interview protocol submitted as part of the approved proposal (see Appendix

B). Some of the interviews lasted more than half an hour while others lasted less. Given

the semistructured nature of the interviews, I asked probing questions as often as the

opportunity presented itself to elicit more detailed responses from the participants. The

duration of each interview was determined by whether the participants provided succinct

rather than elaborative answers to the interview questions and if those answers provoked follow-up questions.

The initial data collection plans presented in Chapter 3 had to be modified with the approval of the IRB to address the challenge of recruitment. According to the initial plan, recruitment was supposed to be restricted to the southeast region of Texas only. But, due to the challenge of getting enough participants to hit saturation within that specific region alone, I obtained IRB approval to expand the recruitment to the rest of the United States. Seeking the guidance of my committee at every step of the data collection process was what helped me to successfully complete the recruitment of participants for this study. The interviews were digitally recorded using the audio recording feature of Zoom. At the beginning of each individual interview, I restated the purpose of the study and the contents of the informed consent form. I had put the interview questions found in the interview protocol (see Appendix B) on a PowerPoint so that once a participant expressed that they were ready to begin, I shared my screen so that they could both hear and see the questions I was asking one at a time, except for the follow-up questions which could not be displayed in such manner because they were different and generated based on individual participant response during each interview. I thought the questions in this manner was necessary both for keeping the participants focused on the question at hand and as visual support because English was a second language for most of the participants.

After the interviews, I listened to the recordings and produced a verbatim transcription. A total of 32 pages of transcripts was yielded from the interview

recordings. Each transcript was sent to the corresponding participant via email to fulfill the member checking process in which the participants were given the opportunity to review the accuracy of the transcription and their responses. The member checking process was vital to the credibility of the study. The participants did not make any changes to the transcripts; therefore, the transcripts were considered final. The finalized transcripts were imported to the computer-assisted qualitative data analysis software NVivo Version 12 in preparation for data analysis.

Data Analysis

The data analysis procedures applied to the data were in accordance with the thematic analysis plans presented in Chapter 3. I followed Braun et al.'s (2014) recommended six-step thematic analysis framework to develop themes from the interview data. The six steps were: data familiarization, code generation, theme identification, theme review, theme definition, and report production (Braun et al., 2014).

Data familiarization involved repeated and prolonged exposure to the data to grasp general ideas about early impressions of the data. I conducted the interviews with each participant and listened to the interview recordings for transcription. Each interview transcript was read twice until I became familiar with the broad patterns in the data.

Once I developed impressions about the data set, the code generation process began. The transcripts were imported to NVivo Version 12 and reread closely per line to find provisional codes to describe data units as suggested by Saldaña (2016). An example of a data unit is Participant 3's statement, "My students became more motivated and engaged in the learning process." This statement was attributed with the meaning that the

use of VR as a teaching tool for Spanish language in a middle school classroom increased the students' motivation and engagement in class. Thus, in NVivo, this statement was highlighted and assigned with the code "increased motivation and engagement.

When no new initial code emerged, I proceeded to develop themes. To aid with the theme identification process, I followed Saldaña's (2016) pattern coding strategy in which the relationships among the codes were examined and codes with similar meanings were clustered under one group. The use of NVivo was suitable for creating structure in the iterative pattern coding process as the clusters of codes were visually represented in the hierarchy feature. Figure 2 shows three codes—increased active learning experience, increased independent learning, and increased student ownership—under the hierarchy named "promoted student-led learning."

Figure 2

Sample Hierarchy of Codes

promoted student-led learning
○ increased active learning experience
○ increased independent learning
○ increased student ownership
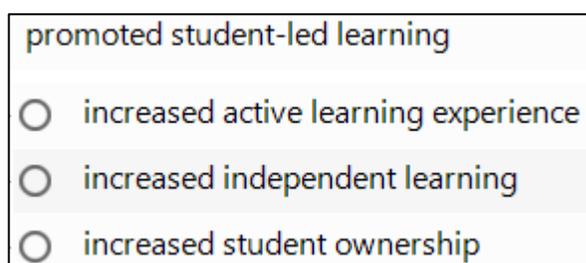
The three codes were grouped together with the identification of similar patterns in the coded text pertaining to how the use of VR resulted in the students' self-directed education. Sample quotes that show how the three codes were similar are provided in Table 2.

Table 2

Sample Codes With Similar Meanings

Code	Quote
Increased active learning experience	"VR facilitates personalized learning in that students can learn and practice at their pace and according to their skill level and interest…This is what I mean by VR facilitates differentiation and student-centered learning."
Increased independent learning	"I became a guide on the side, they chose what experiences they wanted have and researched the Spanish vocabulary they needed to learn."
Increased student ownership	"Another effect I have observed is they are taking more ownership of the learning process. Remember I had mentioned to you that sometimes they are the ones leading the expeditions or even choosing what experiences we should have."

Note. VR = virtual reality.

The themes were then reviewed. Theme review continued to be guided by the pattern coding process in which themes that did not share similarities with the other themes to support the narrative were modified or eliminated. Likewise, themes that appeared similar were combined. The themes were reviewed in comparison with the data to ensure that each theme was sufficiently supported and evidenced by the data. During this process, no themes were eliminated but two themes were combined. The themes of

"increased students' excitement for class," which was supported by seven participants

with 12 mentions, and "increased student engagement," which was supported by four

participants with six mentions, were merged under the final theme, which was "using VR

as an instructional tool increased student participation." Based on the review of the

pattern coding process, the two initial themes both referred to the increase of students'

willingness to participate in class as a result of using VR. I also produced a thematic map

shown in Figure 3 to display the entire narrative derived from the themes.

Figure 3

Thematic Map

Using VR for language learning targets multiple communicative competence at once	Using VR as an instructional tool increased student participation	Using VR as an instructional tool promoted student-led learning	Using VR as an instructional tool can be challenging when not supported by leaders	Using VR as an instructional tool promoted students' ability to express themselves confidently	Using VR as an instructional tool increased opportunities to interact and collaborate with peers
• students can learn meanings of words and practice speaking in a given context • students can practice spelling, grammar, reading, and listening comprehension • students can learn 21st century skills	• increased students' excitement for class • increased student engagement	• increased active learning experience • increased student ownership • increased independent learning	• different levels of support • inadequate resources	• increased students' confidence in oneself • increased self-expression	• increased chances for collaboration among students

The themes were finalized and defined such that they made sense when answering the

RQs. The final themes and their definitions are presented in Table 3.

Table 3

Themes and Definitions

Theme	Definition
Using VR for language learning targets multiple communicative competence at once	The use of VR was not limited to the development of only one communicative competence
Using VR as an instructional tool increased student participation	The use of VR increased the students' interest and willingness to partake in class activities
Using VR as an instructional tool can be challenging when not supported by leaders	The use of VR as an instructional tool was relatively a novel practice and the different levels of leaders' support resulted in different challenges in teaching using VR
Using VR as an instructional tool promoted student-led learning	The use of VR increased self-directed education among the students with the teachers playing the role of a guide
Using VR as an instructional tool promoted students' ability to express themselves confidently	The use of VR entailed activities that allowed students to explore, be creative, and make mistakes while receiving immediate feedback without the pressure of being in front of the class
Using VR as an instructional tool increased opportunities to interact and collaborate with peers	The use of VR entailed activities that allowed students to communicate and work with each other

Note. VR = virtual reality.

Evidence of Trustworthiness

The methodology applied to this qualitative study included addressing the issues of trustworthiness presented in Chapter 3. Addressing the issues of trustworthiness involved meeting the four trustworthiness criteria. The criteria are credibility, transferability, dependability, and confirmability (Korstjens & Moser, 2018).

Credibility

Credibility refers to the extent to which the study findings are considered an accurate representation of the researcher's intentions in the study (Meltzoff & Cooper, 2018). Techniques to increase credibility were applied from planning the study to the presentation of the results. During the planning of the research, I took reflective notes of personal background and concepts so that preconceived perceptions and emotional responses did not influence the results. In preparing the interview guide, three experts in VR, education, and qualitative research reviewed the interview protocol to verify that the data collection instrument was composed of relevant and non-biased questions. I was also mindful and reflective in asking the questions, keeping in mind the purpose of the study so as to keep the interviews aligned with the original intentions of the study. Additionally, participants were given a copy of the questions they answered during the interview and an opportunity to review the transcripts of their responses to ensure accuracy of information transmitted and documented during the interview. I then immersed in the data from conducting the interviews, writing notes, listening to the interview recordings, transcribing the data, to repeatedly reading the transcripts. Prolonged immersion in the data allowed me to exhaust information until no new codes

emerged and saturation was reached. Finally, to facility transparency and minimize potential bias in the interpretation of the data, I shared the transcripts and coding results with my doctoral committee. These steps are consistent with best practices in establishing credibility in qualitative studies (Creswell & Miller, 2000).

Transferability

Transferability refers to the extent to which the study is applicable in another context (Oswaldo, 2021). Transferability is often problematic in qualitative studies due to the non-numeric nature of the data. To address this problem, the report of this study included the acknowledgement and thick descriptions of the characteristics and attributes of the small purposive sample as well as the setting of the study. The selection strategy was also accurately described including the inclusion and exclusion criteria and the recruitment process. Providing detailed information about the setting and sample of this study will allow readers to draw their own conclusions about the substantial comparability of the study findings to another context.

Dependability

Dependability refers to the extent to which the study findings remain consistent throughout time (Oswaldo, 2021). The process of establishing dependability was to plan, reflect, and document. I provided a detailed description of the consistency strategies I would employ to ensure dependability in Chapter 3 of this study. To facilitate dependability, I audio-recorded the interviews and kept an audit trail of all the materials collected including handwritten notes. After the interviews with each participant, I listened to the interview recordings for transcription then I sent the transcripts to the

participants for review and verification. Once the transcripts were returned, I read each transcript twice until I became familiar with the broad patterns in the data before importing the transcripts into NVivo Version 12 in preparation for the data analysis. During the data analysis, I referred to my reflexive journal continually to minimize potential for bias.

Confirmability

Confirmability refers to the extent to which the study findings is viewed as impartial and can be verified by others (Oswaldo, 2021). I acknowledged my role to include being an observer and a participant and the inherent potential for bias that presents. To minimize influences on the results, I practiced reflexivity in which all steps taken and thought processes regarding this study were self-inquired and documented. In Chapter 3, I stated that the instrument for data collection would be semistructured interviews and followed through with its implementation in the data collection phase in Chapter 4. Appendix C contains coding documentation. I conducted eight interviews and communicated my progress and challenges with my committee on a biweekly basis. This ongoing self-awareness, intentionality, and documentation facilitated the confirmability for this qualitative study.

<div align="center">

Results

</div>

Six themes emerged from the analysis to answer the RQs. The six themes were: using VR for language learning targets multiple communicative competence at once, using VR as an instructional tool increased student participation, using VR as an instructional tool can be challenging when not supported by leaders, using VR as an

instructional tool promoted student-led learning, using VR as an instructional tool

promoted students' ability to express themselves confidently, and using VR as an

instructional tool increased opportunities to interact and collaborate with peers. Table 3

provides an overview of the themes. The table includes the number of supporting

participants and occurrences in the data that were identified as a result of the use of the

pattern coding strategy.

Table 4

Overview of Themes

Theme	No. of supporting participants	No. of occurrences in the data
Using VR for language learning targets multiple communicative competence at once.	8	25
Using VR as an instructional tool increased student participation.	8	22
Using VR as an instructional tool can be challenging when not supported by leaders.	7	20
Using VR as an instructional tool promoted student-led learning.	5	16
Using VR as an instructional tool promoted students' ability to express themselves confidently.	6	13
Using VR as an instructional tool increased opportunities to interact and collaborate with peers.	4	7

Note. VR = virtual reality.

Perceived Utility of Virtual Reality to Simultaneously Target Multiple Aspects of

Communicative Competence

All eight participants shared the perceptive that using VR as an instructional tool

improved their students' communicative competence in Spanish. According to Participant

8, the improvement in the students' Spanish language competence was observable in the assessments set by the district. Nonetheless, Participant 8 also emphasized that the use of VR removed the students' pressure on obtaining certain grades and placed the focus on learning. Participant 8 stated:

> The results have been telling because they are doing better on those district assessments even though the focus is not on them…the way Mondly units are structured makes the learning process seem like you are actually living in the culture of the language you are learning. So, the meaningfulness comes from learning Spanish through those experiences, an example of an experience could be to take a food tour in a little town in Spain or a cultural celebration in Mexico.

Four other participants shared similar insights as Participant 8. Participants 3, 4, and 6 perceived that using VR improved overall language competence as students learned new words in context through simulated scenarios. Participant 6 who used Google Expeditions stated that, "The simulated experiences allow students to practice the words they are learning within the cultural context of the Spanish language." Participant 3, who also used Google Expeditions, noted that the VR experiences were comparable to having the students travel to a foreign country to practice the language. Participant 3 disclosed that, "Google Expeditions allow students to have the experience of being at new places and that has shown to motivate them to speak more, to practice listening comprehension and also write about their experiences." Participant 4, who also used Google Expeditions, shared:

When we teach a foreign language, our goal is to get our students to learn that

language, we want them to be able to speak it, write it, understand when spoken to

and use a variety of words to communicate in that target language. If we are

talking about the outcomes, then yes, VR is aligned to the district outcomes

because it gets our students to learn and use the target language to communicate.

Participant 4 added that the simulated experiences were not limited to travel but

also included areas that might be of students' interest such as sports and pop culture.

Participant 4 perceived that the students could apply what they learned in Spanish class

"for real life socialization." Participant 4 shared:

Speaking and spelling words are contextualized. Basically, let's say that the

students choose to compare famous singers or football players, the pronunciation

feature allows them to practice speaking about that topic, the typing feature

allows them to practice writing that conversation, the spelling feature allows them

to practice using and writing the new words they have learned within that topic

while the translation allows them to practice their listening comprehension. So, in

the end every practice they do is based on that topic they chose, not just random

Spanish words without context. This helps them learn targeted and useful words

for real life socialization and other applications of the new language.

Participants 7 and 8 reported that Mondly contains features that targeted more

than one communicative competence at once. Participants 8 gave an example of learning

the Spanish names of food while learning spelling and using the terms in a given context.

Participant 8 disclosed, "So it is not so much one feature per se, it is the embedded

opportunities in the experiences that makes VR so helpful." Participant 4 stated, "There are so many options as far as what they can talk about and they can play and practice these conversations over and over and over until it rolls out of their tongue without effort."

Participants 1, 2, and 3, reported similar experiences of observing improvement in the students' communicative competence when they incorporated VR into their instruction. Participants 1 and 2 used the term "frontloading" to describe how they exposed their students to the vocabulary they were going to encounter in the simulation ahead of time. According to Participant 1, frontloading meant exposing the learner to the vocabulary ahead of time before the simulation so that once they encountered the scenario, they were equipped with the words to engage and interact with peers. Participant 1 shared:

> So, with Aurasma, the students created presentations and learned the key words that we needed to incorporate into the presentation and then they were able to use those words, basically. It was a really interesting approach for my students and I saw how their vocabulary started improving because they had to use the words especially with this application Aurasma, they had to use the vocabulary, they had to explain, they had to be written on their posters but they also had to be used or utilized in the little video that they attached to that poster.

Participants 1, 2, and 3 shared that they guided their students in mastering Spanish words and their proper use through simulated tours within the VR program as well as through presentations they needed to create using the VR program. Participant 3's way of

guiding students was to "pre-teach" the vocabulary word before immersing in VR.

Participant 2 guided the students towards areas in the VR program where they could

obtain contextualized information about the words they learned. Participant 2 added that

while immersed in a simulated tour, students were motivated to participate and practice

speaking in class, which also improved the other students' listening skills. Participant 2

detailed:

> What is most amazing about these tours is, I could guide my students to really get
>
> information about the things they were seeing. I had also frontloaded the
>
> vocabulary so they had opportunities to practice using them during the VR tour…
>
> previously my students learned vocabulary as part of text or a story, but now with
>
> the Google expedition they were learning targeted vocabulary for specific
>
> concrete experiences that required them to use the words immediately for self-
>
> expression. When our lessons were text-driven it was a challenge to get them to
>
> speak but with Google Expeditions, they became more motivated to use the words
>
> and I could also see an increase in their listening comprehension as they used the
>
> words many times with each other.

Perceived Utility of Virtual Reality to Increase Student Participation

All eight participants perceived that using VR as an instructional tool was

beneficial in engaging students willingly; therefore, the use of VR increased student

participation. The participants stated that the students were interested, motivated, and

excited for class due to the use of VR. Participant 3 specified, "I downloaded the

software on all the devices…The engagement was through the roof, for the first time I

heard my students saying they wished Spanish was double period." Participant 4 shared, "They were engaged from the beginning to the end of the lesson, some days they wanted to spend more time with the activities than our lesson time allowed." Participant 7 compared class participation before and after introducing VR and stated that students became willing to answer questions and were "hands-on" in learning when using VR. Participant 6 found that students had increased participation when using VR as they were more focused and had less reported behavioral problems than before using VR. Participant 6 elaborated:

> My students became more motivated and engaged in the learning process. First, the focus on task completion increased and they were completing all tasks with higher percentage of accuracy, they were lesser behavior management issues, they were willingly practicing with each other without me having to make them and more than anything else, my classes became more animated and it was evident that they were enjoying the learning activities they were participating in.

Participant 2 explained that students tended to be focused in VR activities due to the simulated experiences in which students were immersed in. Participant 2 stated, "The simulated experiences make it impossible for any of the students to be complacent during the learning process, they are excited, they ask questions and they want to try new things." Participant 8 reported that the use of VR entailed variety to keep students interested. Participant 8 shared:

> All I had to do was choose an experience for shared learning then release the students to go practice with the avatars in VR and each other. First the students

seemed to be enjoying the new structure of the lesson better, second there was such a variety of experiences and activities to enjoy in VR that it did not even feel like learning anymore.

Participant 1 also observed that students became more interested and excited to learn and had improved communicative competences after the introduction of the use of VR in class. However, to keep the students interested, Participant 1 shared using VR only for "special projects." Participant 1 detailed:

So, they discovered that it was a lot of fun and I discovered that too…Before I introduced VR in my classroom, I can say my Spanish class used to be a little bit on the boring side for the students. Students want something more exciting… we didn't Aurasma all the time, we used it more for special projects… So, their writing improved but again I didn't use Aurasma all the time because I didn't want them to get tired of it.

Perceived Challenges in Using Virtual Reality Due to Lack of Leadership Support

Seven participants perceived that using VR as an instructional tool was a relatively novel practice and that not all school leaders supported the practice. When school leadership did not back the practice, resources tended to be inadequate. Participant 2 stated, "I was told that [VR] was not part of the approved budget so I had to wait for a whole process to get approval." Participant 1 shared asking students to bring their own devices to be able to use VR. Participants 1 and 2 both used their own resources to provide one-to-one student to device ratio. Participant 1 shared:

Back then when I incorporated Aurasma in my Spanish class with my students, we didn't have a enough technologies devices from the school. As a matter of fact, we barely had any so I started asking the students to bring their devices from home so they started bringing their tablets. Those who didn't have any sometimes used my personal devices including my cell phone. I had to do all those things to be able to have students experience technology that way.

Nonetheless, Participant 2 shared that teachers were supportive of other teachers in the practice of using VR in class. Participant 2 shared, "The reality is it was teacher-to-teacher support, the art teacher introduced the science teacher first, then the science teacher introduced me." However, Participant 2 added that without leaders' support, not all teachers bought into the practice of using VR. The practice was limited to teachers who were technologically inclined. Participant 2 stated, "But for teachers who are not drawn to technology, they don't want to bother with it because they think it's too complicated and one more thing to worry about." Participant 1 had similar experiences in attempting to introduce Aurasma to their co-teachers. Participant 1 shared:

> When I shared these findings with my colleagues, they were happy for me but they were not necessarily interested in incorporating it into their classrooms because technology for a lot of people is a foreign language, it is something scary. So even though I showed them and I shared with them how they could use this application in their classroom with their students, I mean they were excited for me but they were not ready to their mindset at the same time.

For three of the five participants who used VR, the participants shared that the practice of using VR for Spanish class was initiated by the district. Participant 7 stated that aligning the lessons and assessments was not a problem as the use of VR was a district-wide initiative. Participant 4 expressed being "lucky" to have a forward-thinking leader who supported the use of VR in class. Participant 4 shared, "We are lucky to have…our principal, he is very progressive-minded and a lot of programs we implement on campus to improve learning are not implemented in many schools across the district." Similarly, Participant 3 who used Google Expeditions felt lucky to have been supported by their school leader in using VR. Participant 3 disclosed, "Our school is big on technology so using Google Expeditions has been a campus wide effort… we know we are fortunate."

Perceived Utility of Virtual Reality to Promote Student-Led Learning

Five participants perceived that the use of VR as an instructional tool increased students' activeness in their own learning experience, ownership of their education, and independent learning. Five participants described student-led learning to involve students being active participants in the learning process which meant that students not only participated in class but also meant that students made their own decision on how they would learn. Participant 4 emphasized, "As I mentioned earlier, my students pretty much took the driver's seat and I became a passenger in their learning process." Using VR, students had a choice on the content and level of difficulty of the lessons. Participant 8 used the term "personalized" while Participant 5 used the term "differentiated" to describe the learning process using VR. Participant 8 stated, "Then there is the

personalized learning element where the students are able to access the content from anywhere and continue practicing at their own pace even outside class." Participant 5 expanded:

Another advantage is it has made the learning more differentiated and student-centered…so differentiation basically has to do with providing personalized learning to students. This is often difficult when teaching the whole class the same thing at the same time. VR facilitates personalized learning in that students can learn and practice at their pace and according to their skill level and interest. VR makes it possible for learners to take more responsibility for their learning and be in control of choosing learning experiences that interest them. This is what I mean by VR facilitates differentiation and student-centered learning. The student is at the center and in control of the learning choices.

According to three participants, the use of VR allowed the students to learn independently, with the teachers' roles being guides to learning. Participant 8 explained that prior to the use of VR, their role as a teacher mainly focused on preparing for lessons and activities that would engage the students. With the use of VR, Participant 8 shared that the students were engaged and motivated to learn by themselves. Participants 2 and 6 had similar experiences. Participant 2 stated, "After the first experience of Expedition, my students took over their own learning, I became a guide on the side, they chose what experiences they wanted to have and researched the Spanish vocabulary they needed to learn." Nonetheless, Participants 6 and 8 added that they previewed the lessons in the VR program prior to allowing student access. Participant 6 also reported introducing the

lessons in class before letting the students be independent in using VR for practice.

Participant 6 shared, "The students want to get to class and log immediately, it's almost

like they don't need me. But I make sure I introduce the concepts and before letting them

go off and practice."

Consequently, Participants 2, 4, and 5 perceived that, students improved their

sense of empowerment and responsibility as they took control over their own learning

when using VR. Participant 5 shared, "As I mentioned earlier this program has enriched

our Spanish class and empowered the students to take more responsibility for their

learning." Participant 4 reasoned that the students felt ownership as they set their own

pace in practicing the language. Participant 4 stated, "It also allows the students to

practice at their pace. Moreover, it has shown to increase students' ownership of the

learning process and confidence."

Perceived Utility of Virtual Reality to Promote Students' Ability to Express
Themselves With Confidence

Six participants described how the use of VR in class improved students'

confidence especially in learning and in expressing themselves. The participants shared

how VR included activities that required students to speak and perform in front of the

class and activities that provided immediate one-on-one correction when students made

mistakes. Participants 4 and 5 perceived that the direct feedback from the VR program to

the student helped decrease students' anxiety in making mistakes while being watched by

peers or teachers. Participant 4 shared, "These options take away the stress and anxiety

typically associated with speaking in class during language lesson. Students are

comfortable making mistakes and trying again without fear or anxiety." Participant 5
elaborated:

> As I mentioned earlier, prior to implementing VR, it used to be a struggle to get
> my students to practice speaking in class! Even when they understood what I said
> in Spanish they'd respond to me in English. But once we introduced VR, they had
> more opportunities to practice in private and receive feedback without an
> audience. So, naturally they became more confident in speaking in class too.

According to Participants 4, 5, and 7, apart from immediate feedback, feedback
was also immediately provided within the VR activity. Students were able to practice by
themselves using the VR program and to become confident in practicing with their peers.
Participant 5 stated:

> In the past, most of the students used to be shy about speaking in Spanish, but it
> seemed that they were eager to show their skills to their mates because they had
> practiced over and over during the simulation activities and were feeling more
> confident.

Participants 1 and 2 perceived that the use of VR promoted students' confidence
in being creative and in expressing themselves. Participant 1 stated that the activities
required students to think creatively. Participant 1 shared:

> They also came out of their shells and were no longer shy about expressing
> themselves in Spanish. Being able to see how learning can happen even while
> using technology really gave them confidence to take more charge of their
> learning.

Perceived Utility of Virtual Reality to Increase Opportunities to Interact and Collaborate With Peers

Four participants perceived that using VR as an instructional tool increased the chances for students to communicate and work with their peers. Some activities in the VR program required students to work in groups. Participants 3 and 5 observed how their students improved learning as they created shared experiences with their peers. Participant 3 stated, "Virtual reality provided shared experience opportunities for my students and I saw them get excited about learning Spanish and their achievement improved greatly." Participant 5 revealed observing students to helping each other learn. Participant 5 stated:

Using Google Expeditions has transformed my students in more ways than I imagined, not only has their achievement improved but they have become more collaborative in their learning. It is beautiful to watch them helping each other troubleshoot issues and also practice the content.

Participant 3 added that the collaborative activities created opportunities for students to speak with each other. Participant 3 described, "I knew it would generate more conversation among the students and in a language learning class that is what you want." Participant 2 shared that when students worked together, they also corrected and learned from each other. Participant 2 elaborated:

Eventually, we got to a point where they worked in groups to choose an experience, then choose a representative of the group to guide the tour. In such cases I'd log in as a student and participate while one of the students led us on the

adventure. Everyone was excited, even the mistakes added the fun because they provided feedback to each other and laughed with each other through the learning process.

Participant 1 encouraged the students to give their feedback on their peers' work. Participant 1 also critiqued the students' work. The participant observed improvements in the students' Spanish language competence through encouraging the system of giving and receiving feedback. Participant 1 shared:

But when we used it, the students had to be able to write on posters about the topics that they chose or I had given them. Then they'd go through the writing process and edit it, meet with colleagues to get feedback from them and also conference with me which was the last step of that process. So, I was able to see how they evolved and grew in their writing, they employed academic vocabulary and made complete sentences in Spanish, and when needed they were able to write descriptions.

Participants reported that using VR as an instructional tool improved students' communicative competence in Spanish which includes their ability to speak, write, read and understand when listening to a Spanish speaker. Additionally, participants suggested that using VR as an instructional tool contextualized learning and made students more engaged and motivated to practice speaking in Spanish in class.

Summary

The purpose of this basic qualitative study was to explore the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing communicative competence in Spanish language learning. The phenomenon investigated in this study was the use of VR as an instructional tool for developing communicative competence in Spanish language learning. This phenomenon was explored from the insights of eight Spanish middle school teachers in the United States during the COVID-19 pandemic. The basic qualitative design involved using a semistructured individual interview format to collect the data. The interview data were analyzed thematically.

The participants shared their insights of the advantages and challenges of using VR as an instructional tool. The advantages included the participants' observed improvements in the students' communicative competence in the Spanish language as well as in the students' grades in the course. The participants shared that VR activities were interactive and provided immediate feedback to the students' grammar, spelling, and pronunciation mistakes without letting the whole class know about a student's errors. Thus, the participants perceived that students improved their language competence as well as their confidence to use the Spanish language.

Moreover, the use of technology was suitable for the middle school students who the participants described as technologically inclined. The participants reported that students appeared to show more interest and willingness to participate in class activities after they introduced the use of VR. The VR applications used by the participants

included features that allowed students to choose the level of difficulty of the activity, explore simulated places and events that put the Spanish words in context, as well as search for unfamiliar terms they might encounter. Consequently, the participants perceived that their roles went from being the drivers to the guides as students took control and ownership of their Spanish language education. Some VR activities also required students to present their work in class and work in groups which improved the students' confidence, self-expression, and collaborative skills. Nonetheless, with VR as a relatively novel instructional tool, the leaders' level of support and other teachers' buy-in into the technology were varied. Some schools lacked devices for each student to have their own VR gadget for learning. Some participants expressed that their district initiated the use of VR in the classroom and that they were receiving sufficient support to implement the use of VR from attending training and professional development to having adequate resources.

The results will be interpreted in the next chapter. The discussion of the results will be on how the findings answered the RQs of this study through the lenses of the technological determinism theory (Veblen, 1919) and instrumentalism theory of technology (Feenberg, 1991). The next chapter also contains the implications, limitations, recommendations, and conclusion of this study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this basic qualitative study was to explore the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing communicative competence in Spanish language learning. The conceptual framework for this study consisted of Canale and Swain's (1980) communicative competence framework and the educational technology theory (Huang, et al., 2019). This study contributes to the body of knowledge on the use of VR within the discipline of educational technology and may be useful in addressing the ongoing problem of generally poor performance in foreign language education in the United States (Callahan et al., 2012; Carrera, 2018). The existing literature reviewed in Chapter 2 about the use of VR in various fields including education showed statistically significant positive outcomes (Jensen & Konradsen, 2018; Koivisto & Hamari, 2019; Suh & Prophet, 2018). However, middle school teachers' perspectives about the integration of VR as an instructional tool for developing communicative competence in the Spanish language remained unknown.

In Chapter 4, I presented the results. The participants reported their perceptions and experiences of the benefits and disadvantages of using VR as an educational tool. The participants noted improvements in students' Spanish language skills and academic performance. VR was perceived to be interactive and suitable for middle school students. The use of VR increased student interest and engagement, allowed for control, ownership, and collaboration. Using VR also improved communication and presentation

skills, the participants reported. However, the participants found challenges in using VR such as lack of devices and inconsistent support from school leaders and teachers.

This chapter contains the interpretation of the findings through the lenses of the technological determinism theory (Veblen, 1919) and instrumentalism theory of technology (Feenberg, 1991). The interpretation centers on how the findings answered the RQs of this study and contains a discussion of the results supported by peer-reviewed literature. This chapter also includes discussion of the limitations of the study, recommendations, consideration of the study's implications for positive social change and practice, and a conclusion to the study.

Interpretation of the Findings

This section contains the discussion and interpretation of the findings based on the conceptual framework of this study and existing related literature. The conceptual framework of this study included technological determinism theory (Veblen, 1919), instrumentalism theory of technology (Feenberg, 1991), and Canale and Swain's (1980) theory of communicative competence. The discussion also includes how the findings support and contradict existing knowledge on using VR as an instructional tool for Spanish language learning in the United States. Last, the extent to which the findings answered the RQs is also included in the discussion. This section is organized into three sections: the benefits of using VR in developing communicative competencies in Spanish language learning, the benefits of using VR in developing other skills, and the challenges of using VR as an instructional tool in developing communicative competencies in Spanish language learning.

Benefits of Virtual Reality in Developing Communicative Competence

The finding of this study revealed that using VR as an instructional tool for Spanish language learning has benefits in developing communicative competencies which encompasses multiple language skills at once. This finding confirms the results of similar studies reviewed in Chapter 2. Other researchers have found that using VR for language instruction improves language competencies (see Alemi & Khatoony, 2020; Alsaffar, 2021; Nobrega & Rozenfeld, 2019).

Some of the participants in the current study stated that when they used VR as an instructional tool in their middle school Spanish classes they observed that students simultaneously improved in all four components of communicative competency. This confirms the arguments in some of the existing literature reviewed in Chapter 2 that assert that it is difficult to distinguish and measure the progress on individual communicative competences due to the abstractness of the language learning.

Tran (2021) conducted a mixed-methods study on language learning and identified speaking, listening, and comprehension as three areas of focus. Quantitative findings showed that teachers perceived speaking skills as the most improved, while qualitative results revealed that VR improved student confidence in speaking and listening. Participants perceived significant improvements in both speaking and listening skills, with comprehension skills minimally mentioned. This may be due to the clustering of listening and speaking skills as necessary components of communication and comprehension, making it difficult to isolate individual competencies. Consequently, the components of communicative competencies were grouped together such that one

component may be difficult to isolate. Similar to Tran's study, participants in the current study also perceived that the use of VR as an instructional tool for learning Spanish was effective in developing communicative competence which is a composite of listening comprehension, vocabulary development, speaking and writing proficiencies.

In the current study, some participants identified improvement in pronunciation as one of the positive effects of using VR as an instructional tool for language learning. This finding mirrors that of Alemi and Khatoony (2020), who isolated pronunciation as a communicative competency among EFL learner who used VR as an instructional tool. Alemi and Khatoony operationalized pronunciation through the Speech Ace Pronunciation Check Browser embedded in the Speech Ace VR game. The sample of the study consisted of eighteen 6-to-12-year-old Iranian EFL learners. The researchers selected Speech Ace due to the program's feature of differentiating native and non-native speakers' pronunciation. The researchers found significant improvements in the participants' pronunciation of English words before and after ten 90-min sessions of VR-led language learning environment. Thus, Alemi and Khatoony's study may indicate that communicative competencies may be measured on their own when the most appropriate materials and instruments that are designed specifically to measure one competency are selected and when the competencies are clearly operationalized as dependent variables. Measuring the communicative competencies as dependent variables was outside the scope of this qualitative study.

Acquiring and correctly using new vocabulary is another indicator of communicative competence in a new language, according to Canale and Swain's (1980)

communicative competence framework. Participants in the current study shared how they observed an improvement in their students' Spanish vocabulary acquisition after introducing VR as an instructional tool. This result is comparable to Yamazaki's study from 2018, in which students were exposed to a VR software for an entire semester to learn Japanese communicative competencies. The qualitative portion of Yamazaki's study revealed that using VR as an instructional tool in language learning effectively improved vocabulary and speaking skills. Vocabulary improved through the contextualized VR-learning environment in which words were incidentally encountered and acquired as students explored virtual Tokyo. The participants of the current study also perceived that their students were able to develop vocabulary through the simulated contextualized experiences of Spanish cultural events in the VR environment. Researchers have proposed that a VR environment can be conducive to language learning because of the multisensory stimulation that the human brain interprets as real-world concrete experiences (Barrett et al., 2020; Lee, 2019). In a similar vein, other researchers have asserted that contextualized experiences that are authentic facilitate experiential learning, which enhances language learning outcomes (Calvert & Abadia, 2020; Lee, 2019; Paquette et al., 2020; Radu & Antle, 2017).

Yamazaki (2018) also found that speaking skills were improved at the same time, as students engaged in dialogues with the virtual characters in virtual Tokyo. The researcher suggested that the VR program they used was designed to improve procedural communicative competence or how to communicate rather than declarative communicative competence or knowledge of syntax, forms, and mechanics. In the current

study, the participants perceived that students did not only effectively acquire vocabulary, but also correctly used them in conversation. Wang et al. (2020) also echoed Yamazaki's (2018) point of view in stating that immersion in VR create opportunities for authentic exploration of events resulting in personalized construction of meaning and divergent thinking. Thus, similar to Yamazaki's and Wang's findings, the findings of the current study also revealed that using VR as an instructional tool enabled students to express themselves using the language, they were learning instead of mechanically learning vocabulary, spelling, and grammar.

Based on these existing studies on using VR as an instructional tool for language learning, the intention of the design of the VR program and the specificity of the communicative competency being targeted could influence the actual communicative competencies developed by the students. In the current study, the participants experienced three different VR programs which was not factored or included in the inclusion criteria during participant selection. Thus, the findings indicated the development of multiple communicative competencies rather than isolated competencies as the research sub-Qs intended to address.

Other Benefits of Virtual Reality as a Tool for Language Learning

Other learning outcomes also emerged from the teachers' interviews in the current study including increased student participation, improved independent learning, boosted confidence, and increased collaboration. These findings were beyond the four research sub-QS but fell within the domain of the middle school Spanish teachers' perspectives about their use of VR as an instructional tool for language learning. These findings were

consistent with Lee's study (2019) in which he found that studies on the use of VR and experiential learning generally focused on the students' perceptions of using VR as a learning tool and rarely focused on investigating the affective outcomes of learning with VR. The current study was equally focused on teachers' perspectives about using VR as an instructional tool to develop communicative competencies in Spanish language. However, the affective outcomes of motivation, independent learning, self-confidence and engagement emerged. Similar findings also emerged from other empirical studies where the goal was to measure learning gains when VR was used as an instructional tool to promote experiential and student-centered learning in an authentic and contextualized environment (Paquette et al., 2020; Radu & Antle, 2017).

In a traditional middle school Spanish language class, learning tasks are teacher-centered with limited opportunity for language learners to actively engaging with the language and participate meaningfully in the learning tasks (Berti, 2021). Participants in the current study stated that the use of VR as an instructional tool for language learning increased student participation. Several previous researchers (Berti, 2021; Calvert & Abadia, 2020; Huang et al., 2021; Mercader & Gairin, 2020; Nicolaidou et al., 2021; Nobrega & Rozenfeld, 2019) had also obtained similar findings in terms of increased learner's participation and engagement when VR was used as an instructional tool. Cetinkaya-Ozdemir and Akyol (2021) were other researchers who interviewed elementary school students who used VR for learning and found that students perceived VR to be entertaining and engaging. As a result, the students had improved motivation, reading comprehension and attitudes about reading. The researchers detailed that the

virtual presence of characters and the utilization of songs and visuals captured the students' attention which resulted in their motivation to cooperate and participate in class.

Independent learning and increased confidence were also documented outcomes of the current study. Yildirim and colleagues had published a similar finding stating that VR enhanced the opportunities for individualized learning comparable to differentiated instructions in which students can learn according to their own competency level. Thus, when using VR, individualized learning made the acquisition of knowledge easier for the students than when sitting in lectures (Yildirim et al., 2020). The researchers also stated that students were allowed to explore the VR world on their own and make their own discoveries, which increased their creativity and confidence in expressing themselves. The current study's participants equally perceived that student-led learning and differentiated instructions which were both facilitated by the use of VR led to increased creativity and confidence among their students. When using VR, students were immersed in the activities and eager to learn by themselves, thus reducing the stress and anxiety of making mistakes while being watched by the teacher and their classmates. This aligns with Yamazaki's (2018) claim that students explore virtual worlds using avatars in which the anonymity may have increased their confidence while learning.

The participants of this current study also believed that the use of VR as an instructional tool fostered interaction and collaboration with their peers. In the participants' experiences, they as teachers facilitated the group activities. However, Jalo et al. (2020) revealed that VR environments can permit multiple user features where

students can interact virtually and still experience collaborative learning and shared cognition.

Challenges of Using Virtual Reality as a Tool for Language Learning

The data from this study showed that using VR as a teaching tool is not without its difficulties. One such challenge was a lack of support by the school leadership. Based on the interviews with the participants, it would be logical to deduce that school leaderships' support is essential for the sustainability of using educational technology such as VR for instruction; a view confirmed by Berti, (2021) and, Kühn, (2019). Another challenge was negative teacher attitude towards embracing technology for instruction. Some of the participants indicated that even though they shared the positive changes they were observing in their students with their colleagues, not many were interested in experimenting with VR in their classrooms. This finding confirms some publications (Barrett et al., 2020; M. Chen et al., 2021; Kühn, 2019) which allege that despite the established benefits of using VR as an instructional tool, not many teachers are willing to incorporate its use into their pedagogy especially when not supported by their school leadership. The participants in the current study who expressed that they had received support from their school and district leadership tended to experience less problems in encouraging other teachers to use VR as an instructional tool than the participants who had not received similar support.

Additionally, the participants who were not supported by their leaders also reported that they experienced challenges with the lack of resources needed to implement the use of VR in the classroom. The problems with resources in using VR as an

instructional tool included poor internet connection and the lack of access to individual devices for each of the students. This finding confirms Huang et al. (2019) study in which they also found that poor infrastructure was a barrier to the effective use of VR as an instructional tool.

Limitations of the Study

This study had methodological limitations inherent in qualitative studies. As anticipated in Chapters 1 and 3, the sample size of the study would only be adequate to generate transferable but not generalizable results. The target demographic of the study was also limited to middle school Spanish teachers in the United States. However, generalizability was outside of the scope of this qualitative study. Therefore, to address the limitations and increase transferability, I focused on following rigorous and ethical qualitative methodology as well as providing thick descriptions of the context of this study. Readers can draw their own conclusions about the applicability of the findings to another context.

The participants were selected through purposive sampling in which one inclusion criterion was being a teacher who has used VR as an instructional tool for Spanish language. This study did not include the attitudes and insights of middle school Spanish teachers who have not used VR as an instructional tool. Teachers who have not used VR may have different perceptions than teachers who have used VR. Teachers who have experience using VR as an instructional tool were only limited in one of the following and not all VR tools: Google Expeditions, Aurasma, or Mondly. Perceptions on other VR programs were not included in this study. There was no analysis of the direction of

causation involved in this study, as none of the phenomena was analyzed through correlation. This study was also limited to Spanish language learning in which words were spelled out in Roman alphabets and the students' primary language was English which also utilized Roman alphabets. Languages such as Chinese, Japanese, or Arabic, in which characters are used, may yield different results than in this study when given the same setting of using VR as an instructional tool.

During data collection, some participants associated improved students' grades, class participation, and engagement as benefits of using VR as an instructional tool. While researchers found similar outcomes of using VR, this study was designed to only explore insights on the learning outcomes for middle school Spanish learners when using VR as an instructional tool to develop communicative competence.

Recommendations

Future researchers are recommended to conduct quantitative correlational studies with a large heterogenous sample size. A large sample size may increase the generalizability of the results. A heterogenous sample could also include an investigation of different VR programs, different language courses, different grade levels of the students, as well as different geographic locations in and out of the United States. Future researchers are also recommended to investigate the benefits of using VR outside the scope of communicative competencies. Conducting a study on how the other benefits of using VR might act as moderators or mediators to the desired learning outcomes when using VR as an instructional tool may also serve to advance the literature on the use of VR as an instructional tool.

Some participants of this study revealed that they used VR as a supplementary learning tool in which they initially introduced their lessons through lectures prior to using VR for simulated experiences to contextualize the concepts the students were learning in class. Given this finding, it is recommended for future researchers to explore the impacts of language learning with and without lectures to further assess the extent of VR's impact on language learning in such context.

Implications

This study was aimed at exploring the perspectives of middle school Spanish teachers about the use of VR technology as an instructional tool for developing communicative competence in Spanish language learning. The findings revealed benefits and challenges of using VR as an instructional tool. This section contains the implications of the findings on positive social change, theory, and practice.

Positive Social Change

School leaders may use the results of this study to justify the choice of VR as an instructional tool for Spanish language learning in middle schools and allocate funds to purchase VR programs and equipment across the United States. Reinforcing the use of VR could improve students' communicative competence, as well as participation, confidence, interaction, collaboration, and self-directed learning. The outcomes outside of communicative competencies may indicate a positive social change when applied to other subjects.

School leaders may also use the findings to improve the rules and regulation of students bringing personal gadgets to school. The findings of this study revealed

challenges in the lack of devices in school and that students bringing their own devices could resolve the problem. Using electronic devices could expose the students to technological skills that they could use in the future.

School teachers may use the findings to understand the need for innovative teaching tools to improve the students' learning and academic outcomes as well as other skills. The findings may also be used as a basis to develop workshops and seminars for teachers to use VR as an instructional tool for language learning. When teachers are educated about the use of VR, they may be more likely to accept its use in teaching. Teaching the use of VR as an instructional tool could indicate an attitude of accepting rather than resisting new pedagogical practices for the benefit of the students. Moreover, students could benefit from being interested and participative in class.

Practical Implications

The findings revealed that VR can be a tool to target multiple communicative competencies in language learning at once; thus, improving overall academic performance in the language learning course. Regarding the implications for practice, middle school teachers across the United States should be encouraged to utilize VR to improve the vocabulary, speaking proficiency, writing proficiency, and listening comprehension of their students in Spanish class. Specifically, middle school teachers can use VR as an instructional tool to immerse their students in the context of the language they are learning and produce simulated experiences that mimic real-life experiences rather than confining learning to lectures and textbooks. The simulated experiences allowed the students to associate the words they have learned to a specific

context while being exposed to spelling and grammar. Simulations through VR also increased students' interest and engagement in learning as they included experiences of travel, sports, and pop culture. However, teachers should also be aware of the disadvantage of overusing VR.

The findings of this study also revealed that using VR for learning improved class participation, confidence, independent learning, interaction, and collaborative skills. Teachers may consider using VR to teach other subjects for the potential for similar social change outcomes. School leaders are encouraged to support the use of VR as an instructional tool to promote a conducive language learning environment through simulations to reduce the time and cost of language learning.

Conclusion

The purpose of this basic qualitative study was to explore the perspectives of middle school Spanish teachers about the use of VR as an instructional tool for developing communicative competence in Spanish language learning. This study was built upon Canale and Swain's (1980) theory of communicative competence with the backdrop of technological determinism theory (Veblen, 1919) and instrumentalism theory of technology (Feenberg, 1991). The study was informed by the data gathered from interviewing eight middle school Spanish teachers across the United States. This study was guided by one primary RQ and four sub-Qs. The primary RQ concerned the participating teachers' perspectives of their use of VR as an instructional tool for developing communicative competence in Spanish language learning. The sub-Qs concerned the participants' perceptions regarding the use of VR as an instructional tool

for vocabulary development, speaking proficiency, writing proficiency, and listening

comprehension in Spanish language learning.

The findings of this study focused on the benefits and challenges of using VR as

an instructional tool. The benefits were not limited to communicative competencies in

Spanish, but also included skills that may be applicable in other learning experiences.

The findings revealed that with the emergence of other skills from the use of VR, the

learning outcomes also improved. When students were participative and engaged, and

developed confidence, collaboration, accountability, and independence when using VR,

their performance in Spanish class also improved. These findings aligned with prior

literature in which soft skills were advantageous to developing hard skills among students

and adult learners (Halimah et al., 2022; Schislyaeva & Saychenko, 2022). However, the

implementation of using VR as an instructional tool may be challenging when the

programs were not supported by the school and district leaders. When educational leaders

do not support an initiative, subordinates such as teachers tended to fail to see the value

of the program (Barrett et al., 2020; M. Chen et al., 2021; Kühn, 2019). Resources may

also be difficult to obtain due to budget constraints (Huang et al., 2019).

To conclude, VR can be an effective instructional tool for developing

communicative competencies. The human brain tends to interpret simulated experiences

in VR as real-world experiences (Barrett et al., 2020; Lee, 2019). VR can be programmed

to immerse the user in contexts and settings that might not be cost and time efficient

when experienced in reality. Thus, the use of VR could facilitate and expedite learning in

a cost- effective manner. VR could also speed up learning, as learners tended to be

engaged and to develop soft skills helpful in learning.

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Appendix A: Recruitment Information

- Are you a middle school Spanish teacher in the United States?

- Have you used virtual reality as an instructional tool in your Spanish language class?

- Would you be willing to share your experience and opinion about using VR as an instructional tool to teaching Spanish?

- Then I need you!

I am conducting a research study titled "Perspectives of middle school Spanish teachers about using virtual reality for learning Spanish" and I need volunteers to participate. The use of VR for learning purposes in educational settings holds great promise and should be investigated to determine how it could be appropriated to enhance Spanish language learning in middle schools across the United States. If you do agree to participate, your participation would involve an online interview that could take between thirty to forty-five minutes of your time. There are no direct risks for participation, all participants will receive a $30.00 thank you gift card after the interview. Additionally, your responses to the questions you will be asked during the interview will contribute to research knowledge in relation to using VR in the classroom for second-language learning. If you would like to participate in this study, contact the researcher at [email address redacted].

Appendix B: Interview Guide

Hello! My name is Betty Ukera-Kajoh and I am a student at Walden University, in the

Doctorate of Education Program. Welcome to my research study titled "Perspectives of

Middle School Teachers About Using Virtual Reality for Learning Spanish." I received

your digital consent to participate in this study but before initiating this interview, I

would like you to confirm that you have not had a change of heart to participate in this

study since you provided your informed digital consent. After that, I will ask you some

screening questions, then a few more questions about your teaching experience. Finally, I

am going to ask you some questions about your perspective in using VR for learning

Spanish.

Confirm Informed Consent

Verbal Reiteration of Participant Rights and Confirmation of Informed Consent

As you know, the purpose of this study is to explore the perspectives of middle

school Spanish teachers about their use of VR as an instructional tool for Spanish. There

are no direct risks or benefits for participating in this study. No compensation will be

provided but your responses will contribute to knowledge generation in relation to the use

of VR for Spanish language learning in middle school. Your participation will be

confidential meaning that the results of this study will be reported and published,

however there will be no information provided that could result in the identification of

any participants. The data will be kept for 5 years, and then destroyed by the deletion of

digital data, and the shredding of any paper documents. You have the rights to privacy

and confidentiality in relation to your personal data and information that you reveal. You

have the right to withdraw from the study at any time, and no reason is required. If you want to withdraw, please contact the researcher at [email address redacted] or [telephone number redacted]. Your participation will take between thirty to forty-five minutes of your time. Do you confirm that you understand the purpose of this study, and agree willingly to participate in this audio-recorded interview?

Demographic Questions (aligned with the inclusion criteria):

1. What grade level do you teach?

2. How long have you been teaching in your current school?

3. Have you used VR as an instructional tool for Spanish language instruction in the classroom?

Opening Questions

What is your most preferred instructional tool when teaching Spanish to your middle school students?

If the answer is VR, ask:	If the answer is not VR, ask:
• What are the advantages of using VR over other instructional tools when teaching Spanish to middle school students?	• Thank you for taking the time to interview with. As I indicated in my recruitment announcement, the target participants for this study are middle school Spanish teachers who use virtual reality to teach Spanish. Since you have indicated that you do not use VR

	in your Spanish class, I do not want to take any more of your time. Thank you again.
• What are the disadvantages of using VR over other instructional tools when teaching Spanish to middle school students?	

Focusing Questions

1. How have you used VR when teaching Spanish to your middle school students?

2. What functions of VR as an instructional tool have you found useful in teaching Spanish to your middle school students?

    a. What functions do you think are targeted to enhance vocabulary?

    b. What functions do you think are targeted to enhance speaking?

    c. What functions do you think are targeted to enhance writing?

    d. What functions do you think are targeted to enhance listening?

3. What changes did you observe in students' Spanish proficiency when you started using VR?

    a. What changes in vocabulary have you observed among your students?

    b. What changes in speaking have you observed among your students?

    c. What changes in writing have you observed among your students?

    d. What changes in listening have you observed among your students?

4. How else do you think using VR as an instructional tool has changed the learning of your middle school students?

    a. What changes in motivation have you observed among your students?

    b. What changes in technology literacy have you observed among your students?

    c. What changes in class engagement have you observed among your students?

5. How do you describe your successful use of VR as an instructional tool when teaching Spanish to your middle school students?

6. What challenges have you experienced in using VR as an instructional tool when teaching Spanish to your middle school students?

7. What did you do to overcome the challenges you experienced in using VR as an instructional tool when teaching Spanish to your middle school students?

8. What support did your school provide to help you overcome the challenges you experienced in using VR as an instructional tool when teaching Spanish to your middle school students?

    a. What resources did the school provide to help you use VR as an instructional tool when teaching Spanish to your middle school students?

    b. How did your supervisor help you use VR as an instructional tool when teaching Spanish to your middle school students?

    c. What school policies helped you use VR as an instructional tool when teaching Spanish to your middle school students?

9. How did your school prepare you to use VR as an instructional tool to teach Spanish to your middle school students?

    a. How did the school introduce VR as an instructional tool?

    b. What training did the school provide to help you use VR as an instructional tool?

10. What recommendations do you have to improve the use of VR as an instructional tool to teach Spanish to middle school students?

Closing Question

Do you have anything else to add?

Conclusion

This is the end of the interview. I appreciate your honest and detailed responses. I will be immediately transcribing this interview after which I will send a copy of the transcription to your email. Kindly review the accuracy of your responses in my transcription. Feel free to edit the responses as needed to clarify some of your responses or add any details you may have forgotten during the interview. Your review is part of the member checking process which is vital to the trustworthiness of this study. I may also contact you if there is need for additional clarifications or follow-up. Thank you!

Appendix C: Codebook

Initial Codes	Pattern Codes/Initial Themes	Themes	No. of Supporting Participants	No. of Occurrences in the Data
		Using VR for language learning targets multiple communicative competence at once	8	25
students can learn 21st Century skills	students can learn 21st Century skills		2	3
	students can learn meanings of words and practice speaking in a given context		8	19
frontloading words during 'tours'			2	2
frontloading words through creating presentations			3	3
learn from simulated concrete experiences			5	8
learn meanings of action words			1	1

Initial Codes	Pattern Codes/Initial Themes	Themes	No. of Supporting Participants	No. of Occurrences in the Data
learn through interactive activities			1	1
learn words with context			3	3
simplified learning process			1	1
students can practice spelling, grammar, reading, and listening comprehension			1	3
		Using VR as an instructional tool increased student participation	8	22
increased student engagement	increased student engagement		4	6
	increased students' excitement for class		7	12
a variety of activities			1	1
-easy to prepare for class			1	1
-not used all the time, only for special projects			1	2

Initial Codes	Pattern Codes/Initial Themes	Themes	No. of Supporting Participants	No. of Occurrences in the Data
students are technologically inclined			2	2
		Using VR as an instructional tool can be challenging when not supported by leaders	7	20
	different levels of support		7	14
gaining attention			1	1
introduced and supported by district			7	9
attended PD about the use of VR to teach language			3	4
-not supported			1	1
other teachers are not interested			2	2
other teachers don't have time to learn			1	1
	inadequate resources		4	6
not enough devices			3	5

Initial Codes	Pattern Codes/Initial Themes	Themes	No. of Supporting Participants	No. of Occurrences in the Data
not part of approved budget			1	1
not sufficient connectivity			1	1
		Using VR as an instructional tool increased opportunities to interact and collaborate with peers	4	7
	increased chances for collaboration among students		4	7
	creates shared meaningful learning experiences		2	2
students collaborate and hear each other speak			2	2
students gave feedback to each other			1	1
using vr app along with interaction with teacher and peers			1	1
		Using VR as an instructional tool promoted	5	16

Initial Codes	Pattern Codes/Initial Themes	Themes	No. of Supporting Participants	No. of Occurrences in the Data
		student-led learning		
	promoted student-led learning		5	16
increased active learning experience			5	8
students can choose their level			3	4
increased independent learning			3	3
increased student ownership			3	5
		Using VR as an instructional tool promoted students' ability to express themselves confidently	6	13
	increased self-expression		2	2
increase opportunities for self-expression			1	1
increased students' creativity			1	1
	increased students'		6	11

Initial Codes	Pattern Codes/Initial Themes	Themes	No. of Supporting Participants	No. of Occurrences in the Data
	confidence in oneself			
decreased anxiety in making mistakes			2	2
students are evaluated immediately			3	4