ELEMENTARY EDUCATORS' PERCEPTIONS OF ONLINE EDUCATIONAL

RESOURCES IN A PERSONALIZED LEARNING CLASSROOM: A

PHENOMENOLOGICAL STUDY

by

Victoria Diana Stephens

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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2020

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APPROVED BY:

Christopher Clark Ed. D, Committee Chair

Gail Collins Ed. D, Committee Member

ABSTRACT

The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. Guiding this study was Siemens' 2005 connectivism learning theory, as it explains how students in the current era, the Knowledge Age, acquire knowledge and deepen understandings through digital learning. The central research question used to drive the study was: How do elementary educators explain their perceptions of the use of OER and VLE in personalized instruction for students? The data collection methods used in this study consisted of in-depth semi-structured interviews, observations, and document analysis of primary sources classified as instructional documents. The data analysis for this study included a conceptual framework used for coding, open coding, memoing, and final coding with winnowing. The data collected revealed that elementary educators perceived VLE as a supplemental support to their direct teaching and tutoring tool for digital learners in personalized learning classrooms. Educators felt that VLE was not able to meet the academic needs of students as a direct instruction tool. Findings revealed that educators perceived VLE to be inadequate and not appropriate when used with the special needs population of digital learning students.

Keywords: digital learner, personalized learning, open educational resources, virtual learning environments

Copyright Page

Dedication

This dissertation is dedicated to my devoted and loving husband, John, as well as; my amazing children, Isabella, James, Leonardo, and Dominic. I love you more than words can express. Thank you for walking with me through this journey.

Acknowledgments

"Therefore, I will give thanks unto thee, O Lord, among the heathen, and I will sing praises unto thy name" (2 Samuel 22:50, King James Bible). The completion of this dissertation is a testimony to the love and grace of God. He carried me throughout the entire journey and never left my side. He gave me strength to make it through the sleepless nights and struggles. Thank you, Lord for your undying love.

A heartfelt thanks to the amazing educators that agreed to be part of this study. I could not have done this without you.

I would be no where if it was not for the support of my husband. Thank you for always pushing me to continue and for being my editor.

With deep gratitude, I must thank my chair, Dr. Clark, and methodologist, Dr. Collins. Thank you for supporting me and taking the time to make this journey with me.

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List of Abbreviations

English Language Learning (ELL)

Institutional Review Board (IRB)

Independent Education Plan (IEP)

Massachusetts Institute of Technology (MIT)

Open educational resource (OER)

Technological pedagogical content knowledge (TPACK)

United States of America (USA)

Universal Design for Learning (UDL)

Virtual learning environment (VLE)

Web-based tools Web Content Accessibility Guidelines (WCAG)

CHAPTER ONE: INTRODUCTION

Overview

Advances in technology have revolutionized education from teacher-centered learning to student-centered learning for Knowledge Age students (Kivunja, 2014). The Knowledge Age consists of students whose intellectual advancement and skill development results from personalized digital learning paths (Kivunja, 2014) and collaborative technology platforms that develop knowledge (Bishara, 2016). Open educational resources (OER) are being used to create personalized digital learning paths and provide collaborative technology platforms for elementary students (Ramirez-Montoya, Mena, & Rodriguez-Arroyo, 2017); however, educators are not being heard on the effectiveness of these resources to meet the academic needs of the diverse student population that encompasses a 21st-century elementary classroom (Cheok, Wong, Ayub, & Mahmud, 2017; Ertmer, Ottenbreit-Leftwich, & York, 2007; Harbi, 2016; Nusir, Alsmadi, Al-Kabi, & Sharadgah, 2013). The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. This chapter begins with the background including the historical, social, and theoretical context of OER and VLE. The chapter moves on to detail the situation to self and significance of the study, which is followed by the problem statement and purpose statement. The chapter concludes with the research questions and all relevant definitions for this study.

Background

With current advances in technology, the push to differentiate instruction and educational materials to meet the diverse learning needs of 21st-century students has opened the classroom

doors to technology-based adapting instruction that guides learners down individualized learning paths through the use of OER (Bishara, 2016; Liu, McKelroy, Corliss, & Carrigan, 2017; Schuetz, Biancarosa, & Goode, 2018). OER is defined as educational and research resources such as textbooks, video lessons, software, and learning platforms; that reside in the public domain and are free to use as a result of open intellectual property license (Belikov & Bodily, 2016; Clements & Pawlowski, 2011; Doan, 2017; Ramirez-Montoya et al., 2017). OER are being used in the classroom as an educational tool to "transcend barriers" and aid in "educational attainment" (Ganapathi, 2018, p. 2).

Current classrooms are filled with digital learners of the Knowledge Age who use OER as a tool to create collaborative intelligence (Schroer, 2018; Siemens, 2005). Digital learners are students who learn through collaborative technology platforms that allow them to synthesize their knowledge with that of others (Ramirez-Montoya et al., 2017). Without the use of OER and, particularly, virtual learning environments (VLE), a component of OER (Ruiperez-Valiente et al., 2016), the student will struggle to engage the material in a manner that is cohesive to their learning mode (Dayag, 2018) and they will fail to thrive as productive members of the global workforce (Alismail & McGuire, 2015; Siemens, 2005). Classroom educators must develop a 21st-century skill set through the implementation of OER in each of their students in order for the students to be college and career ready (Bishara, 2016; Buskist, Reilly, Walker, & Bouke, 2016; Downs, 2010).

Elementary educators teaching in personalized learning classrooms are personalizing the digital learner's instructional path through the use of VLE to meet the academic needs of the student (Office of Ed Tech, 2017) as well as the societal demands for qualified workers (Alismail & McGuire, 2015). However, there is a deficit in the research on the use of VLE in personalized

learning classrooms (Cheok et al., 2017; Ertmer et al., 2007; Harbi, 2016; Nusir et al., 2013). In order to understand the impact of VLE on digital learners in elementary personalized learning classrooms, the perceptions of educators should be obtained since the beliefs and perceptions of educators are essential in meaningful use of VLE (Bray & Tangney, 2017; Ertmer et al., 2006; Nusir et al., 2013). Researchers are calling for further studies that establish the perspectives of educators on the use of OER (Belikov & Bodily, 2016; Cheok et al., 2017; Clements & Pawlowski, 2011; Ertmer et al., 2007; Harbi, 2016; Nusir et al., 2013; Ramirez-Montoya et al., 2017; Rolfe, 2017).

Historical Context

OER originated in the 20th century from the open and distance learning movement that sought to create a wider culture of open knowledge through free resources and collaboration (Ramirez-Montoya et al., 2017; Wiley, 2006). OER gained global attention with the educational community, including the United States of America's (USA) public schools when large educational institutions, such as the Massachusetts Institute of Technology (MIT) began to use them in their programs (Ganapathi, 2018). OERs have gained recognition and use in elementary schools and teacher education programs since they enable educators to expand students' knowledge at no cost while providing academic support (Ramirez-Montoya et al., 2017). OERs are teaching, learning, and research resources that are located in the public domain of the internet and have been released for free use and repurposing use under "an intellectual property license" or have a Creative Commons license (Cooney, 2017, p. 156). OERs are used to bridge the gap between formal and informal knowledge transmission and have been acknowledged and embraced by various governments and organizations for their prime objective of widening participation in education (Ganapathi, 2018).

Social Context

OER have gained social significance in personalized learning through the use of VLEs, such as Khan Academy, Dreambox, and IXL, and in collaborative learning through the use of SlideShare, YouTube, and Vimeo (Lesko, 2013; Schuetz et al., 2018). Research has shown that OER, used in conjunction with classroom instruction, can enable select populations of students to self-regulate and self-direct their learning (Bishara, 2016; Liu et al., 2017; Musti-Rao & Plati, 2015; Outhwaite, Gulliford, & Pitchford, 2017; Schacter & Booil, 2016; Schuetz et al., 2018). OER offer success with low-performing mathematics students and students with a low socioeconomic status (Bishara, 2016; Outhwaite et al., 2017: Schacter & Booil, 2016); however, research has found that students' academic performance decreased by 25% when they were forced to use OERs (Ruiperez-Valiente et al., 2016). Current research provides inconsistent results on the effectiveness of OER on student academic achievement (Cabi, 2018; Schacter & Booil, 2016; Schuetz et al., 2018).

In addition, Smith and Harvey (2014) found that Khan Academy, a prominent public education VLE, does not meet the Universal Design for Learning (UDL) framework created from standards set forth by Web-based tools Web Content Accessibility Guidelines (WCAG) and Section 508 of the Rehabilitation Act, establishing with Cabi (2018) that VLE do not meet the learning needs of students with learning disabilities. Nusir et al. (2013) on the other hand, found that e-learning had a positive academic impact on students with learning disabilities, as they were afforded access to material that they could not access in traditional teaching classrooms. Educators are the source of understanding on the successful application of OER in elementary classrooms (Carver, 2016; Cheok et al., 2018; Harbi, 2016). The inconsistent results and lack of universal success for all populations of students indicate a need for further research in the area of

educators' perceptions on the application of OER in elementary classroom education. While

studies have been conducted exploring the role of the educator in OER (Bottge, Ma, Gassaway,

Toland, Butler, & Cho, 2014; Musti-Rao & Plati, 2015; Outhwaite et al., 2017), there is a gap in

the literature with regard to educators' perceptions of OER. These studies may be a key piece to

increasing understanding of the successful application of OER and VLE particularly in

elementary classrooms (Carver, 2016; Cheok et al., 2018; Harbi, 2016).

Theoretical Context

Advances in technology have created adaptive and corrective feedback features within

OER technologies leading to the creation of VLE, an integral component of OER (Ruiperez-

Valiente et al., 2016). Educators use the adaptive learning technology found within VLE to

personalize instruction and lessons, thereby; meeting each student's unique learning needs while

increasing the student's content and application knowledge (Biancarosa, & Goode, 2018;

Bishara, 2016; Liu et al., 2017; Ruiperez-Valiente et al., 2016; Schuetz), ultimately resulting in

self-regulated learning for students (Bishara, 2016; Ruiperez-Valiente et al., 2016) and higher

cognitive processing (Anderson, Love, & Tsai, 2014). The network of information found within

OER and the self-regulated learning found particularly in VLE create a "collaborative knowledge

exchange systems and open access publication of scholarly communications" allowing students

to form their own information networks based on the knowledge they have obtained from the

learning communities (Dunaway, 2011, p. 678). VLEs creates a system of collaborative learning

that accesses information from multiple sources and develops knowledge and skills from

extrinsic sources, thereby, establishing the connectivism learning theory in education (Downes,

2005, 2010; Dunaway, 2011; Ganapathi, 2018). Digital learners learn through actively engaging

in the learning process (Dunaway, 2011; Siemens, 2005). Knowledge is no longer stored in

textbooks, but rather in online data bases that are continually updated (Cooney, 2017; Dunaway, 2011; Siemens, 2005). Learning now has an external component where learners make connections with the knowledge that is stored online creating a synthesis between their understandings and skills with the understanding and skills of others located in their learning networks (Dunaway, 2011; Gerald & Goldie, 2016; Lesko, 2013; Mattar, 2018; Siemens, 2005). The process of making connections between ideas located throughout a personal learning network, which is the "information resources and technologies", is the connectivism learning model (Dunaway, 2011, p. 678). OER, as a whole, close the gap between informal and formal knowledge (Ganapathi, 2018), allowing students to develop higher levels of cognitive understandings through networking within the VLE, thereby; illustrating the connectivism learning theory, which accurately describes how students currently learn (Siemens, 2005).

The goal of this transcendental phenomenological study was to provide an understanding on the perceptions of elementary educators who had developed a personalized learning classroom through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. Studying the perceptions of educators will provide researchers, adaptive technology developers, and educators at all levels with an understanding of how VLEs are perceived, used within the lesson, and understood by elementary educators in personalized learning, thereby; enabling more efficacious professional development of pre-service and in-service educators as well as further technological advancements in VLE.

Situation to Self

As a public-school elementary educator, it is essential for me to disclose my experiences with the phenomenon of VLE as an instructional resource. I have been a Georgia public-school elementary educator for seven years, three of which were as a personalized learning mathematics

and science teacher. I hold coaching, gifted, and mathematics endorsements for instruction with students K-5. I have personal experience with VLE, such as IXL, Khan Academy and Dreambox, as intervention tools and instructional resources for fifth- and third-grade digital learning students. A transcendental phenomenology approach allows the me to set aside my personal experiences and feelings about the phenomenon under investigation in order to obtain an unbiased view of the phenomenon (Moustakas, 1994); therefore, the transcendental approach was used in this phenomenological study.

My personal motivation for conducting this study was to better understand how educators perceive the incorporation of VLE as an instructional resource in personalized learning classrooms. There were philosophical assumptions and paradigms that I brought to the research. The ontological assumption, the characteristics and nature of reality (Creswell & Poth, 2018), within my study was that education is composed of perspectives that overshadow the education that students receive and the tools used for instruction. The epistemological assumption, how researchers know what it is that they know (Creswell & Poth, 2018), within my study was that I have a perspective on the use of VLE within personalized learning since I am a personalized learning educator with a vast array of experiences. The methodological assumption, the method used based on the researcher's personal experiences (Creswell & Poth, 2018), was that individualized instruction and student academic success in digital learning would drive this study. The rhetorical assumptions, the procedures that were used to remove the personal impressions and expectations from the research (Patton, 2015), were bracketing, reflexivity journaling, and member checking to establish credibility. I withheld my personal perspective and conducted a study using the most effective means to obtain educators' perspectives on VLE. A paradigm within my study was that all personalized educators use VLEs in personalized

learning classrooms. Another paradigm was that students are only able to make academic gains when the instructional material is differentiated to meet their unique learning needs. In the Lakeside School District (pseudonym) classroom sizes are well over 25 students, therefore; differentiation was achieved most effectively through the use of technology.

Problem Statement

The problem is VLE is being used to meet the learning needs of digital learners and educational societal demands under the claim that students are able to self-regulate their learning and educators are able to provide individualized student-centered instruction (Belikov & Bodily, 2016; Clements & Pawlowski, 2011; Ramirez-Montoya et al., 2017; Rolfe, 2017). However, classroom educators are not being consulted on the effectiveness of VLE to meet the demands of a 21st century learning environment (Belikov & Bodily, 2016; Clements & Pawlowski, 2011; Lesko, 2013; Ramirez-Montoya et al., 2017; Rolfe, 2017; Uzunboylu & Ozdamli, 2011). The current elementary student population consists of students who are considered digital learners, since their intellectual advancement and skill development both result from personalized digital learning paths (Kivunja, 2014) and collaborative technology platforms that develop knowledge through a synopsis of connections that are internal and external (Bishara, 2016; Dunaway, 2011; Gerard & Goldie, 2016; Kelly, 2012; Kizito, 2016; Siemens, 2005). As a result, VLE, a critical component of OER in the realm of self-regulated learning (Georgia Department of Education, 2019; Kelly, & Rutherford, 2017), has become an integral part of the public education system (Bishara, 2016; Liu et al., 2017; Schuetz et al., 2018), thereby; forcing elementary educators to incorporate VLE into classroom instruction without their voices being heard on the effectiveness of VLE in student academic achievement. The success of an educational tool, especially VLE, in the classroom is dependent on the positive perceptions of the educator (Bray & Tangney, 2017;

Carver, 2016; Harbi, 2016); however, educators are not being consulted on the use of VLE in education. The research that has been conducted has provided inconclusive results regarding the effectiveness of VLE to increase student academic growth for a classroom of diverse learners (Cabi, 2018; Smith & Harvey, 2014) and there is a deficit in research addressing the use of VLE in personalized learning classrooms. The problem is that VLE has been incorporated into elementary personalized learning classroom instruction as an academic support without an understanding, from the educators implementing VLE, on the academic effectiveness of VLE for the diverse student body that comprises the classroom.

Purpose Statement

The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. Personalized learning is defined as student self-regulated learning that has customized instruction meeting the students' academic needs instead of a general lesson for the entire class of students (Office of Ed Tech, 2017). VLE is defined as technology programs that provide instruction on an academic concept that includes constructive feedback and the connection of concepts for students through the use of interactive learning activities (Ruiperez-Valiente et al., 2016), and OER is defined as free educational resources that reside in the public domain of the Internet (Belikov & Bodily, 2016; Clements & Pawlowski, 2011; Doan, 2017; Ramirez-Montoya et al., 2017). The theory that guided the study was Siemens' (2005) connectivism learning theory as it explains how 21st-century students acquire knowledge and further develop skills through digital learning. Connectivism was developed from constructivist learning theory after the advances in technology began to develop digital

learning, which took acquiring knowledge and transferring information from the student's

internal world to their external data base (Gerard & Goldie, 2016; Siemens, 2005). Information

is no longer just processed in the student's brain. The connectivism learning theory asserts that

knowledge and skill acquisition are "disruptive" and "consist of networks of connections formed

from experience and interactions between individuals, societies, organizations, and the

technologies that link them" (Gerard & Goldie, 2016, p. 1065). The process of learning and

creating knowledge no longer reside internally in the student but now includes external networks

of information systems (Dunaway, 2011; Gerard & Goldie, 2016; Kelly, 2012; Kizito, 2016;

Mattar, 2018; Siemens, 2005).

Connectivism is a learning theory that specifically addresses how digital learning takes

place in the 21st-century classroom through the collaborative use of VLE (Kelly, 2012; Mattar,

2018). Digital learning is a collaborative learning process where students acquire information

and transfer knowledge through extrinsic information processing in a non-individualistic

collaborative format (Gerard & Goldie, 2016; Siemens, 2005).

Significance of Study

The significance of this study comes in the ability of educators who work in personalized

learning classrooms who teach academically diverse digital learners to have their voices heard on

the impact of VLE as an instructional tool used with digital learners. The educators provided

theoretical significance to this study when they provided a detailed understanding on the role of

VLE and OER in a student's development of knowledge through collaborative learning, thereby,

adding to the theoretical framework of connectivism. The connectivism learning theory states

that students build their skills and develop knowledge through the interaction of external digital

data systems, like that of VLE (Gerard & Goldie, 2016; Mattar, 2018; Siemens, 2005). The

understandings provided by this study has highlighted the connection between VLE and learning in relation to the connectivism learning theory in personalized learning for digital learners. This study has further developed connectivism as a learning theory for the 21st-century classroom providing significance for the current public education system.

Current educators are faced with meeting the diverse academic needs of digital learners who do not acquire knowledge in the traditional manner (Alismail & McGuire, 2015; Downs, 2010; Gerard & Goldie, 2016; Mattar, 2018; Siemens, 2005). Educators increasingly rely on technology to provide self-reflective learning through the use of adaptive learning resources found in VLE on the OER platform (Bishara, 2016; Gerard & Goldie, 2016; Liu et al., 2017; Yoshida, 2016). Research has been conducted to establish the effectiveness of VLE as an instructional resource; however, the results are conflicting (Bishara, 2016; Cabi, 2018; Liu et al., 2017; Musti-Rao & Plati, 2015; Outhwaite et al., 2017; Ruiperez-Valiente et al., 2016; Schacter & Booil, 2016; Schuetz et al., 2018; Smith & Harvey, 2014) and do not include the voice of educators.

The empirical significance that resulted from this study can be found in the understanding of VLE as an instructional resource for the diverse student base of 21st-century students in a personalized learning classroom, thereby, closing the gap in the literature surrounding educators' perceptions on VLE use with digital learners. Furthermore, this study provided an explanation for the inconclusive research results on the use of VLE in elementary classrooms. In addition, data regarding the effective use of VLE with students of varying academic abilities and needs who utilize individualized learning paths will inform educator training practices (Bishara, 2016; Bottge, Ma, Gassaway, Toland, Butler, & Cho, 2014; Schuetz et al., 2018; Smith & Harvey, 2014). The collected data provided answers to the research questions and developed an

understanding of how elementary educators perceive VLE use in a 21st-century classroom. Ultimately, the success or failure of VLE in the classroom is dependent upon the perspective of the educator (Bray & Tangney, 2017; Carver, 2016; Harbi, 2016). If the educator perceives VLE to be ineffective it will not be used in the manner in which it was developed, thereby; rendering the item ineffective in the educational environment (Bray & Tangney, 2017; Carver, 2016; Harbi, 2016). Educators are the ones implementing VLE and their perceptions of VLE are an imperative component to the successful use of VLE in digital learning. With the dependent nature of digital learners on the collaborative platform of VLE to increase their knowledge and skill base, it is imperative to hear and understand the voices of educators (Downs, 2010; Dunaway, 2011; Gerard & Goldie, 2016; Kelly, 2012; Kizito, 2016; Siemens, 2005).

This study provided an understanding that allows current and future elementary educators to successfully adapt their teaching pedagogy to technological pedagogical content knowledge (TPACK) (Jan, 2017; Koehler & Mishra, 2009), thereby, providing 21st-century students with a foundational education that will permit them to become productive members of the global human capital (Alismail & McGuire, 2015; Nusir et al., 2013). The data collected in this study can provide for the further development of TPACK for pre-service and in-service educators through professional development courses and refined teacher education programs that focus on the use of VLE in student-centered teaching (Jan, 2017; Koehler & Mishra, 2009). The understandings that have been provided from this study may allow individuals contributing to VLE to alter their contribution to meet the diverse learning needs of 21st-century students.

Research Questions

The following are the research questions that were used to guide this study on the use of VLE as instructional tools used by personalized learning elementary educators to meet the instructional needs of digital learners that compose 21st-century classrooms.

Central Research Question

How do elementary educators describe the use of VLE in the personalized instruction for all of their students?

Research has shown that VLE, used in conjunction with classroom instruction, can enable certain students to self-regulate and self-direct their learning (Bishara, 2016; Liu et al., 2017; Musti-Rao & Plati, 2015; Outhwaite et al., 2017; Schacter & Booil, 2016; Schuetz et al., 2018) and adaptive forms of OER can allow the educators to individualize student instruction creating personalized learning (Bishara, 2016; Liu et al., 2017; Yoshida, 2016). VLE has been shown to be moderately successful for diverse student populations (Bishara, 2016; Schacter & Booil, 2016). However, there is a gap in the understanding of VLE use in the 21st-century classroom. There is a deficit in the research illuminating the understanding of the educator's perspective on the use of VLE in personalized learning for all students.

Guiding Question One

How do elementary educators use VLE as an instructional support in the classroom?

Research demonstrates that educators found the use of VLE to be supportive in corrective feedback (Schuetz et al., 2018), increased student motivation (Carver, 2016), and afforded ability to differentiate instruction (Belikov & Bodily, 2016; Craig & Schroeder, 2017). However, research is very limited on the use of VLE as an instructional support resource, and there is a deficit of research on the use of VLE in personalized learning classrooms.

Guiding Question Two

How do elementary educators explain the role of VLE in 21st-century education and digital

learning?

Advances in technology have revolutionized education from teacher-centered learning to

student-centered learning. Classroom educators must develop a 21st-century skill set through the

implementation of VLE for each of their students in order for the students to be college and

career ready (Bishara, 2016; Buskist et al., 2016). Current classrooms are filled with digital

learners of the Knowledge Age who use technology as a tool to create a collaborative

intelligence (Schroer, 2018; "Shifts to 21st Century Thinking," 2018; Siemens, 2005). Without

the use of VLE in the classroom, students struggle to engage with the material in a manner that is

cohesive to their learning mode and may fail to thrive as productive members of the global

workforce (Alismail & McGuire, 2015; Nusir et al., 2013). There is a deficit in the research

explaining the educator's perception of OER in a digital learning classroom.

Guiding Question Three

How do elementary educators describe VLE in relation to meeting the academic needs of the

diverse learners within their classroom?

Research has indicated that VLE is successful for low-performing mathematics students

(Outhwaite et al., 2017; Schacter & Booil, 2016); however, other research has found that

students' academic performance decreased by 25% when they were forced to use VLEs

(Ruiperez-Valiente et al., 2016). Other findings reveal that VLEs did not meet the needs of

students with learning disabilities (Cabi, 2018; Smith & Harvey, 2014) and less than 3% of all

OER instructional videos are learning videos (Multisilta, 2014). Classrooms are made up of

diverse students with a wide variety of learning needs. Understanding VLE's ability to meet

these needs in a personalized learning classroom is imperative for 21st-century education.

Guiding Question Four

How do elementary educators describe the learning needs of 21st-century students?

The core subjects of reading, writing, and arithmetic are no longer the only leaning needs that "every educated person should have mastered" (Kivunja, 2014, p. 8). Technological innovations and global workforce demands require skills such as critical thinking, collaborative problem solving, computer literacy, and digital fluency, that were not part of the curriculum instruction prior to the Knowledge Age, be taught to students (Downs, 2005; Dunaway, 2011; Gerald & Goldie, 2016; Kelly, 2012; Kivunja, 2014; Lesko, 2013; Mattar, 2018; Siemens, 2005). The connectivism learning theory accurately explains how learning includes how knowledge is acquired and manipulated from sources outside of the student as well as the student's ability to make connection between information sources and create a collaborative knowledge (Dunaway, 2011; Siemens, 2005). Research has shown that students no longer learn in the same manner as they did prior to the Knowledge Age (Downs, 2005; Dunaway, 2011; Gerald & Goldie, 2016; Kelly, 2012; Kivunja, 2014; Lesko, 2013; Mattar, 2018).

<div align="center">

Definitions

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The following are the defined terms that are pertinent to this study.

1. *Conceptual Learning-* Conceptual learning is the ability to connect general principle knowledge, procedure knowledge, category knowledge, and symbol knowledge and perform complex thinking (Volk, Cotic, Zajc, & Starcic, 2017).

2. *Connectivism-* Connectivism is a learning theory that evolved from constructivism and the advances in technology. It explains how students, who are now digital learners, acquire knowledge and learn (Kelly, 2012; Mattar, 2018; Siemens, 2005).

3. *Digital learning-* Digital learning is a collaborative learning process that uses technology as the mode of acquiring and transferring knowledge (Gerard & Goldie, 2016; Siemens, 2005).

4. *Online Education Resources (OER)-* Online Education Resources are free educational resources used to create individualized learning, such as online textbooks and technology-based learning platforms (Belikov & Bodily, 2016; Doan, 2017).

5. *Perception-* Perception can most readily be defined as the act of receiving data from an external source and giving that data value based on prior perceived data (Uzunboylu & Ozdamli, 2011).

6. *Personalized learning-* Personalized learning is self-regulated learning with customized instruction that is paced with the academic needs of each individual student (Office of Ed Tech, 2017).

7. *Personalized learning classroom-* A personalized learning classroom is a classroom in which the educator differentiates instruction and customizes the educational material to meet the learning needs of each of the students rather than the traditional one that fits all approaches (Office of Ed Tech, 2017).

8. *Procedural Learning-* Procedural learning is the process of learning the routines, rules, and applications without complex thought patterns (Volk, et al., 2017).

9. *Self-regulated learning-* Self-regulated learning occurs when students move through the instructional material at their own pace and select the lesson material that they want to investigate in depth (Bishara, 2016).

10. *Virtual learning environment (VLR)-* Virtual learning environments are technology programs that provide instructional information, including constructive feedback and

concept connections, to students through the use of interactive learning activities
(Ruiperez-Valiente et al., 2016).

11. *21st-century student*- A 21st-century student is defined as a student born between 1995
and 2012, growing up in the Knowledge Age (also referred to as the 21st-century), who is
by nature a digital learner and is adept at collaboration and at the creation of a "collective
intelligence" instead of being an individual expert. Knowledge and ideas are the main
source of economic growth (Schroer, 2018; "Shifts to 21st Century Thinking," 2018).

Summary

Current elementary classrooms are composed of digital learning students who advance
their understandings and acquire new skills through the use of VLE and collaborative
intelligence (Downs, 2010; Schroer, 2018; Siemens, 2005). The education system is adjusting to
meet the needs of the digital learning students of the 21st-century. However, before any further
adjustments are made to the instructional resources used in the classroom such as the
recommendation of Khan Academy as an instructional resource by each of the states within the
US without research to support such a recommendation (Georgia Department of Education,
2019; Kelly, & Rutherford, 2017), the perceptions of educators on the use of VLE must be
understood. The implementation of elementary instructional resources should be based on sound
research and not successful marketing. Classroom educators are the ones on the frontline of
education and their perceptions are key to the use and implementation of instructional resources
(Bray & Tangney, 2017; Carver, 2016). Therefore, resources should not be implemented
without first understanding the perceptions of the educators who have firsthand experience
utilizing VLE with their students.

VLE is like any other educational resource and must be studied to understand what

population of students will best be served through its use and how it should be used within the

classroom setting (Belikov & Bodily, 2016; Craig & Schroeder, 2017; Doan, 2017). Current

research focuses on the role of the educator in the implementation of VLE in the classroom

(Bottge et al., 2014; Musti-Rao & Plati, 2015; Outhwaite et al., 2017), but not the perceptions of

the educators. With the conflicting results of the current research on the academic

successfulness of VLE in student learning (Bishara, 2016; Cabi, 2018; Liu et al., 2017; Musti-

Rao & Plati, 2015; Outhwaite et al., 2017; Ruiperez-Valiente et al., 2016; Schacter & Booil,

2016; Schuetz et al., 2018; Smith & Harvey, 2014), the perceptions of educators is key to

understanding the role of VLE in the education of digital learners in personalized learning

classrooms (Bray & Tangney, 2017).

The problem is VLE is being used to meet the learning needs of digital learners and

educational societal demands under the claim that students are able to self-regulate their learning

and educators are able to provide individualized student-centered instruction; however,

classroom educators are not being consulted on the effectiveness of VLE to meet the demands of

a 21st century learning environment (Belikov & Bodily, 2016; Clements & Pawlowski, 2011;

Ramirez-Montoya et al., 2017; Rolfe, 2017). The purpose of this transcendental

phenomenological study was to understand personalized learning elementary educators'

perceptions of virtual learning environments (VLE), and using an open educational resource

(OER), as an instructional academic support for students at Lakeside School District. The

understandings provided from this study will aid in completing the picture of VLE as an

instructional resource in personalized learning elementary classrooms. Thus enabling the

development of student-centered instruction that successfully incorporates VLE resulting in

academic advancement for all students within the classroom.

CHAPTER TWO: LITERATURE REVIEW

Overview

This literature review dissects how OER and VLEs in particular have impacted student learning, motivation, and engagement through the use of self-regulated learning, adaptive learning, corrective feedback, and time. This chapter provides the theoretical framework and related literature to OER and VLE in education. The literature review specifically explains what OER and VLE are, defines and explains what self-regulated learning is in relation to OER and VLE, discusses VLE application in core academic subjects, explains VLE's connection to digital learners, and reviews VLE use with special population students. The literature review concludes with a review of the established perceptions of educators. In addition, the literature review clearly identifies the gap that exists concerning how personalized learning elementary educators perceive the inclusion of OERs in general, and VLE specifically, in their daily instruction in a personalized learning classroom, as well as the influence that it may have on a student's further development of knowledge and skills.

Theoretical Framework

The theoretical framework for this study was the theory of connectivism, put forth by Siemens (2005). Technology has transformed the educational learning environment so dramatically that traditional learning theories struggle to explain how students learn and how information is transferred, stored, and retrieved by students (Downs, 2005; Dunaway, 2011; Gerald & Goldie, 2016; Kelly, 2012; Lesko, 2013; Mattar, 2018; Siemens, 2005). The student population that encompasses elementary classrooms today was not socialized or raised in the same manner as the previous generation of students (Downs, 2010; Kivunja, 2014; Noer, 2012; Prensky, 2001), therefore, they do not learn in the same manner. Prensky (2001) conducted a

study on the neuroplasticity, the constant reorganization of the human brain, and discovered that humans have been on a forward progression of retraining thought patterns since the discovery of written language. The forward progression includes the passage of students through the advent of reading, radio, television, and now video games (Prensky, 2001).

Traditional learning theories, like traditional education, are linear, however, a 21st-century student's thought process is parallel, like the connectivism learning theory. The use of linear teaching and learning theories, which dominate the current educational system, can "retard learning for brains developed through game and web-surfing processes on the computer" (Moore, 1997, para 12). The skills established as essential for 21st-century students are no longer just the three R-s, reading, writing, and arithmetic, but also critical thinking, problem solving, innovative thought process, collaboration skills, teamwork, leadership, and digital literacy. Therefore, the connectivist paradigm is now the most appropriate learning theory for 21st-century education (Downs, 2010; Kivanja, 2014; Siemens, 2005). "Teaching our students so that they become well-equipped with the 21st-century skills is the new learning paradigm" (Kivania, 2014, p. 85).

Educators and textbooks are no longer the only resources of information available to students (Cooney, 2017; Downs, 2005; Siemens, 2005). Throughout schools, textbooks have been replaced with the Internet as the primary instructional resource used. Educators are assisted by OERs to provide current and accurate educational material, as well as, interactive and engaging lessons (Cooney, 2017; Dunaway, 2011; Kelly, 2012; Mattar, 2018; Siemens, 2005). With the OER movement into the elementary classroom, it is "increasingly important to demonstrate how such materials are being used, by whom and with what impact" (Lesko, 2013, p. 103). Therefore, a learning theory that accounts for the external learning that takes place

through interactions and collaboration with VLE is needed to understand how students learn and acquire knowledge through the use of OER and, specifically, how VLE is related to student development of knowledge and skills.

The needs of 21st-century students and education are "encapsulated by the connectivism approach to learning" since it provides the educators with the opportunity to "see learners interconnected in collaborative environments that are open-ended and in which computer mediation, driven by internet technologies, facilitates and enhances learning" (Kivania, 2014, p. 90).

Siemens (2005) observed that the fundamental learning theories that have driven education, "behaviorism, cognitivism, and constructivism do not attempt to address the challenges of organizational knowledge and transference" of information that occurs in the Knowledge Age between learners and technology; i.e., digital learning (Learning Theories section, para. 20). Digital learners derive their competence from "forming connections" (Siemens, 2005, Learning Theories, para. 15) between the things that they know and the information that they have obtained through technology and online learning communities (Gerald & Goldie, 2016).

Learning is no longer an activity in which one engages alone, but rather an "interactive activity within dynamic communities that comprise Peer Learning Networks" (Kivania, 2014, p. 90). Behaviorism, with key contributors Watson, Pavlo, Skinner, Thorndike, and Bandura, is based on the theory that learning occurs as a response to environmental stimuli with either positive or negative reinforcements (Kelly, 2012; Kivania, 2014).

Cognitivism, with key contributor Piaget, is based on the theory that learning is a process of taking information in, processing it, and retaining it (Kelly, 2012; Kivania, 2014).

Constructivism is a learning theory that is based on the acquisition of knowledge through intrinsic and extrinsic collaborative learning that occurs when students take in new information and construct meaning for it based on information they have synthesized between what they already know and with their digital communities (Kelly, 2012; Kivania, 2014; Mattar, 2018; Siemens, 2005). These earlier fundamental learning theories did not address external learning or digital learning that takes place in a 21st-century education; therefore, Siemens (2005) developed the connectivism learning theory which captures digital learning and collective knowledge (Gerald & Goldie, 2016; Kelly, 2012; Kivania, 2014; Mattar, 2018; Siemens, 2005) "Connectivism is one of the most prominent of the network learning theories that have been developed for e-learning environments" (Gerald & Goldie, 2016, p. 1064).

The Knowledge Age, also referred to as the 21st-century, is defined as the era where collaboration of information is used to develop a collective intelligence using technology between groups of individuals instead of from individual experts (Schroer, 2018; "Shifts to 21st Century Thinking," 2018; Siemens 2005). Knowledge and ideas are the main source of economic growth for the 21st-century, which has created a demand for a human capital; a global workforce, that is able to collaboratively create information using technology (Kivania, 2014; Nusir et al., 2013; "Shifts to 21st Century Thinking," 2018; Siemens 2005).

The digital learning that takes place as students acquire information from technology and then share it is not captured by prior learning theories, therefore, Siemens (2005) developed the theory of connectivism. "Connectivism is the integration of principles explored by chaos, network, and complexity and self-organization theories" (Siemens, 2005, para. 11). Connectivism is the learning theory for the digital age as it accounts for the network learning

format in which 21st-century students learn (Dunaway, 2011; Gerald & Goldie, 2016; Kelly, 2012; Lesko, 2013; Mattar, 2018; Siemens, 2005).

Connectivism is academically engaged collaborative learning that is non-individualistic student-centered and based on the transfer of knowledge between a student's internal and external networks (Downs, 2010; Siemens, 2005). Therefore, it is perfectly suited to drive this study on VLE use in education. VLE is based on the transfer of information between individuals using external and internal networks of understanding (Cooney, 2017; Lesko, 2013). Connectivism and VLE are based on the premises that knowledge is continually evolving from information that is located globally in public forums (Cooney, 2017; Lesko, 2013: Siemens, 2005). This study further expanded the understanding of connectivism in 21st-century education because it precisely explains the way in which students transfer, retrieve, and store information using OER and VLE.

In addition, this study further advanced the use of the connectivism learning theory in elementary education as the cornerstone of instructional planning and the foundation in which lessons should be based. With Connectivism, students synthesize ideas and information as they focus on patterns, connections, and similarities that they simultaneously share and network in order to grow in their understanding (Downs. 2005; Dunaway, 2011). OER and VLE close the gap between informal and formal knowledge (Ganapathi, 2018) by providing students with an external network of knowledge that they are able to manipulate to create knowledge.

"Learning is no longer a lonely, DIOYO (do it on your own) experience, but an interactive activity" in collaborative learning communities that build knowledge by connecting information from various sources (Kivunja, 2014, p 90). The connectivism learning theory explains how in the 21st-century learning takes place; therefore, this study connected the learning

that occurs with the use of VLE to the connectivism learning theory and further the placement of connectivism as the learning theory of the 21st-century. The connectivism theory was used to drive this study on elementary educators' perceptions on the use of VLE with digital learners due to the direct connection that it has to digital learning (Cooney, 2017; Lesko, 2013: Siemens, 2005).

Related Literature

The 21st-century elementary education system has begun to transform from teacher-centered instruction to student-centered instruction with the use of self-regulated learning and adaptive resources (Bishara, 2016; Ganapathi, 2018; Liu et al., 2017; Schuetz et al., 2018). Self-regulated learning consists of active student engagement and student paced progression through instructional material that is differentiated to meet the student's unique learning profile, including method and mode of instruction (Bishara, 2016). Self-regulated learning found in VLE is essentially individualized learning, i.e. personalized learning (Ruiperez-Valiente et al., 2016). With current advances in technology, educators are able to use VLEs to personalize the student's instruction, practice lessons, and interventions in an inexpensive manner that adds depth to the student's understanding and meets the digital learning needs of 21st-century students in ways traditional teaching methods cannot (Belikov & Bodily, 2016; Doan, 2017).

Research studies have provided consistent evidence that student engagement increases (Ruiperez-Valiente et al., 2016; Volk et al., 2017) and the gaps in skills and knowledge are able to be closed for low-achieving students (Musti-Rao & Plati, 2015; Outhwaite et al., 2017) with the use of VLE. However, concerns have been raised on the inefficiencies of VLE for diverse student populations, such as students with learning disabilities (Smith & Harvey, 2014) and academically advanced students (Anderson et al., 2014; Schuetz et al., 2018). Schuetz et al.

(2018) found that the academically advanced students received more support when using VLE than did their peer counterparts. Some research has raised concerns in regard to VLE increasing the socioeconomic gap between students, thereby, placing at risk students further behind their peers, by creating equality in the classroom and not equity (Brown, 2012; Noer, 2012; Witte, Haelermans, & Rogge, 2014)

In addition to meeting the 21st-century students' unique digital learning needs and their academic support needs, educators must use VLE to meet the societal demands of collaborative learning for students who are able to use technology to create collective knowledge (Niemela & Helevirta, 2017; Witte et al., 2014). The Georgia Department of Education (2008) found that the core academic subjects must be "explicitly" integrated with VLE in order to develop the technology literacy skills necessary in 21st-century education. Due to the positive correlation between a student's education and human capital development in future labor markets (Weeraratne & Chinn, 2018), educators are tasked with developing lessons that use VLE instructional materials that will assist all students in becoming college and career ready (Buskist et al., 2016), as well as become productive members of the global workforce (Alismail & McGuire, 2015). Weeraratne and Chinn (2018) found that computer aided remedial programs found in VLE are able to increase student test scores by nearly double when compared to teacher based remedial programs that do not include VLE use. VLE is an essential component of human capital development and essential to the 21st-century students' instruction (Anderson et al., 2014; Weeraratne & Chinn, 2018).

Some neuroscientist and whole brain theorists have recommended the use of VLE to meet these societal and student learning demands since they have found that VLE use increases the cognitive load for students not identified as a gifted learner (Anderson et al., 2014). VLE is

not serving about 8-10% of the students since they are identified as gifted learners (The

Governor's Office of Student Achievement, 2018); therefore, VLE appears to be ineffective as a

whole class instructional tool to increase a student's cognitive load and enable them to be college

and career ready. The perception of educators is needed to determine that actual effectiveness of

VLE, since 35% of the student population within an elementary classroom setting are identified

as advanced learners who have yet to be identified as gifted which means VLEs are ineffective

for 43-45% of the class (Anderson et al., 2014; The Governor's Office of Student Achievement,

2018).

  With the advancement of VLE into the public education system the focus of many studies

has been on the impact of technology on student academic achievement and development toward

productive human capital, however, there is a deficit in the qualitative research regarding VLE in

public education (Almekhlafi & Almeqdadi, 2010). Therefore, this literature review is primarily

composed of quantitative studies.

Role of Educator

  The educator's teaching pedagogy and perceptions of VLE dictate the type of resources

used to instruct students as well as contribute to the student's academic outcomes (Brom et al.,

2017; Weeraratne & Chinn, 2018). In addition, an educator's willingness to implement VLE as

an educational resource will indicate the degree to which VLE is used in classroom instruction as

well as affect student academic achievement and human capital development (Weeraratne &

Chinn, 2018). The role of an educator in 21st-century elementary education is to decide the

degree of student involvement with VLE (Brom et al., 2017; Weeraratne & Chinn, 2018) and

coach students as they navigate through educational material (Wessa et al., 2011). The degree of

student involvement in VLE impacts the classroom use, flow of instruction, complexity of

learning environment, and outcome of interventions (Brom et al., 2017; Downes, 2010). An observation of classroom instruction will allow me to determine the degree of VLE use as an instructional resource.

The educator determines the intrinsic and extrinsic motivation as well as the overall instructional load for the classroom and individual student (Brom et al., 2017; Downes, 2010). The role of the educator is to determine the degree in which VLE is to be used based on each student's individual academic needs (Brom et al., 2017; Downes, 2010), therefore, the perception of the educator is critical in the effectiveness of VLE as an instructional resource (Bray & Tangney, 2017; Carver, 2016; Ertmer, Ottenbreit-Leftwich, & York, 2006).

Current research has indicated the role the educator plays in the implementation and use of VLE within the classroom (Musti-Rao & Plati, 2015; Outhwaite et al., 2017; Ruiperez-Valiente et al., 2016; Volk et al., 2017); however, it does not investigate the educator's perception of the effectiveness of VLE to develop the skills and knowledge necessary for students to be college and career ready within a personalized learning classroom. Since educators are the individuals implementing VLE into the classroom, they are best suited to determine if VLEs are an integral component of 21st-century elementary education (Bray & Tangney, 2017; Carver, 2016; Ertmer, Ottenbreit-Leftwich, & York, 2006). Further research is needed to understand elementary educators' perceptions on the effectiveness of OER and VLE in particular within a personalized learning classroom in part because in the college setting, Doan (2017) found "the largest barrier to OER adoption is faculty" (p. 665).

Educator Perceptions

The perceptions of educators are a key component in the use of technology within the classroom (Witte et al., 2014). The educator's perception of an educational resource will dictate

the usage of that resource as well as the effectiveness of that resource (Weeraratne & Chin, 2018; Witte et al., 2014). Perception can most readily be defined as the act of receiving data from an external source and giving that data value based on prior perceived data (Uzunboylu & Ozdamli, 2011). "The perceptions of educators are of greatest significance" in education (Uzunboylu & Ozdamli, 201, p. 546).

According to Microsoft and McKinsey & Company's Education Practice's (2017) research, 67% of educators indicated a need to shift instruction to personalized learning through the use of VLEs such as Minecraft Education. VLE has the capabilities when used as intended to increase student academic achievement, close academic gaps, create equitable education, and produce human capital, thus, meeting societal demands (Anderson et al., 2014; Ganapathi, 2018; Weeraratne & Chin, 2018; Witte, et al., 2014); therefore, research needs to be done to understand the perceptions of personalized learning elementary educators on VLE as an instructional resource to determine if VLE is being used to its full capabilities.

Schuetz et al. (2018) found during their investigation that traditional classroom educators' felt that VLEs were able to provide more corrective feedback to students than educators could have in the same amount of time. Carver (2016) found that educators obtaining higher degrees, and science, technology, engineering, and mathematics (STEM) educators, considered technology as a tool that increases student engagement and motivation. Research has highlighted how the perceptions of pre-service teachers impact the use of VLE in the classroom as an effective tool for differentiation and interventions (Belikov & Bodily, 2016; Craig & Schroeder, 2017); however, there is a deficit on research on the perceptions of personalized learning elementary educators use of VLE.

School administration influences the educator's classroom practices, as well as how VLE is used within classroom instruction in such a way that a similarity should exist across classrooms within the same grade ban and school (Horn & Ramey, 2004); however, Horn and Ramey (2004) could not find a similarity between classrooms. Instead they found that the level of successful implementation of VLE was influenced by the educator's belief in VLE to increase students' skills and understanding (Horn & Ramey, 2004). Measurements of educator's beliefs are considered proxy to the instructional resources and normative activities are utilized (Horn & Ramey, 2004). An educator's perception on the effectiveness will dictate their use of VLE as an instructional resource, as well as, the effectiveness of VLE in the student's academic achievement and human capital skill development (Horn & Ramey, 2004). Studies found that VLE use depends on perceptions of the educator and requires extrinsic motivation for implementation (Ertmer et al., 2007; Harbi, 2016). The educator's willingness to "accept or reject VLE" as an instructional tool and their "positive attitudes towards VLEs determine how effective the implementation of e-learning technology can be" (Harbi, 2016, p. 108).

Harding (2018) found that educators are facing a "perfect estorm" as they try to link the student academic needs to technology through their pedagogy. Yet, educators are the unheard voice in the VLE movement and as a result very little is known about how VLE is "perceived by those individuals the closest associated with it" (Rolfe, 2017, para 12). Researching the perceptions of educators on "VLE is important in understanding how they might use it to enhance student learning" and address the e-storm facing education today (Harding, 2018, p.61). Uzunboylu and Ozdamli (2011) determined through their study that successful integration of technology requires the perceptions of the educators facilitating that integration and noted that "primary school teachers should be used as participants" (p. 553). Further research is needed to

understand the perceptions of a personalized learning elementary educators since personalized learning is the mode of instruction for a 21st-century classroom (Belikov & Bodily, 2016; Clements & Pawlowski, 2011; Lesko, 2013; Ramirez-Montoya et al., 2017; Rolfe, 2017; Uzunboylu & Ozdamli, 2011).

Open Educational Resources (OER)

OER originated in the 20th century as a result of the open and distance learning movement, which sought to create a wider culture of knowledge through resources and collaboration made available freely through the Internet (Ramirez-Montoya et al., 2017; Wiley, 2006). OERs are teaching, learning, and research resources that are located in the public domain of the Internet and have been released for free use and repurposing under "an intellectual property license" or have a Creative Commons license (Cooney, 2017, p. 156). OER is widely used in upper and middle education due to its "multi-directional flow of knowledge" and ability to provide "equitable and widespread diffusion" of information while developing skills and understandings that will allow students to overcome academic barriers (Ganapathi, 2018, para 3). Increasing their appeal, OERs are available at no cost to the educator (Ramirez-Montoya et al., 2017). OER provides equal access to educational material to all students regardless of their socio-economic standing or prior level of education (Neupane, 2014). In addition, OER is easier to transport than textbooks, identify and locate specific instructional material from, and provide up-to-date material (Doan, 2017; Neupane, 2014).

Consequently, OERs and VLEs are being widely used within the elementary educational setting without the research to support their use nor guidance on proper usage. This is due in part to the possibilities that VLE may create, such as equity, as well as being a strongly lobbied free resource (Kelly & Rutherford, 2017). However, according to Schwartz (2016), students can

only gain new understandings and skills through authentic learning, which comes from "juggling ideas and tools on their own" (p. 6). VLEs are creating the illusion of student engagement through the activities that the student is completing but, the engagement is superficial and no lasting understandings or skills are learned since the students are not engaged in authentic learning (Schwartz, 2016). Only educators can tell us if VLEs are allowing students to create the illusion of learning or if they are transforming the face of education through equitable differentiation.

Advances in technology have developed program features such as voice effect and adaptive features that provide corrective feedback, enabling student learning with OER to include elementary students (Ganapathi, 2018). OER is defined as educational and research resources such as textbooks, video lessons, software, and learning platforms that reside in the public domain and are free to use as a result of open intellectual property license (Belikov & Bodily, 2016; Doan, 2017). Research has indicated that constraints of prior OER technology, such as voice effect, virtual characters, and artificial intelligence, no longer impact the educational process for students (Craig & Schroeder, 2017; Multisilta, 2014); therefore, OER and VLE are an appropriate instructional resource for digital learning students in all subjects. However, Boylan and Saxon (n.d.) were in agreement with the findings of Cheok et al. (2017), who noted that there is a decline in the effect that VLE has on student academic achievement over time; therefore, authentic learning is not taking place with the use of VLE but rather as Schwartz (2016) found, there is an illusion of understanding.

Craig and Schroeder's (2017) research contrasts the findings of Boylan and Saxon (n.d.) by finding that the modern voice used with technology significantly improved learning as compared to the older speech engine and was rated at the same level as the human voice. Craig

and Schroeder's (2017) research combines with research to show that VLE allow educators to provide innovative impactful and meaningful instruction that increases student engagement, motivation, performance, and understanding (Belikov & Bodily, 2016; Craig & Schroeder, 2017; Doan, 2017).

Research has also found that educators who use VLE in classrooms that have 1:1 technology have an increase in student attendance and outperform their traditional lesson peers (Carver, 2016); however, the studies did not account for the multi-academic skill leveled classrooms that comprise personalized learning classrooms in their findings. Light and Pierson (2014) found that VLE can be successfully used by educators in whole group instruction, as well as individualized instruction, however, Haelermans and Ghysels (2017) found that there is no effect on student learning when VLE is used in a non-individualized manner which entails whole group instruction. The conflicting research results need to be understood in the context of an elementary instruction that consists of whole group, small group, and individualized instruction through the perceptions of elementary educators.

In addition, Lesko (2013) found that only 9% of educators are using VLE and only 20% of them are using it as an instructional resource. With increasing demands being placed on the educational system for results that meet societal demands as well as student academic needs, it is imperative to understand what educators are using as instructional resources (Ganapathi, 2018). Research is needed to understand what the remaining 80% of educators are using as instructional resources to meet the needs of digital learners since they are not using technology either whole group or individualized.

VLEs are adaptive in nature and able to be incorporated into the educator's teaching pedagogy; to meet the students' academic needs and expand the limited resources available for

instruction (Belikov & Bodily, 2016; Doan, 2017); however, educators have cited the quality and discoverability of OERs, as well as the time and effort needed to locate resources that meet their needs, as serious drawbacks to OERs (Belikov & Bodily, 2016; Doan, 2017). "Open resources, as well as traditional resources, are of varying quality and some will not be appropriate in the classroom setting" (Belikov & Bodily, 2016, p. 242); therefore, we must evaluate OER to determine if it is appropriate and will be effective for elementary instruction. More studies are needed to understand educators' perception of the evaluation of OER, and VLE in particular.

Research has shown that VLE allows more students to actively participate in instruction and gives control of the classroom educational teaching material back to the educator (Doan, 2017). VLE learning platforms such as Khan Academy, Dreambox, and Math Shelf have adaptive software that adjusts to the student's learning needs and gives feedback as the student moves through the lessons creating a VLE (Schuetz et al., 2018; Muir, 2014). Research has been conducted on VLE adaptive learning platforms to evaluate their effectiveness to personalize learning material, as intervention tools, use to facilitate flipped classrooms and as a technology station in a traditional classroom.

This research has shown that VLE learning platforms allow students to self-regulate their learning but none indicated if this regulation was academically beneficial to the student (Bishara, 2016; Liu et al., 2017; Musti-Rao & Plati, 2015; Outhwaite et al., 2017; Schacter & Booil, 2016; Schuetz et al., 2018). While the researchers did indicate the role that the educator assumes within the classroom the research does not investigate their perception on VLEs' effectiveness in relation to the student's self-regulated learning in an academically productive manner. VLE use in classroom instruction has also been found to increase the level of effectiveness and self-efficacy in educators (Harbi, 2016). However, Baggaley (2015) found that the implementation of

VLE into the classroom instruction does not take into account the traditional teaching techniques and teaching pedagogies that entail the teaching culture. Further studies are needed to understand the educators' perspective on VLEs ability to adapt to each student's personal learning needs as well as their learning desires (Belikov & Bodily, 2016; Clements & Pawlowski, 2011; Lesko, 2013; Ramirez-Montoya et al., 2017; Rolfe, 2017; Uzunboylu & Ozdamli, 2011).

Self-Regulated Learning

VLEs allow students to "control their own learning process" and provide the students with access to material and information at their desired pace (Adburrahman & Almeqdadi, 2010, p. 165), which allows the students to self-regulate their learning. VLEs foster academic independence and promote learning autonomy in students (Dayag, 2018). Self-regulated learning is the "process that puts an emphasis on pupils' active engagement with the study material" (Bishara, 2016, p. 1). The student moves through the lesson material on their own, selecting the items for which they feel they need more understanding. This form of learning can also be called personalized learning (Liu et al., 2017; Yoshida, 2016).

Self-regulated learning requires the student to set goals, monitor progress, reflect on their learning, and evaluate their level of understanding without the assistance of the educator (Ruiperez-Valiente et al., 2016). Self-regulated learning allows the student to maximize instructional time and focus as they increase their understanding of the material (Liu et al., 2017; Yoshida, 2016). Self-regulation is a necessary skill for a 21st-century learner since they are surrounded by adaptive forms of technology that they must self-direct through. Self-regulated learning is required for students to obtain academic success and develop self-efficacy (Zientek, Schneider, & Onwuegbuzie, 2014).

In order for self-regulated learning to be successful it must include a feedback loop where students receive immediate information based on their performance (Hawkins et al., 2017; Ruiperez-Valiente et al., 2016). VLE provides a quick and continuous feedback loop that students have immediate access in a way that they would not using teacher driven feedback (Hawkins et al., 2017; Ruiperez-Valiente et al., 2016). However, Hodgkinson-Williams, Arinto, Cartmill, and King (2017) found that VLE was only successful in student academic achievement when it is continually critiqued to ensure that the student receives feedback that informs the student on conceptual phases of learning which further substantiated the feedback loop required in self-regulated learning.

Research found that with the use of VLE, students are provided with more resources that support their learning needs, thereby, enabling the student to "act more independently from the teacher" (Light & Pierson, 2014, p. 114). Additional investigations demonstrated that the use of VLE development of self-regulated learning increases the student's ability to perform more complex problems on their own to a degree that cannot be matched with any other instructional support system (Bishara, 2016: Volk et al., 2017) and the students were able to transfer their independently developed skills to other problems within the field of mathematics (Musti-Rao & Plati, 2015).

However, Schuetz et al. (2018) found that while students were engaged and VLE provided the students with more corrective feedback than did traditional teaching the mathematics skills between the groups of students with and without the use of a VLE showed no significant differences in skill ability. Muir (2014) found that students used VLE to investigate only those topics covered in class. Chang, Che and Hsu (2010) and Nusir et al. (2010) found that students did not engage in more complicated tasks on their own and they lacked needed skills to

produce quality work when relying on VLE alone for instruction. VLEs are fundamental in self-regulated learning (Adburrahman & Almeqdadi, 2010; Light & Pierson, 2014) and, thus are a component of a personalized learning classroom that needs to be further understood from the perspectives of educators. (Lesko, 2013; Ramirez-Montoya et al., 2017; Rolfe, 2017; Uzunboylu & Ozdamli, 2011).

Gamification

Studies have shown that some VLE use game-based learning to increase student motivation and engagement (Bottage et al., 2014; Brom et al., 2017; Downes, 2010; Karsenti, Bugmann, & Gros, 2017). VLE that use game-based learning peak student interest in such a way that the students immerse themselves into the instructional material (Downes, 2010). In addition, Karsenti et al. (2017) found that "Minecraft scaffolded student independence and autonomy" and 90% of students collaborate (p. 20). Karsenti et al. (2017) also found that the gamification nature of Minecraft Education, a VLE, increases student perseverance while completing difficult tasks. However, studies have illustrated that instructional material is not selected based on the quality of the material, but rather on the ability of that material in evoke student interest (Bottage et al., 2014). Karsenti (2019) found that in order for VLE to be successfully implemented it must be planned in detail, explicitly supported and purposeful to the student's academic development; otherwise students will play the games negating the benefits and the "learning advantages could be wasted" (para 12).

Brom et al. (2017) found that student academic performance increased when the students were interested and involved in the topic and information. Brom et al. (2017) found that when students engaged in VLE that use game-based learning they developed "deeper levels of comprehension" (p. 250). However, Downes (2010) found that students did not develop deep

levels of understanding when using VLE that employ gamification elements to interest students. Game-based learning, aka gamification, is where a VLE allows students to earn badges and points based on their activity in the lessons (Ruiperez-Valiente et al., 2016). In addition, in gamification students are able to pick their own avatar which increases their interest in the VLE (Ruiperez-Valiente et al., 2016). Ruiperez-Valiente et al. (2016) found that gamification allows students to set goals and increases interest in the educational material, thereby, increasing student academic achievement. Traditional education is linear in nature, forcing students down a set path, whereas gamification allows students to think in parallel patterns matching their thought patterns (Prensky, 2001). Students completed their academic goals and gave positive feedback on lessons 51% of the time (Ruiperez-Valiente et al., 2016). Gamification of VLE allows instructional material to be presented in several different ways; however students who are not familiar with multimedia are not able to maneuver through the material in an academically beneficial manner (Nusir et al, 2013).

The issue of gamification lies in the student's self-directed learning (Chang et al., 2010). Ruiperez-Valiente et al. (2016) found that while students did spend more time on in the VLE, they did not complete optional activities or access supplemental resources. Chang et al. (2010) found that VLE using gamification promotes cooperative learning and intellectual debate as students discuss their results. Students appear to learn more skills and information at a faster pace than traditional education; however, students are not able to complete complex tasks or connect relevant information (Chang et al., 2010). Therefore, VLE is presenting the illusion of learning (Chang et al., 2010). Schuetz et al. (2018) found that student motivation and engagement increased with just the use of a VLE without gamification. Merely using technology allowed the students to engage in the lessons. Chang et al. (2010) discovered that educators

spent more time reteaching skills and connecting information when students use gamification in VLE as compared to traditional instruction.

Outhwaite et al. (2017) found that VLEs that used gamification had a positive impact on the education students through the use of differentiation in lessons and activities. Students do not come to school with the same skill and knowledge base. The gamification features of VLE allowed students to see multiple representations of information while differentiating the material to meet their individual academic needs in a way that a classroom educator is not able to do with an entire classroom of students (Outhwaite et al., 2017). Volk et al. (2017) found the gamification feature to be significantly impactful in a way that classroom instruction is not able to as well in the determined persistence of students to master the material, which results from an intrinsic need to achieve game recognition. Bray and Tangney (2017) also found positive results with the use of gamification for students who were given rapid feedback in mathematics, which resulted in the student's ability to advance rapidly through the problems.

However, students do not know what information, skills, or understandings that they do not know and will not access the intervention resources that they need to increase their skills and understandings (Downes, 2010; Ruiperez-Valiente et al., 2016). Research indicates that students who do not have repeated practice on various tiers of understanding in VLE will not progress academically (Downes, 2010; Nusir et al, 2013). Gamification in VLE has students work within one tier where they are "just practicing within the representational tier doesn't appear to support authentic understanding" (Schwartz, 2016, p. 4). Therefore, students are not developing an understanding that is transferable to complex tasks (Nusir et al, 2013; Schwartz, 2016).

Studies also found that when using gamification, VLE only teaches some skills specifically while neglecting other skills, therefore, students are unable to transfer knowledge

and skills between concepts (Nusir et al, 2013). Study results indicated that instruction is developmentally appropriate for student's academic progress when VLE is combined with traditional teaching practices that integrate instructional material, direct teacher instruction, and student-centered learning (Horn & Ramey, 2004; Nusir et al, 2013). Schwartz (2018) found that gamification of VLE creates an extrinsic feedback loop that is not related to the development of comprehension, but rather a reward system that potentially inhibits students from developing complex understandings.

Application in Mathematics

The majority of research conducted on OER used within the classroom considers the use of the adaptive learning VLEs in the core academic subject of mathematics. Research has shown that adaptive learning VLE "can be a cost-effective and scalable approach to improving" students' math skills and understandings (Schacter & Booil, 2016, p. 228). VLE provide students with free resources that they would not have access to without the use of technology (Hawkins et al., 2017). Studies have consistently demonstrated that students are struggling with basic computing skills, fluency skills, and algorithm understandings. Since these skills are considered the predictors of future mathematic success and human capital success educators are constantly seeking adequate differentiation and intervention tools to meet the diverse needs of their students (Hawkins, Collins, Hernan, and Flowers, 2017; Kronholz, 2012; Schuetz et al., 2018).

VLEs allow the educator to create personalized mathematic instruction that target the students' academic needs (Haelermans & Ghysles, 2017) and provide individualized intervention resources (Hawkins et al., 2017). Hawkins et al. (2017) found that students can experience an increase in their mathematic skills when they actively participate in the lesson, have immediate

feedback that explains the misconceptions they have demonstrated, participate collaboratively, and have paced instruction that matches their academic abilities. Hawkins et al. (2017) found that VLEs are able to provide all of these essential learning elements needed for students to advance in skills; however, student active engagement in the lesson was a consistent concern.

Research on the use of VLE to increase mathematic understanding and skills has resulted in conflicting information. Haelermans and Ghysles (2017) found that VLE is only academically impactful on the student when used individually and more time is given for practice. Schuetz et al. (2018) found that there was not a significant difference in the student's engagement or motivation when using a VLE; however, since more corrective feedback was given with more practice problems students would score higher with the use of VLE. This leads to one question, is it the actual use of VLE or due to students getting to complete more practice problems and have constructive feedback faster than traditional education that VLE use appears to result in higher test scores.

Outhwaite, Gulliford, and Pitchford (2016) found that students identified as low achieving and low socioeconomic status received the greatest benefit when VLE was implemented into instruction and the students best served by a VLE are young students. In addition, Light and Pierson (2014) found that VLE was successful when used in whole group instruction.

Research has raised concern with the use of VLE specifically as an instructional tool since it is not culturally sensitive to the student and increases the socioeconomic gap found within the student population (Cheok et al., 2017). Since educators and districts are "more likely to use interventions that are not only effective but also efficient, easy to implement, and sustainable" (Musti-Rao & Plati, 2015, p. 433) and the VLE Khan Academy has become the

recommended intervention and differentiation tool for mathematics by every state Department of Education in the United States (Kelly & Rutherford, 2017) it is imperative to understand how educators perceive VLE as an instructional tool in personalized learning classrooms.

Research has established that the various adaptive OERs, which are VLEs, are easy to implement within the classroom setting and do not require the educator to have extensive technological understandings (Bottge et al., 2014; Musti-Rao & Plati, 2015; Schacter & Booil, 2016). Dayag (2018) found that while educators do not need to be technologically savvy to implement VLE into the classroom, they must have the technological skills to address student technology issues as they arise. Research has consistently established that VLEs are effective in closing the learning gaps of low-performing mathematics students (Schacter & Booil, 2016; Outhwaite et al., 2017); however, the research is conflicting on the impact of VLE use on middle-achieving students and there is no research on the impact of high-achieving students.

Research is also conflicting on the sustainability and efficiency of VLEs. Schacter and Booil (2016) found that the use of VLE resulted in increased mathematical understandings in a short period of time for three to four-year-olds, however, Schuetz et al., (2018) found that there was no significant difference between the use of an VLE and the traditional paper-pencil interventions for second-grade middle-class students. Elementary classrooms are composed of diverse students whose learning ability ranges from low to high-achieving (Rolfe, 2017). Based on these current understandings, research must be done to understand the elementary educators' perspective on the impact of VLE in personalized learning classrooms (Lesko, 2013; Ramirez-Montoya et al., 2017; Rolfe, 2017; Uzunboylu & Ozdamli, 2011) Investigations on the use of VLE with the other core academic subjects, such as science, social studies, and language arts are very limited.

Virtual Learning Environment (VLE)

The available research indicates that the OER platform that is the most educationally appropriate for academic achievement in core academic subjects for a 21st-century student is a VLE (Cooney, 2017; Ruiperez-Valiente et al., 2016). VLEs use "informational assets such as video lectures or text documents as well as with interactive learning activities" which will provide feedback to the student (Ruiperez-Valiente et al., 2016, p. 231). VLE permits students to interact with tutors in virtual environments and does not restrict the students to help found only within the classroom setting thereby giving them more time to interact with intervention lessons (Weller, 2007). The foundation of VLE is learning activities that "involve social interaction, collaboration, and/or communication" and are submitted to check for understanding (Wessa et al., 2011). Carver (2016) found that VLE increased student engagement by 59%, but did not have a significant correlation to deeper levels of comprehension or understandings. Interestingly, students were found to spend time downloading educational material to assist in their acquisition of knowledge 52% of the time with only 14% of students not using VLE to access unrelated material (Demian & Morrice, 2012).

However, Demian and Morrice (2012) found the more often students visited VLE sites the lower their final grade in that subject, in addition, the students do not use the resources that they needed to progress academically. Harding (2018) and Sallam and Alzoueni (2014) each found that VLE is often perceived as the white knight in education; however, VLE does permit differentiated instruction that meets the academic needs of students, but it can not stand alone in education and move students from where they are academically to where they need to be.

Zengin (2017) found that VLE was significantly impactful for students in understanding course material and allowed them to perform higher order thinking tasks. However, Wessa,

Rycker, and Holiday (2011) found that VLE did not meet all of the course content needs and only allowed students to create meaningless work samples that did not demonstrate authentic learning. Demian and Morrice (2012) also found that VLE did not work well for many courses outside of math as an instructional resource. Additionally, Demian and Morrice (2012) found that students felt VLE was best used as a supplemental support rather than an intervention resource. Demian and Morrice (2012) found that student academic success when VLE is dependent upon the use of alternate media presentation resources. In addition, Ruiperez-Valiente et al., (2016) found that students' academic performance decreased by 25% when they were forced to use VLE. Research also found that only 51% of all the goals set by students were met (Ruiperez-Valiente et al., 2016).

Learning is the successful transfer of a skill or understanding from one individual or thing to another (Niemela & Helevirta, 2017). There are two roads, the low and high road, for fostering successful learning both of which are located in the OER matrix (Ganapathi, 2018; Niemela & Helevirta, 2017; Schwartz, 2016); however, VLE as a whole was conceived for the use of high road learning (Ganapathi, 2018). The low road, or procedural learning, focuses on "strengthening routines by iteration" allowing the student to have reflexive and automatic responses, and the high road, or conceptual learning, focuses on "explicit abstraction" and actively searching for connections (Niemela & Helevirta, 2017, p. 5). Conceptual learning is the ability to connect on general principle knowledge, procedure knowledge, category knowledge, and symbol knowledge and to perform complex thinking (Volk et al., 2017). Procedural learning is the process of learning the routines, rules, and applications without complex thought patterns (Volk, et al., 2017).

Schwartz (2016) found that students were engaged in low road learning when using VLE; however, Zengin (2017) found that students were "learning concepts with higher levels of difficulty" utilizing high road learning while using VLE (p. 90). Kivunja (2014) found that student motivation to engage in educational activities increased by a multiplier of 2.5-4.8 indicating a significant correlation between student motivation to complete educational activities using VLE. However, Kivunja (2014) did not indicate if the students were completing low or high road learning with the increased motivation. Both the perspectives of educators and observations are needed to understand if students are using VLE for low or high road learning in personalized learning classrooms, as there is a deficit in the research on which of the roads elementary educators are implementing VLE use on.

Cooney (2017) found that VLEs are able to level the prior academic experience between students in a class and support interactivity with the academic subject. Volk et al., (2017) found that when students used tablets with VLE they were able to learn from the mistakes they made by interacting with the technology, which would support the connectivism theory. However, Boylan and Saxon (n.d.) reported that the effectiveness of VLE use declined when it was used as the primary source for remedial instruction.

VLE has become so ingrained in classroom education that the state of Georgia has recommended elementary teachers use Khan Academy, a VLE, as an educational resource in an effort to meet the academic needs of the digital learners that comprise current elementary classrooms (Georgia Department of Education, 2019). Digital learners process information in an external manner where they acquire new information through intrinsic and extrinsic collaboration and construct meaning and knowledge based off of what they already know and information from their learning network (Kivania, 2014). Students are no longer passive

learners. Digital learners are active learners that make connections between networks of information and synthesize ideas and information to develop understandings (Downs. 2005; Dunaway, 2011). New VLE components are being forced into the classroom in an effort to meet the needs of the digital learners and the demands of global human capital production (Alismail & McGuire, 2015; Downs, 2010; Nusir et al., 2013).

The state of Georgia joined the rest of the United States and adopted Khan Academy, a VLE, as the recommended mathematics instructional resource and tool for public school educators (Georgia Department of Education, 2019; Kelly & Rutherford, 2017). The Department of Education (DOE) of Georgia adopted Khan Academy as a result of two factors that plagued the education system. The first factor was the need to implement VLE into the classroom to meet the learning needs of 21st-century students (Georgia Department of Education, 2019). The second factor was the successful marketing and lobbying by SAL the parent company of Khan Academy and not educator recommendations or research results (Kelly & Rutherford, 2017).

The Georgia Department of Education (2008) developed a technology plan to be implemented into all public schools in the state of Georgia that is based on the understanding that "children growing up today require a new and more demanding intellectual skill set in order to be successful in a global environment" and therefore need to use technology to build skills and understandings (p. 5), which can be done through the use of VLEs, such as Khan Academy. Khan Academy is based on learning videos that allow students to watch a problem be worked out (Georgia Department of Education, 2019). However, Multisilta (2014) found that "only 2.3% of all videos" studied were learning videos that would allow students to further their understanding (p. 663).

The Georgia Department of Education (2008) has developed a technology plan to increase student academic achievement, as well as develop fluency in technology skills necessary in the global workforce. Within the technology plan, it is recommended that students develop skills necessary to sift effectively through information and develop a collaborative intelligence rather than use technology superficially in the classroom as a resource (Georgia Department of Education, 2008). The Georgia Department of Education (2008) discovered in their study on the use of VLE as a classroom resource that there was no significant difference between the standardized test scores of students who used VLE and those who did not. However, students make learning gains of up to "one letter grade" when using a tutoring VLE (Georgia Department of Education, 2008). The successfulness of any tutoring program depends on the level of student motivation, input, and effort (Wessa et al., 2011). Haelermans and Ghysels (2017) found that as educators are being forced to use VLE in their classroom instruction and intervention practices, and as a result, resentment is forming against VLE. Classroom educators must be interviewed to understand how students are impacting the results of VLE use as an instructional resource.

Research needs to be conducted to understand the educators' perception of VLE with such a significant shortage of learning videos. With such significant findings on the use of VLE on higher education students, and the insignificant amount of learning videos, an understanding of the elementary educators' perceptions on VLE and learning videos is imperative to the further development of VLE use within the elementary classroom (Lesko, 2013; Uzunboylu & Ozdamli, 2011).

Use with Specific Population Students

The traditional teaching method for math includes the forced memorization of algorithmic-operations and precise calculations using paper and pencil (Habok & Nagy, 2016; Smith & Harvey, 2014). The 21st-century teaching method includes self-regulated learning with the personalized educational materials and individualized learning paths that allow students to self-direct their learning (Habok & Nagy, 2016). Regardless, if it is a 21st-century teaching VLE or a traditional classroom instructional approach, it must conform to the standards established for equal access to education which can be found in the Web-based tools Web Content Accessibility Guidelines (WCAG) 2.0 (World Wide Web Consortium [W3C], 2011) and Section 508 of the Rehabilitation Act (2000). These standards specify how web pages must be designed so that students with disabilities are able to understand, perceive, and operate them (W3C, 2011). Smith and Harvey (2014) using the Universal Design for Learning (UDL) framework examined Khan Academy, an example of the current VLE, to see if it met the standards set forth by WCAG and Section 508 of the Rehabilitation Act. Smith and Harvey (2014) found that Khan Academy did not meet the standards or the UDL framework, therefore, VLE does not meet the learning needs of students with learning disabilities.

However, according to Bottage et al., (2014), students identified as having learning disabilities out-performed their peers when using VLE and Bishara (2016) found that the collaborative nature of VLE assisted students with disabilities. On the other hand, Cabi (2018) and Smith and Harvey (2014) found that students with disabilities had difficulties using the features of VLE and struggled to access and understand the resources. In addition, no modifications were made to the material to make it accessible to these students. In contrast,

Harding (2018) found that VLE offered many benefits to students with learning disabilities

through the use of multimedia and learning activities.

Studies have demonstrated that VLE meets the remediation and supplemental needs of

students with low socio-economic status and low academic abilities (Baylan & Saxon, n.d.;

Neupane, 2014). Research also suggests that VLE assists English Language Learning (ELL)

students with acquiring academic skills, since the VLE platforms allow educators to create and

translate academic content into the student's mother language (Ganapathi, 2018). However,

Dayag (2018) found that in order for VLE to be remotely beneficial to ELL and English as a

Foreign Language (EFL) students, the educator must upload a substantial amount of resources to

account for the language and cultural barriers. Dayag (2018) found VLE to lack the cultural

sensitivity needed in education. Hodgkinson-Williams, Arinto, Cartmill, and King (2017) found

that the students must be fluent in English in order to have academic success using VLE.

In addition, Dayag (2018), found that the VLE created a significant time constraint for

educators, between uploading material and monitoring student activity. In addition, when

students use VLE they must be monitored 24 hours a day to prevent inappropriate student

behavior, bulling, and harassment between students after school hours (Dayag, 2018). Some

research illustrated that VLE provides equal access to educational material to all students

regardless of their socio-economic status, cultural background, or academic abilities (Baylan &

Saxon, n.d.; Cooney, 2017; Ganapathi, 2018; Neupane, 2014; Rolfe, 2017), while other research

presented contradictory findings. Studies find agreement in the fact that VLE gives students

access to material that they would otherwise not have access to in a traditional classroom (Butler,

Marsh, Slavinsky & Baraniuk, 2014). However, Pearce (2013) found that VLE present

information in a hierarchy format that is difficult for diverse learners to navigate through. The

act of providing more information to students does not mean it is educationally appropriate for students, therefore, studies must investigate the perceptions of educators to determine VLE impact on the education of special population students.

Pearce (2013) found that the most frequently used form of technology by classroom educators is Youtube. "Youtube is effectively a repository of digital content" that provides a vast area of collaborative information (Pearce, 2013); however, on its own, Youtube cannot provide the instructional basis that students need to progress academically in fundamental mathematical understandings and it is not a VLE (Demian & Morrice, 2012; Ruiperez-Valiente et al., 2016). Additionally, students with disabilities find it difficult to follow the paced instruction found in video instruction (Cabi, 2018; Smith & Harvey, 2014).

Research found the use of VLE affords students who are economically advantaged the ability to increase their understandings and skills at a faster rate than their lower socioeconomic peers, thereby, increasing the socioeconomic gap (Brown, 2012; Noer, 2012; Witte, Haelermans, & Rogge, 2014). In addition, Schuetz et al. (2018) found that students who are academically advanced receive more support than their peers. Anderson et al. (2014) found that VLE are not academically appropriate for academically advanced students since there was no significant support when for them.

<div align="center">**Summary**</div>

Connectivism details how 21st-century students network information in a collaborative manner while obtaining knowledge through the use of VLE both intrinsically and extrinsically (Downs, 2005, Siemens, 2005). Connectivism explains how student learning has transitioned from the linear path of information acquisition to the parallel paths of input and output that drive active learning today. Connectivism is the driving learning theory for VLE in elementary

education. The current research, while limited, has highlighted the many benefits that OER in general and VLE specifically have on students' academic achievement and college and career development (Bishara, 2016; Liu et al., 2017; Schuetz et al., 2018). The adaptive learning technology and the collaborative framework found within VLE allows instruction to become personalized to each student's unique learning needs while increasing the student's content and application knowledge (Bishara, 2016; Liu et al., 2017; Schuetz et al., 2018).

While VLE is moderately successful with all types of learners, it has proven to have significant results with low achieving and low socioeconomic students (Bishara, 2016; Schacter & Booil, 2016). The adaptive technology and corrective feedback of VLE have increased student motivation and engagement in core academic subjects (Ruiperez-Valiente et al., 2016) while the format of VLE has decreased the time that teachers must spend on feedback, directions, and classroom management (Schuetz et al., 2018). Students are more persistent when working with VLE to achieve success which has resulted in an increase in academic achievement, however this persistence is limited to the use of gamification within VLE lessons (Volk et al., 2017). However, there is substantial conflicting research on the impact of VLE on the diverse digital learners of 21st-century classrooms and there is a marked deficit in the research on VLE use in personalized learning classrooms.

The current studies have only identified the educator's role in the implication of the VLE (Bishara, 2016; Liu et al., 2017; Schuetz et al., 2018). Within these studies, educators have expressed that the use of VLE as an intervention tool has decreased the time that educators would have spent closing a knowledge gap and reinforcing understandings (Bishara, 2016; Liu et al., 2017; Schuetz et al., 2018); however, the use of a VLE takes substantial time to review to ensure that it is appropriate for the student (Doan, 2017). Witte et al. (2014), as well as

Uzunboylu and Ozdamli (2011), found that the perceptions of educators play a critical role in the use of VLE within the classroom; however, there is a deficit in the research on the perceptions of elementary educators of personalized learning classrooms.

Therefore, it is imperative to illuminate the perceptions of personalized learning elementary educators to develop an understanding of VLE impact in education. Elementary educators, teaching within a 21st-century personalized learning classroom, have not been studied to investigate their perceptions of the use of VLE as a tool to increase their student's college and career readiness. The goal of this transcendental phenomenological study was to provide a voice to the currently unheard elementary educators, as well as provide researchers, adaptive technology developers, and educators at all levels with an understanding of how VLEs are perceived, used within the lessons, and understood by elementary educators in personalized learning classrooms.

CHAPTER THREE: METHODS

Overview

Elementary educators are being asked to use the advanced technological features of virtual learning environments (VLE) to provide individualized learning paths for their students without an understanding of the impact that VLE has on the academic advancement of their diverse digital learners (Kivunja, 2014). The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. This chapter details the aspects of my transcendental phenomenological study in information-rich descriptions of the selection rationale for the research design, setting, and participant selection through purposeful sampling. This chapter also includes a detailed explanation of the research procedures, including data collection and data analysis, that were selected for this study. The chapter concludes with the extensive steps taken to establish trustworthiness and the ethical considerations of this study.

Design

The qualitative research method was selected for this study since it facilitates in-depth holistic analysis of the lived experiences providing an understanding through the voice of the participants of the why and how behind the phenomenon (Moustakas, 1994; Patton, 2015). Creswell and Poth (2018) defined the qualitative research method as a focused analysis of participants' perspectives with their meanings and multiple subjective views attached to a phenomenon. The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom

through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. Therefore, qualitative research was the appropriate approach for this study since it sought to understand the phenomenon through the perception of participants who have personally experienced it (Creswell & Poth, 2018; Moustakas, 1994; Patton, 2015).

The phenomenology design, a design within the qualitative research method, was used to conduct this study since a phenomenology analysis of data "seeks to grasp and elucidate the meaning of structure, and essence of the lived experience of a phenomenon" (Patton, 2015, p. 573). Phenomenology, which was formally introduced by Edmund Husserl (1977) at the beginning of the twentieth century, is a structured study on the way in which human experiences present themselves around a phenomenon (as cited in Moustakas, 1994, pp. 12-42). Phenomenology seeks to gain an understanding of a phenomenon through the *verstehen* (Christensen, Johnson, & Turner, 2010) and the consciousness of the experiencer (Guignon, 2006; Moustakas, 1994). *Verstehen* is a German term which means the researcher seeks an interpretive understanding of the phenomenon through the perspective of the participant (Christensen et al., 2010). The phenomenological design gains information from the rich descriptions of meaning that create understandings of the essences of the phenomenon, thereby; providing validity to the scientific investigation (Moustakas, 1994). Because this study sought to understand the essences of educators' experiences with VLE, phenomenology was the appropriate design for this study.

Since my background includes personalized learning in elementary education, the transcendental phenomenological approach was used within this study. The transcendental phenomenology approach allows the researcher to bracket out personal experiences and focus on

data with an open mind and pure consciousness (Giorgi, Giorgi, & Morley, 2017; Moustakas, 1994). The focus of this study was on understanding the perspectives of elementary educators using the phenomenon of VLE as an educational tool to personalize their students' education. As an elementary educator who uses OER to assist students in their academic achievement, transcendental phenomenology allowed me to *epoche* and bracket out my personal experience in order to understand the participants' perspectives without underlying biases and utilize transcendental subjectivity (Giorgi et al., 2017: Moustakas, 1994). Moustakas (1994) stated that to use intentionality to *epoche*, abstain from casting judgment, will allow me to obtain the "vantage point of a pure or transcendental ego" (p. 33). I used a Research Reflexive Journal located in Appendix M *epoche* throughout the study. Thereby, permitting me to perceive the data as though it is a first-time experience allowing the singularity of the participant's experience to be considered. The *epoche* was followed by the transcendental-phenomenological reduction in which my perception was focused on just the phenomenon and the participant (Moustakas, 1994). There are four steps: 1 the *epoche,* 2 phenomenological reduction, 3 imaginative variation, and 4 synthesis, in Moustakas' (1994) transcendental phenomenology approach which were addressed throughout the data collection and data analysis portion of this study.

The transcendental phenomenological approach was appropriate for this study since I have a personal interest in the research question that was driving the study and maintained the focus of this study on the experience of the phenomenon from the perspectives of the participants and not the analysis of the phenomenon.

Research Questions

The following research questions were used to guide this transcendental phenomenological study:

Central Research Question

How do elementary educators explain their perceptions of the use of OER and VLE in personalized instruction for students?

Guiding Question One

How do elementary educators use VLE as instructional support in the classroom?

Guiding Question Two

How do elementary educators explain the role of VLE in 21st-century education and digital learning?

Guiding Question Three

How do elementary educators perceive VLE in relation to meeting the academic needs of the diverse learners within their classroom?

Guiding Question Four

How do elementary educators perceive the learning needs of 21st-century students?

Setting

The site of this study was Turner Elementary (pseudonym), which is a part of the Lakeside School District in the state of Georgia. The Lakeside School District was within the top 10 largest school districts in the state of Georgia (The Governor's Office of Student Achievement, 2018) and was publicly recognized as a personalized learning school district (Mathewson, 2017). Turner Elementary was within the top five largest elementary schools and one of the district's featured examples of personalized learning (Mathewson, 2017; The Governor's Office of Student Achievement, 2018).

Turner Elementary had three identified student subgroups consisting of 10.4% students with disabilities, 5% with Limited English Proficiency, and 52% of the students who were

eligible for free/reduced meals (The Governor's Office of Student Achievement, 2018). The

compensatory programs found at Turner Elementary included the following enrollment

percentage;, 23.1% Early Intervention (EIP), 10% English to Speakers of Other Languages

(ESOL), 12.5% Gifted Education, and 10.4% Special Education (The Governor's Office of

Student Achievement, 2018). The student demographics of Turner Elementary provided the

study with the diverse base of student learners that is representative of the larger student

population served by public schools within the state of Georgia (The Governor's Office of

Student Achievement, 2018).

The 21st-century educational system is characterized by the digital learners of the

Knowledge Age who seek to learn through personalized learning paths integrated with

technology (Hanover Research, 2014; Kivunja, 2014). Advances in technology have afforded

educators the ability to differentiate instruction and educational material with the use of VLEs to

create individualized learning paths, thereby; creating personalized learning in elementary

classrooms (Hanover Research, 2014; Kivunja, 2014; Sallam & Alzouebi, 2014). Lakeside was

one of the larger school districts in Georgia and was a personalized learning school district;

therefore, it had one of the largest collections of elementary educators using VLEs as an

instructional support in a personalized learning classroom (The Governor's Office of Student

Achievement, 2018). In addition, Lakeside was a one-to-one school district (The Governor's

Office of Student Achievement, 2018), so technology availability for students was not an issue

for this study. Turner Elementary was one of the district's exemplar schools; therefore, the

educators at Turner are some of the best representations of personalized learning educators in the

district. Turner Elementary was selected as the site for this study since it was a publicly accepted

representation of personalized learning (Mathewson, 2017) and representative of the larger

population of personalized learning elementary schools (Creswell & Poth, 2018).

<center>**Participants**</center>

Purposeful sampling was used to select the participants for this study. Purposeful

sampling is a non-probability sampling method used to select information-rich participants (Gall

et al., 2006; Patton, 2015). Purposeful sampling is used when the researcher is seeking to access

a particular subset of participants with direct experiences of a targeted phenomenon (Gall et al.,

2006; Patton, 2015). Continuous sampling occurred until thematic saturation was met (Creswell

& Poth, 2018). The sample size of 13 participants was taken from the school's educators, who

consisted of 13% male educators and 87% female educators of which 1% were Asian, 10% were

Black, 10% were Hispanic, 1% were Native American/Alaskan Native, 60% were White, and

18% were Multiracial (The Governor's Office of Student Achievement, 2018). In addition, 5%

of the educators were first-year teachers, 13% had less than five years of teaching experience,

and 82% of the educators had more than 5 years of experience (The Governor's Office of

Student Achievement, 2018). The educator demographics provided the study with maximum

variation representative of educators providing 21st-century students with a personalized

learning education in a public elementary school (Creswell & Poth, 2018; Gall et al., 2006;

Patton, 2015).

Sampling continued until a maximum variation of the population was achieved (Creswell

& Poth, 2018; Moustakas, 1994). Maximum variation within a study will increase the

probability that the findings from the research are representative of different vantages while

building the shared experience structure that exists around a phenomenon (Moustakas, 1994).

Due to the information-rich nature of the selected school, all educators at the school working

with grades kindergarten through- fifth grade were invited to participate in the study if they meet

the selection criteria. The first selection criteria item was that the participant must be an

elementary educator who teaches students, characterized as Knowledge Age learners and

Generation Z, who have attended elementary school within the last three years. Generation Z

students were born between 1995 and 2012 (Prensky, 2001; Schroer, 2018). The Knowledge

Age, also referred to as the 21st-century, is defined as the era where a "collective intelligence" is

used instead of individual experts, and knowledge and ideas are the main source of economic

growth (Kivunja, 2014; Prensky, 2001; "Shifts to 21st Century Thinking," 2018). The second

selection criteria item was that the participant must have some experience using OER within a

personalized learning classroom. All educators working with students in kindergarten through -

fifth grade received an invitation to participate by district email. A copy of the invitation is

located in Appendix B.

Procedures

No data was collected until all appropriate Liberty University Institutional Review Board

(IRB) (located in Appendix A) and district approvals had been received. I obtained a review

from experts in the field to ensure face and content validity to my research questions and

interview questions as well as the rubric used to conduct observations and analyze documents.

IRB approval was sought with the submission of the completed application prior to conducting

any aspect of this study. A pilot interview with a small sample of participants outside of my

study was conducted immediately after IRB approval to ensure the questions had clarity and a

choice of wording that supported the focus of the study (Patton, 2015). Once the pilot study was

concluded, potential participants were emailed a recruitment letter. The recruitment letter is

located in Appendix B. A screening survey was hyperlinked in the recruitment letter for the

potential participants to complete. The screening survey is located in Appendix D. I created an

acceptance email for all of the participants that had selected and a rejection email for all of the

participants that were declined participation. A Consent Form (located in Appendix F) was

attached to the acceptance email. Each of these emails are located in Appendix E.

    I obtained written consent from all participants using the approved Liberty University

consent form (Appendix A) prior to the start of each interview (Creswell & Poth, 2018; Gall et

al., 2006). The participants were emailed the consent form and asked to bring it to the interview.

I provided the participant with a copy of the consent form at the time of the interview. Data

collection consisted of semi-structured interviews, observations, and site document analysis. The

semi-structured interview format allows the interview to yield detailed information focused on

the study while permitting open-ended responses that are structured in the participant's own

words (Gall et al., 2006) and provides information-rich data (Patton, 2015). Prior to the

interview starting, I detailed the purpose of the study, as well as its procedures, risks and

benefits, and confidentiality as detailed in the initial consent letter (Creswell & Poth, 2018; Gall

et al., 2006). All interviews were recorded at the time of the interview to capture participants'

verbatim answers and voice inflections (Creswell & Poth, 2018; Gall et al., 2006). All recordings

were audio recordings and I personally transcribed each interview verbatim (Patton, 2015). The

observations were conducted to observe the educators' use of VLE during instructional time with

students and I journaled during all observations (Creswell & Poth, 2018; Patton, 2015).

    A member check was completed at the conclusion of each interview and observation to

ensure that the data collected was credible (Creswell & Poth, 2018; Gall et al., 2006). A copy of

the transcription from the interview was given to the participants and a telephone conference was

used to establish the validity and reliability of the data (Patton, 2015). All soft-data collected

was stored on a password-protected computer and external hard drive (Creswell & Poth, 2018;

Gall et al., 2006). Soft-data is interviews and observations as they are suspect to interpretation. The external hard drive was stored with the hard-collected data. Hard-data is data such as lesson plans and lists of acceptable sites to use with students since they are not subject to interpretation. All hard-data collected was stored in a locked safe and I had the only access to it (Creswell & Poth, 2018; Gall et al., 2006). The site document analysis included analysis and coding of the participants' lesson plans, educational material provided to students, instructions provided to students, and all school and district documents pertaining to OER use and personalized learning will be analyzed and coded.

The data analysis of all obtained data included coding for themes using memoing, winnowing, and horizontal placement (Moustakas, 1994). An analysis of the themes was conducted in order to organize the findings in an effort to provide an understanding of the phenomenon. General concepts and categories were formed from the analysis of the common themes and conceptual manifestations discovered in the data (Moustakas, 1994; Parish & Candon, 2016).

A reflexivity journal (Appendix M) was used throughout the study during data collection and analysis to detail any personal bias, prejudgments, and initial conclusions that arose as well as reflection on interviews and observations after they occurred (Creswell & Poth, 2018; Gall et al., 2006). The reflexivity journal allowed me to detail my reactions, reflections, and thoughts to all of the data (Gall et al., 2006).

The Researcher's Role

At the time of the study, I was a doctoral student at Liberty University's School of Education. I have obtained my Education Specialist degree in Educational Leadership and my Master's in Education. I have a coaching, mathematics, and gifted endorsement for elementary

education, as well as a Georgia teaching credential. I have been teaching for 13 years. I have

taught within the traditional setting as well as the personalized learning setting. I use VLE as an

instructional tutoring tool for students who are considered at risk due to their academic

background. My personal motivation for conducting this study was to better understand how

educators perceive the use of OERs and VLEs in particular as instructional aids for 21st-century

students in personalized learning classrooms.

All personal experiences and impressions of VLEs were withheld from the participants

and bracketed out of the data through the use of the transcendental approach (Moustakas, 1994).

While conducting the interviews, I followed the interview guidelines as prescribed by Creswell

and Poth (2018) to ensure the interview was conducted with an open mind. I provided each

participant with a copy of the transcriptions from the interview and observation and conducted a

telephone conference to establish validity in the transcription (Creswell & Poth, 2018; Patton,

2015). The rhetorical assumption within this study was the use of bracketing, reflexivity

journaling, and semi-structured interviews, which enabled me to withhold my personal

perspective and conduct a study using the most effective means to obtain the educators'

perspectives of VLE (Moustakas, 1994). In qualitative research, the researcher is the data

collection tool or human instrument that processes the raw data (Yin, 2016). Since the study was

focused on the perceptions of educators, it was essential that I bracket out my perceptions to

establish reliability, validity, and trustworthiness (Creswell & Poth, 2018).

Data Collection

This qualitative study used the transcendental phenomenology inquiry approach to obtain

an understanding on the perspectives of 13 elementary educators on the use of OER in

personalized learning through the use of interviews, observations, and document analysis. The

use of interviews, observations, and document analysis afforded triangulation within the study

(Patton, 2015). Triangulation is the use of multiple data collection methods used to establish a

comprehensive understanding of the phenomenon, thereby, providing validity to the study

through a convergence of information (Patton, 2015). Triangulation was achieved in this study

by using the same open-ended questions for all participants in the interviews, by collecting data

from the various sources and using different methods (i.e., interview, observation, documents

analysis) to answer the research questions (Patton, 2015). The data collection process began

with the first two steps, the *epoche* and the phenomenological reduction, of the transcendental

phenomenology approach (Moustakas, 1994).

Prior to the submission of my IRB application, I conducted an expert panel review of the

interview questions that were used for data collection in this study to evaluate the content and

validity of the questions. The panel consisted of two experts who provided feedback. The first

panelist was an educator with 15 years of experience in traditional and personalized learning,

holds an Educational Specialist degree, and is considered an expert within the Lakeview School

District. The second panelist has a doctorate in education, 20 years of experience in traditional

and personalized learning, and is also an in-service educator endorsement professor. Per the

suggestions of the expert panel, minor changes were made to the interview questions for

purposes of clarifying the participants answers.

Interviews

Interviews are a qualitative data collection method that provide a deep holistic

understanding of the phenomenon being studied through the participants' perspective (Patton,

2015). Interviews provide "thick descriptions of a given social world analyzed for cultural

patterns and themes" (Warren, 2002, p. 85). Interviews are used when there is little research on

the phenomenon and detailed insight is needed from the participants to establish understanding (Gall et al., 2006; Gill, Stewart, Treasure, & Chadwick, 2008; Patton, 2015). Interviews permit open-ended responses that are structured in the participants' own wording (Gall et al., 2006; Patton, 2015). The interviews of the participants of this study provided a holistic understanding of the perspectives of elementary educators on the use of VLE in personalized learning. I used open-ended questions to interview the participants using a semi-structured interview method, which provided a structure to the interview without narrowing the participants' responses (Patton, 2015). Open-ended questions allowed the participants to completely answer the questions in an unstifled manner, while at the same time establishing trustworthiness (Patton, 2015).

The participants were interviewed in-depth with open-ended questions for 45-60 minutes at an agreed upon time and location. At the time of the interview, the participants were reminded of the purpose of the study, as well as its procedures, risks and benefits, and confidentiality as detailed in the initial consent letter (Appendix F; Patton, 2015). Participants were asked to sign the consent form acknowledging that they understood the scope of the study, as well as their rights prior to the start of the interview (Gall et al., 2006). All interviews were digitally recorded to capture the participants' verbatim answers and voice inflections and then transcribed verbatim (Creswell & Poth, 2018; Gall et al., 2006; Patton, 2015). A copy of the transcription was provided to the participant and a telephone conference was used to establish the validity and reliability of the data (Creswell & Poth, 2018). I took notes while I interviewed the participants and took care to notate any non-verbal responses (Creswell & Poth, 2018). All collected data were stored on a password-protected computer and external hard drive and will remain stored for a period of three years, after which time, the data will be deleted and destroyed (Creswell & Poth, 2018).

Standardized Open-Ended Interview Questions

1. Please introduce yourself to me.

2. Please walk me through your teaching pedagogy.

3. What impact does a teacher's pedagogy have on the educational material used? The instruction format used? Use of technology in the classroom?

4. What do you believe is the most important activity to achieve student academic success?

5. How would you describe the learning needs of your students?

6. What are the things you consider imperative to students achieving academic success?

7. How would you define 21st-century learning?

8. How would you define personalized learning?

9. How would you define online education resources as they relate to elementary education?

10. How would you explain your perception on the use of VLE in personalized instruction for all students?

11. Of the components of learning you have identified, which would you say were the most significant?

12. What makes them significant?

13. What else would like to add to the concept of VLE used in personalized instruction?

14. How have you used VLE as instructional support in the classroom?

15. How would you define the term "21st-century students"?

16. How do your students currently learn new concepts best?

17. How would you explain the academic needs and grade level abilities, skills, and knowledge of your students?

18. How do you explain the role of VLE in 21st-century education and digital learning?

19. How do you perceive VLE in relation to meeting the academic needs of the diverse learners within your classroom?

20. I greatly appreciate your time and assistance. We've covered a lot of information today and I have one final question. What are the questions that I should have asked in relation to VLE use in personalized learning?

Research has shown that an educator's teaching pedagogy has a strong correlation with student academic performance, ability to identify the learning needs of students, and the level of commitment to student success (Hakim, 2015). If educators are not committed to the academic success of their students, they will not work to adapt their teaching techniques to meet the changing needs of diverse learners (Hakim, 2015). Without the classroom educator's support and successful implementation of VLE, technology will not be an integral part of digital learning (Cheok et al., 2017). Teachers must transform their current teaching pedagogy to a technological pedagogical content knowledge (TPACK) which is student-centered teaching that focuses on the implementation of digital learning (Jan, 2017; Koehler & Mishra, 2009). It is important to understand the classroom educator's perception of adopting TPACK in order to understand their perception of VLE use in student achievement, academic growth, and college and career readiness (Light &Pierson, 2014). Questions one through four provided understanding on the participants' pedagogy as it related to TPACK and the use of VLE as an instructional support within their classrooms.

Questions five and six provided an understanding of the participants' perceptiveness of student learning needs. The level of perceptiveness to student learning needs has a direct link to student academic growth (Hakim, 2015) and the use of educational materials that meet the learning of each student (Jan, 2017). If an educator is not perceptive of student learning needs,

they will not adapt their teaching techniques and educational resources to meet the needs of students (Hakim, 2015; Jan, 2017; Koehler & Mishra, 2009). Understanding the participants' perceptiveness provided data on the purposeful use and implementation of VLE as an education resource (Cheok et al., 2017).

The established definition of 21st-century learning is learning that is digital in nature, uses individualized learning paths that are personalized for each student, and is self-regulated (Bishara, 2016; Hanover Research, 2014; Kivunja, 2014). In addition, personalized learning is defined as individualized instruction that meets the students' unique learning needs (Hanover Research, 2014; Office of Ed Tech, 2017). VLE allows elementary educators to differentiate instruction in a personalized manner for each student and increase their understanding and skill base through the self-regulated nature of the adaptive technology (Cheok et al., 2017; Schuetz et al., 2018); therefore, VLE is a component of present-day education. Research has shown that 21st-century students require extensive 24-hour monitoring when provided with a VLE in order to control the inappropriate student behavior and use that has resulted in bullying and sexual harassment (Dayag, 2018). Cheok et al. (2017) found that educators viewed VLE as a method in which to meet the academic needs of their digital learners while equipping them with 21st-century skills; however, the cost of educators' personal time is substantial with the implementation of e-learning. In addition, students were found to be lazier in their academic endeavors when e-learning is a component of classroom education (Cheok et al., 2017; Dayag, 2018). OER is defined as educational and research resources, such as online textbooks, video lessons, software, and technology-based learning platforms that reside in the public domain of the Internet that are freely used by educators to create personalized lessons for students as a result of open intellectual property licenses (Belikov & Bodily, 2016; Doan, 2017). Research

has established the definition of VLE as web-based learning that allows students to collaborate, access learning material, receive immediate corrective feedback, practice problems and take quizzes to establish understanding of content material, and to have an individualized learning path that accommodates their learning mode and needs (Cheok et al., 2017; Dayag, 2018). Questions seven, eight, and nine provided an understanding on the educator's definition of the key terms that are the foundation of this study, as well as provided an imperative understanding on the phenomenon of VLE use within personalized learning classrooms.

Prior studies have shown that VLE, used in conjunction with classroom instruction, can enable certain students to self-regulate and self-direct their learning (Bishara, 2016; Liu et al., 2017; Musti-Rao & Plati, 2015; Outhwaite et al.,2017; Schacter & Booil, 2016; Schuetz et al., 2018), and adaptive forms of OER can allow educators to individualize student instruction creating personalized learning (Bishara, 2016; Liu et al., 2017; Yoshida, 2016). VLE has been shown to be moderately successful for diverse student populations, such as students identified as low-socioeconomic status, as below grade level expectations, and ELL (Bishara, 2016; Dayag, 2018; Schacter & Booil, 2016). However, conflicting research has found VLE to be inadequate when meeting the learning needs of students with learning disabilities (Smith & Harvey, 2014), students who are academically challenged with grade appropriate material (Schuetz et al., 2018), and English as a Foreign Language (EFL) students (Dayag, 2018). Additionally, research establishing an understanding on the perceptions of elementary educators and of personalized learning elementary educators on the use of VLE is inadequate. Question 10 provided an understanding of elementary educators' perceptions on the use of VLE in 21st-century education.

VLE use in a study setting resulted in educators feeling that the adaptive nature of VLE was able to provide supportive corrective feedback to students in a timeframe that they could not

match (Schuetz et al., 2018). The adaptive technological features of some VLE has enabled educators to create personalized lessons that meet the unique learning needs of students (Belikov & Bodily, 2016; Craig & Schroeder, 2017). VLE has features, such as gamification, which have shown an increase in student motivation (Carver, 2016) and successful goal setting that supports self-regulation (Ruiperez-Valiente et al., 2016). In contrast, Schuetz et al. (2018) found that there was not a statistically significant difference between the scores of students who used VLE in math as an instructional aid and the students who used traditional paper and pencil. With conflicting research studies, further research is needed to develop an understanding of the use of VLE as an instructional support resource in elementary school personalized learning classrooms. Questions 11-14 and 15-16 provided data that lead to this understanding.

Advances in technology have revolutionized education from teacher-centered learning to student-centered learning (Jan, 2017; Job & Sriraman, 2015; Koehler & Mishra, 2009). Classroom educators must develop a 21st-century skill set through the implementation of VLE in each of their students in order for students to be college and career ready (Bishara, 2016; Kivunja, 2014). Current classrooms are filled with digital learners of the Knowledge Age who use technology as a tool to create a collaborative intelligence (Cheok et al., 2017; Schroer, 2018; Siemens, 2005). Without the use of VLE in the classroom, students will not be able to engage the material in a manner that is cohesive to their learning mode and they will fail to thrive as productive members of the global workforce (Alismail & McGuire, 2015; Kivunja, C., 2014). Questions 17 and 18 provided an understanding of the educators' perceptions of OER in a digital learning classroom.

Studies have indicated that VLE is successful for low-performing mathematics students (Outhwaite et al., 2017; Schacter & Booil, 2016), however, research has also found that students'

academic performance decreased by 25% when they were forced to use VLE (Ruiperez-Valiente et al., 2016). VLE do not meet the needs of students with learning disabilities (Cabi, 2018; Smith & Harvey, 2014) and less than 3% of all OER instructional videos are learning videos (Multisilta, 2014). Understanding OER's and VLE's ability to meet these needs in the diverse learning needs of a personalized learning classroom is imperative for 21st-century education. Questions 15, 16, 19, and 20 provided data to develop this understanding.

Observations

Observations were used in this study to collect holistic information on how VLE is used within a 21st-century learning classroom. The use of an observation allowed me to see how the educator perceived VLE through their actions and behaviors as they related and reacted to the use of VLE in the instruction of their students (Cheok et al., 2017) since observation permits the researcher to see the phenomenon in a natural setting (Patton, 2015). The observations of the educators provided me with the necessary first-hand experiences and insight into VLE use as an instructional tool within the classroom to articulate not only VLE positions within personalized learning but the actual degree and scope of use instead of simply the educator's' perceived degree of use (Cheok et al., 2017). I was able to ascertain the educator's attitude toward VLE use as an instructional aid in relation to the two levels of perception, usefulness and ease of use, which are the basis of incorporation into classroom instruction (Cheok et al., 2017; Harding, 2018). The observations followed the interviews, were 45-60 minutes long and conducted in the participants' classrooms during instructional periods. All observations concluded with a follow-up conversation that focused on clarifying the observed behaviors and VLE interactions. This follow-up conversation allowed me to make connections between the actions observed and the phenomena, as well as establish trustworthiness in the study (Patton, 2015).

I used the participant mode of observation since it provides "a holistic understanding of the phenomena under study that is as objective and accurate as possible given the limitations of the method" (DeWalt & DeWalt, 2002, p. 92). In the role of the observer as a participant, I was able to assimilate into the classroom while maintaining the focus of the observation on data collection (McLeod, 2015; Merriam, 1998) and conduct a focused observation. I engaged with students and the educator to inquire how they were interacting with the VLE to determine how the VLE was being used within the instructional format of the classroom. A focused observation uses the information and understandings gained from participant interviews to guide the observation on what key aspects to notice (Kawulich, 2005; Werner & Schoepfle, 1987); thereby, permitting me to focus the observation entirely on the role VLE played in the students' education. I used event sampling to maintain my focused observation (McLeod, 2015). Event sampling occurs when the observer ignores all types of behavior except the specific behavior that the observer has decided in advance to monitor (McLeod, 2015).

Due to the district's privacy rules for students, I did not film or record the observations. I took notes using the observation protocol (Appendix J) while conducting the observation ensuring that I documented and coded all behaviors, actions, words, visuals, and observed data that related to the phenomenon (Creswell & Poth, 2018).

Prior to the observation, I toured the facility in order to become familiar with it (Taylor & Bogdan, 1984). On the day of the observation, I dressed in the manner that met the dress code expectations for the facility, and I made sure the educator made the students aware of the purpose of my observation as recommended by Taylor and Bogdan (1984). Prior to the observation, I *epoched* myself so as to conduct the observation as though it was the first time that I had encountered VLE use in personalized learning (Moustakas, 1994). I conducted the study

with intentionality as I focused on the noema and noesis of the phenomenon of VLE use in elementary education. I paid attention to the noema, or the external perception of the appearance of the phenomenon, remembering that the noema is not the "real object but the phenomenon" (Moustakas, 1994, p. 29). The noesis, the way the phenomenon was experienced by the participant, was the focus of this study (Moustakas, 1994, p. 29).

Moustakas's *epoche* allowed me to bracket out my personal experience and see the phenomena through the eyes of the participant and verstehen the data through transcendental subjectivity (Christensen et al., 2010; Giorgi et al., 2017; Moustakas, 1994). The observation provided information-rich data and descriptions allowing for the further development of an understanding on the essences of the phenomenon, thereby, providing validity to the scientific investigation (Moustakas, 1994).

As I conducted the observation, I made sure to notate the day of the week, date, time, and the codes so that I was able to keep track "of entries, and reflections on and about one's mood, personal reactions, and random thoughts" (Kawulich, 2005, para. 12). During the observation, I notated the things that were seen and unseen without inferring any meaning into the observation which allowed me to maintain the validity of the transcendental approach of this study (Kawulich, 2005; Moustakas, 1994). After the observation was over, I spent time wallowing in the notes and observation with an open mind (Moustakas, 1994).

Document Analysis

A document analysis was used since, when used with the data collection methods of interviews and observations, it established validity and triangulation within the study (Patton, 2015). Documents are stable data sources that can be viewed multiple times while remaining unaffected by the research process or the influence of the researcher (O'Leary, 2014). The

documents that were used within this study were primary sources classified as personal

documents and artifacts (O'Leary, 2014; Patton, 2015). The personal documents consisted of

lesson plans and instructional material created by the participants for instructional use with the

students. The artifacts consisted of site documents that established expectations for OER and

VLE use, the School Improvement Plan, grade level framework tasks, pacing guides, curriculum

maps, and all school and district documents pertaining to OER and VLE use and personalized

learning. The state of Georgia Department of Education website documents, grade level

frameworks, pacing guides, standards, and curriculum maps were also analyzed. There are two

ways, written and oral, in which data on the participants' experiences can be obtained for

phenomenological studies (Giorgi et al., 2017). The interviews and observations provided the

oral data and the document analysis provided the written data. These documents provided me

with the administration's perception of VLE use as an instructional tool within the classroom,

which had significant bearing on the classroom educator's use of VLE (Cheok et al., 2017;

Harding, 2018).

All of the documents were examined and coded to establish an understanding of the use

of OER in personalized learning using open coding (Creswell & Poth, 2018). I paid particular

attention to the descriptions given to ensure that a "good description" was provided, since a good

description allowed "for a rich analysis of the experience" (Giorgi et al., 2017, p. 183). A

coding table was used to connect the codes and themes from the observations and interviews,

with the documents analyzed in order to horizon the data (Moustakas, 1994; Patton, 2015).

Data Analysis

Qualitative data analysis is the process in which the researcher synthesizes the

descriptions, themes, and codes that provide the interconnection of phenomena between the

interviews, observations, and data analysis with the researcher's developed concepts (Graue, 2015). To achieve this synthesis, I created a conceptual framework that provided an infrastructure for the study, thereby, allowing me to organize and group the codes and themes from all data collection sources into one framework (Patton, 2015).

The interviews, observations, and documents were analyzed individually first and then together using phenomenological reduction, imaginative variation, and synthesis (Giorgi et al., 2017; Moustakas, 1994). All of the data collected were rich and thick with details and contextual information providing a "good description," thereby, allowing for a rich analysis of the interviews, individually and as a whole (Giorgi et al., 2017, p.183).

I have created a document analysis rubric (Appendix K) that was used to examine all of the collected documents. I followed the eight steps of document analysis established by O'Leary (2014) which begins with gathering the relevant primary source documents. The documents analyzed were the lesson plans and instructional materials created by the participants for instructional use with the students. Site and district documents created by administration establishing expectations for personalized learning and OER/VLE use, the School Improvement Plan, grade level frameworks tasks, grade level pacing guides, and grade level curriculum maps were also analyzed. Primary documents were reviewed from the state of Georgia Department of Education that includes grade level frameworks, pacing guides, standards, curriculum maps, and instructional material provided for the educator. I used an organizational scheme to process the documents by making working copies of each document, establishing authenticity, and concluding with exploring for biases and background information as O'Leary's (2014) advises. I then used the document rubric (Appendix K) to code and identify themes throughout the document.

I utilized Moustakas' (1994) four step data analysis process which begins with the *epoche* and concludes with the synthesis of the data collected on the phenomenon of the perceptions of personalized learning elementary educators on the use of VLE as an instructional aid. Moustakas' (1994) four steps are the *epoche*, phenomenological reduction, imaginative variation, and synthesis. The *epoche* allowed me to view the data obtained from the interviews, observations, and documents with a pure conscience and clean perceptive, as it was established before the data collection occurred. The *epoche* step entails setting aside prejudgments and bias using systematic efforts to focus entirely on the phenomenon being investigated (Moustakas, 1994).

The second step, phenomenological reduction, which is where the phenomenon is described in its totality from the clean perspective achieved in the first step, provided rich data that was then horizontalized once it was coded across all the data (Moustakas, 1994). The third step, imaginative variation, provided an understanding from the data of the phenomenon, thereby, allowing me to create a synthesis of the meanings and essences of the themes found in the data collected. The essence of a transcendental phenomenological study is the unifying of the noema and the noesis resulting in an understanding from the experiences of participants.

The phenomenological reduction step includes obtaining a "textural-structural synthesis of meanings and essences of the phenomenon" being investigated (Moustakas, 1994, p. 36). Bracketing, the removal of my personal experiences and beliefs from the study (Moustakas, 1994; Patton, 2015), was completed through reflexive journaling throughout the entire study (Giorgi, 1997; Giorgi et al., 2017; Moustakas, 1994). Horizontalization of the data was completed by attributing each piece of data with an equal value bringing precision to the data and allowing for the elimination of repetitive and irrelevant data while creating a textual description

(Giorgi, 1997; Moustakas, 1994; Patton, 2015). Horizontalization identified invariant horizons within each of the participant's experiences and grouped them into coded themes (Moustakas, 1994). Clustering the codes began with open coding and concluded with final coding (Creswell & Poth, 2018; Patton, 2015). In addition, I used open coding throughout the observation, document analysis, and interviews. Open coding refers to the system of coding were the obtained information is placed into major classification categories/themes for analysis (Creswell & Poth, 2018).

The next step, imaginative variation creates enhanced and/or expanded versions of the themes while seeking possible meanings through the context of the data (Giorgi, 1997; Moustakas, 1994). Memoing, or "short phrases, ideas, or key concepts that occur to the reader" synthesizes the themes throughout the data into higher levels of "analytic meanings" (Creswell & Poth, 2018, p. 187), and was used to organize the coded themes and ideas. Winnowing was used to organize the themes into manageable horizons. "Winnowing that data, reducing them to a small manageable set" of five to seven themes allow the researchers to write the final narrative (Creswell & Poth, 2018, p. 187). The textural descriptions were achieved with the use of specific quotes detailing the participants' perceptions of the phenomenon and focused on the how and why behind the phenomenon (Creswell & Poth, 2018, p. 187).

The synthesis, the how and what of the experience studied (Patton, 2015), was presented with the interweaving of the meaning and essence of the experiences of each of the participants together into one fundamental structural and textural description that presents the combined experiences of the phenomenon as a whole (Giorgi, 1997; Moustakas, 1994). "It is the articulation, based on intuition, of a fundamental meaning without which a phenomenon could not present itself as it is" (Giorgi, 1997, p. 242). A data analysis framework was used with the

interviews, observations, and documents in which each theme/code/category was recorded in detail and any overlap was avoided for the data audit (Patton, 2015). Data analysis concluded with assessing the themes to make "carefully considered judgments about what is meaningful in the patterns, themes, and categories" while interpreting and abstracting ideas "out beyond the codes and themes to the larger meaning of the data" (Creswell & Poth, 2018, p. 197). Wallowing occurred at each point in the data analysis to ensure that dependability had occurred (Glasser & Strauss, 1967).

Trustworthiness

Qualitative studies rely on their trustworthiness to establish credibility and justify the findings of the study. "The paradigmatic underpinnings of the research and the standards of the discipline" are used to evaluate qualitative analysis (Morrow, 2005, p. 250); therefore, trustworthiness must be established. Trustworthiness was established by specifically establishing credibility, transferability, dependability, and confirmability throughout the study (Lincoln & Guba, 1985). When establishing credibility, the researcher is creating confidence that their findings are truthful and not embellished (Lincoln & Guba, 1985). Transferability allowed the findings to have transference to larger populations and other applicable contexts (Lincoln & Guba, 1985). Dependability illustrated that the study findings were consistent and replicable (Lincoln & Guba, 1985). Addressing the confirmability throughout the study established an *epoche* within the study (Lincoln & Guba, 1985). In order to have a credible, reliable, and valid study, the credibility, transferability, dependability, and confirmability must be established and maintained throughout the research process (Lincoln & Guba, 1985).

Credibility

Credibility was achieved through the use of member checks and triangulation (Patton, 2015). Member checks are the processes in which "the researcher solicits participants' views of the credibility of the findings and interpretations" by allowing the participants to "judge the accuracy and credibility of the account" detailed and the interpretations made by the researcher (Creswell & Poth, 2013, p. 252). Participants were provided with a copy of the transcript and my interpretation of their interview and observation to ensure it was an accurate representation of what was said and what occurred, thereby; providing credibility to the study (Creswell & Poth, 2013; Patton, 2015). Triangulation was also used to provide credibility within this study (Creswell & Poth, 2013; Gall et al., 2006; Patton, 2015). Triangulation occurs when at least three different data collection methods establish the validity and consistency of the research findings (Gall et al., 2006). There was a twofold triangulation within my study between the use of the same open-ended questions for all participants in the interviews, by collecting data from the various sources, and using different methods (interview, observation, site documents) to answer the research questions that establish credibility (Patton, 2015). Credibility was further established within this study by maintaining an internally consistent focus on the use of VLE during the interviews and observations (Krefting, 1991).

Dependability and Confirmability

Dependability and confirmability address the consistency of the study (Guba & Lincoln, 1989). Dependability and confirmability were achieved within my study through the use of a reflexivity journaling and wallowing in the data (Glasser & Strauss, 1967; Patton, 2015). The data were rich and thick with details and contextual information, which provided further dependability and confirmability (Guba & Lincoln, 1985; Patton, 2015). All the details on the

processes of data collection, data analysis, and interpretation of the data, including how each theme was recorded, was included within the study. Reflexivity was used to address confirmability. Reflexivity is being self-aware as the data are being collected and processed (Patton, 2015). To achieve *epoche*, which is to be aware of personal bias and refrain from judgement based on personal knowledge (Patton, 2015), I used a reflexivity journal (Appendix M) throughout the study to detail personal reflections about what was happening in regard to my values, beliefs, and interests. Wallowing occurred at each point in the data analysis to ensure dependability had occurred. In addition, dependability and confirmability were "enhanced through triangulation to ensure that the weaknesses of one method of data collection are compensated by the use of alternative data-gathering methods" (Krefting, 1991, p. 220).

Transferability

Transferability within a qualitative study refers to the reader's ability to transfer the information and findings from the study to other information (Guba & Lincoln, 1985). Transferability in this study was achieved by purposive sampling of the site and participants (Patton, 2015), and descriptions that were rich and thick (Creswell & Poth, 2018). Obtaining "representativeness of the informants for that particular group" was the most important factor in transferability (Krefting, 1991, p. 220).

To illustrate that this representation had been achieved I provided a dense rich background of the demographics of the participants and setting (Krefting, 1991). Rich and thick descriptions enable "readers to make decisions regarding transferability" (Creswell & Poth, 2018, p. 252). Purposive sampling, the act of selecting information-rich participants who will, by their nature and substance, illuminate the phenomenon being investigated, provided transferability within my study (Patton, 2015). I also provided a data audit trail (Appendix N)

throughout the study. A data audit is where "the auditor examines whether or not the findings, interpretations, and conclusions are supported by the data" (Creswell & Poth, 2018, p. 252). A data audit was conducted with the use of an audit trail (Creswell & Poth, 2018). An audit trail could be conducted on this study since I included rich details for the purpose of replication on exactly how, why, and where all the data were collected (Guba & Lincoln, 1985).

Ethical Considerations

No data were collected until IRB approval, site approval, and all consent forms had been obtained. Pseudonyms were used for all of the participants, the school district, and the school to ensure confidentiality (Patton, 2015). All participants were given a consent form to sign that detailed the focus of the study (Creswell & Poth, 2018). I ensured that each participant understood that their participation was voluntary and that they could decide to withdraw from the study at any time and for any reason (Creswell & Poth, 2018). All hard copy raw data containing the school, district, and/or participants' information were stored in a locked safe and I was the only person who had access to the material (Creswell & Poth, 2018; Gall et al., 2006). I gave each participant a pseudonym once they signed the consent form. I placed the pseudonym onto an electronic list that was stored on a password protected cloud. All interviews were conducted in a secure location where others could not easily overhear the conversation. I personally transcribed all interviews and observations within 72 hours of completing each interview. The transcribed data were attached to the pseudonym immediately. A copy of the transcription from the interview was given to the participants and a telephone conference was used to establish the validity and reliability of the data (Patton, 2015). All soft-data collected, such as the recorded interviews, were removed from the recording device and kept on a secure encrypted server and copied onto a flash drive to be stored separately (Creswell & Poth, 2018; Gall et al., 2006). All

hard-data collected were stored in a locked document safe apart from all other collected data and I am the only person with access to it (Creswell & Poth, 2018; Gall et al., 2006). All of the raw data will be kept secure for three years, after which time it will be properly disposed of by either deleting or shredding (Patton, 2015). After the 3-year time period all of the paper material will be shredded and taken in a locked file transporter with the flash drive to a recognized secure confidential information disposing facility. The electronic data will be erased from the cloud and the flash drive. I had no authority over any participant or anyone connected to a participant. I ensured that no relationships were jeopardized or injured by the sharing of research information. I worked at a sister school within the district and took extreme precautions to ensure a neutral bias throughout the study and that there were no conflicts of interest by adhering to established research protocols by Creswell and Poth (2018).

Summary

The transcendental phenomenology inquiry approach was used to obtain an understanding on the perspectives of 13 elementary educators on the use of VLE in personalized learning instruction. The site was purposefully selected and, after IRB approval was obtained, participants were purposefully selected so that information-rich details were obtained from those closest to the phenomenon (Patton, 2015). The data collection procedures used for this study included semi-structured interviews, observations, and document analysis. The semi-structured interviews provided the educators with a platform in which to add their experiences to the phenomenon of VLE use in personalized learning of digital learners. The observations allowed me to observe what aspects of OER were being used in the classroom as well as how the instructors feel about the use of OER (Dayag, 2018). I had their words detailing their feelings as well as their actions. The document analysis provided me with an understanding of the

expectations that are placed on the educators by the district and state administrators, which contribute to the educators' perspectives of OER. These external expectations contribute to the educators' use and perceptions of VLE as an instructional aid (Dayag, 2018). The understandings obtained from this study allowed for the further development of OER to meet the instructional needs of all students in the classroom, as well as the professional development of in-service and pre-service educators. Information-rich details were given on every aspect of the study to ensure replication of the study and an audit trail can be performed establishing trustworthiness in the study. The steps that were taken throughout the study to ensure triangulation were achieved in a twofold manner and all ethical considerations were considered to permit the results of the study to have reliability and validity within the educational world. The steps of this transcendental phenomenological study in conjunction with the data collection and data analysis methods detailed in this chapter provided a holistic in-depth understanding of the phenomenon regarding the perceptions of personalized learning educators on the use of VLE as an instructional aid for digital learners.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. This study was guided by one central question and four guiding questions to describe the perceived phenomenon experiences of 13 elementary educators who have developed personalized learning classroom perceptions on VLE use as an instructional academic support for students. The participants completed a semi-structured interview with open-ended questions and participant mode observations of classroom instruction. The data collection also included the document analysis of school, district, and state documents that directly pertain to OER and VLE use in the classroom and personalized learning. To maintain the confidentiality of the participants, pseudonyms were used and all identifying factors have been removed.

Chapter Four includes a rich description of the 13 participants through a demographic table, as well as, a narrative. The relevant themes of the data collected; as they relate to the central research questions and the four guiding research questions, are presented in this chapter. The qualitative data analysis was used to synthesize the descriptions, themes, and codes to create the interconnection of phenomena between the interviews, observations, and document analysis with the researcher's developed concepts (Graue, 2015). Synthesis of the data collected was achieved by utilizing the conceptual framework that I created. Each of the interviews, observations, and documents were analyzed individually prior to examining them together using phenomenological reduction, imaginative variation, and synthesis (Giorgi et al., 2017;

Moustakas, 1994). The data collected were rich and thick with details and contextual

information providing a "good description," thereby, allowing for a rich analysis of the data for

individual and as a whole (Giorgi et al., 2017, p.183). A document analysis rubric; located in

Appendix K, was created to examine all the collected documents through the eight steps of

document analysis established by O'Leary (2014). The central research question and four

guiding research questions revealed the previously unheard voice of educators. The central

research question and guiding research questions are as follows.

Central Research Question

How do elementary educators explain their perceptions of the use of OER and VLE in

personalized instruction for students?

Guiding Question One

How do elementary educators use VLE as instructional support in the classroom?

Guiding Question Two

How do elementary educators explain the role of VLE in 21st-century education and digital

learning?

Guiding Question Three

How do elementary educators perceive VLE in relation to meeting the academic needs of the

diverse learners within their classroom?

Guiding Question Four

How do elementary educators perceive the learning needs of 21st-century students?

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Participants

</div>

Purposeful sampling, a non-probability sampling method used to select information-rich

participants, was conducted to select 13 participants to complete this study (Gall et al., 2006;

Patton, 2015). Purposeful sampling allowed me to access a particular subset of participants with

direct experiences of the targeted phenomenon (Gall et al., 2006; Patton, 2015). Thematic

saturation occurred as a result of continuous sampling. The sample size of 13 participants

included 92% female educators and 8% male educators. Of which, 15% of participants identified

as Black, 8% were Hispanic, 23% were Multiracial, and 54% were White. The participants had a

vast array of teaching experiences with VLE and personalized learning with 31% having had less

than five years of teaching experience, and 69% of the educators had more than 5 years of

experience. As shown in Table 1, a maximum variation representative of educators providing

21st-century students with a personalized learning education in a public elementary school was

achieved through the demographics of the study. All participants participated in a semi-

structured interview consisting of 20 open-ended questions and an observation of classroom

instruction. The participants also provided various documents such as lesson plans and

instructional material that pertained to VLE and OER use for data analysis.

Table 1

Participant Demographics

Participant (Pseudonyms)	Grade Taught	Years Taught	Years Using VLE/OER	Years Using Personalized Learning
Kelly	3rd	8	4	4
Frank	4th	9	3	4
Susan	3rd	20	4	5
Sherry	K-5th	20	5	5
Mary	3rd-5th	4	4	4
Heather	1st	9	5	5

Bonnie	K-5th	4	4	4
Ruth	3rd	34.5	4	5
Megan	K-2nd	3	3	3
Margret	4th	12	5	6
Julie	5th	3	3	3
Barbra	3rd-5th	22	5	9
Carol	5th	12	5	9

Kelly

Kelly had been teaching in the public elementary setting for eight years. She had taught kindergarten and third grade. She was currently teaching the third grade. She was comfortable with technology and stated in her interview that she saw it as "a necessary part of the teaching environment." She used VLE and OER on a daily basis and maintained a personalized learning environment. Kelly used VLE in a station rotation student-centered learning environment. Kelly had students using four different VLE platforms as an instructional resource within the station rotation. Kelly used OER to introduce whole class lessons and to teach individual lessons to the students. She had a unique perspective as an educator since she had a child, identified as a student with special learning needs with an Individual Education Plan (IEP), who had been educated using personalized learning and VLE for the last five years. Kelly's classroom was very neat and organized, which allowed students to easily navigate to the various stations. Kelly's classroom was very quiet and had little to no student interactions. Kelly provided lesson plans, student assignment outlines, district newsletters, and district training materials related to personalized learning and VLE and OER use within the classroom.

Frank

Frank was a single parent to three girls and a fourth-grade mathematics teacher for 78 students. Frank had only taught math in his teaching career. Frank utilized a student-centered teaching pedagogy. Frank was extremely proficient and comfortable with technology. Frank had a teaching pedagogy that was based in technological pedagogical content knowledge (TPACK). Frank's TPACK was focused on providing his students with a foundational education, thereby; permitting them to become productive members of the global human capital. Frank used a form of station rotation to incorporate VLE into the daily instruction. Frank used VLE and OER to introduce new concepts in whole group instruction. Students used two VLE platforms for remediation. Frank's classroom was interactive with different exhibits of instructional material and student work highlighted using QR codes. His room was slightly disorganized and had student academic conversations in the non-technology groups that exhibited increased conceptual understanding of the topics. Frank provided lesson plans, student assignment directions, instructional materials, school and district newsletters, and district training materials related to personalized learning and VLE and OER use within his mathematics classroom.

 Susan

Susan taught all subjects in a third-grade general education classroom consisting of 25 students. Susan had shifted her teaching pedagogy over the last five years from teacher-centered to student-centered in order to meet the students' academic needs. She was not as comfortable with the use of technology; however, she did use it in her daily instruction. Susan used VLE in a station rotation where students went to the technology center at least twice a week. Susan felt overwhelmed with the responsibilities that were placed upon teachers and the lack of support she

felt in all aspects of teaching, but especially in the use of VLE in the classroom instruction.

Susan appeared overwhelmed during her observations as she struggled to maintain classroom

management and instruction. Susan's classroom was decorated to mimic a home and she had

various furniture such as lamps, chairs, and rugs that made the classroom warm and inviting.

She spoke often of feeling overwhelmed and frustrated with student behavior that was not

conducive to the learning environment. Susan provided lesson plans, student assignment

outlines, and district training materials related to personalized learning and VLE and OER

instructional use within the content subjects of mathematics, social studies, science, and

language arts.

Sherry

Sherry was a gifted educator who served 72 students identified as talented and gifted or

academically advanced as compared to their grade level peers. Students would come to Sherry

for a 45-minute instructional session with their ability level peers for mathematics and language

arts. Sherry had a student-centered teaching pedagogy that was founded in TPACK and utilized

a flipped classroom, where students learned the material at home and practiced with her in the

classroom. Sherry did not use a station rotation with technology in the classroom. VLE and OER

were incorporated into all academic assignments and activities. Sherry was one year from

retirement and expressed her desire to instruct a different set of students. Sherry had a very quiet

classroom. Sherry had a non-traditional classroom setting and had no desks. She had three

couches, and three kitchen tables with chairs pulled around them. There was an excessive

amount of research books located in six bookcases that lined the classroom. Sherry provided

lesson plans, student assignment directions, instructional materials, project outlines, and district

materials guiding the use of VLE within the content subjects of mathematics, social studies, science, and language arts.

Mary

Mary taught students who were identified on the autism spectrum. Mary worked with students who were in an inclusion general education classroom as well as those who remained with her in the resource classroom. Mary had a total of six students on her case load. Mary personalized all instruction for each of her students. Mary was confident in the use and incorporation of technology in her daily instruction. Mary had worked as a tutor in another state, utilizing technology to address misunderstandings prior to becoming an elementary school teacher. Mary was new to the district and new to the state. Mary used technology as a reward for targeted student behavior. Mary did not use VLE in a station rotation. Mary used VLE and OER as tools to introduce lessons and during direct instruction with the students. Her students never worked on VLE without her direct guidance regardless of their academic abilities. Mary provided redacted copies of IEPs that dictated the students' academic abilities and structural needs as they related to the use of VLE. Mary also provided lesson plans, student assignment outlines, instructional materials, project outlines, and district materials guiding the instructional use of VLE.

Heather

Heather spoke repeatedly about achieving student success for all students. She researched and readily tried new technologies to meet her students' needs. She utilized a student-centered learning environment. She had a firm understanding of available VLE and OER resources and was confident in her use of technology within the classroom. She differentiated instruction to meet the individual academic needs of each student and did not use

station rotation. I observed that Heather was confident in her teaching and comfortable with all

of the student movement and talking. Heather had a very bare classroom with little decorations

and no student work was posted. Heather did have a carpet area that students used to sit on the

floor, and three bean bag chairs for flexible seating. Heather provided lesson plans, instructional

materials, project outlines, and the outlines of student work assignments.

Bonnie

Bonnie was the early intervention educator serving 96 students who demonstrated below

grade level expectations as compared to their immediate peers. Bonnie was responsible for

addressing the educational needs of students who had been identified as performing below grade

level and are at risk of not reaching the academic goals established for their grade level. Bonnie

spent an hour daily with each grade level working on mathematics and language arts skills.

Bonnie used a student-centered teaching pedagogy deeply situated in TPACK. Bonnie used

VLE and OER in direct instruction, as well as in station rotation to incorporate VLE into the

academic instruction. Bonnie provided a unique perspective to the study, as she was a mother of

an elementary student identified as twice exceptional; the student was gifted in mathematics but

had a learning deficit in language arts. Bonnie's classroom was organized and displayed student

work. Bonnie provided instructional materials such as lesson plans and assignment outlines that

directly related to the use of VLE and OER in personalized learning.

Ruth

Ruth was an educator for the third grade at the time of the study; however, she had taught

kindergarten, first, and third grades in a general education classroom for a span of 34.5 years.

Ruth had shifted her teaching pedagogy from teacher-centered to student centered and has been

educating students using personalized learning for the last five years. Ruth was not confident in

her technological abilities and felt uncertain as to where to obtain OER and VLE resources to address specific student needs. Ruth had established three students as technology helpesr and students with technology issues went to these students to get help. The observation of Ruth revealed that she was confident in her small group instruction but struggled to understand the students' instructional needs when working with the VLE program. However, Ruth differentiated and personalized each lesson to meet the unique learning needs of her students. Ruth used only the district suggested VLE in station rotation for each of the academic subjects. Ruth provided district provided materials for the inclusion of VLE, as well as lesson plans and outlines of student assignments.

Megan

Megan taught 14 students in grades kindergarten through second grade who were identified on the autism spectrum. Megan worked with students who were in an inclusion general education classroom as well as those who remained with her in the resource classroom. Megan used a student-centered teaching pedagogy. During her observation, Megan was facilitating two groups of students while at the same time helping the students that needed assistance in the technology group. Megan was observed to be confident in her abilities and easily assisted all students. Megan was comfortable with technology and familiar with various VLE and OER resources. Megan personalized the general education material to meet the needs of each of her students. Megan used VLE in her daily instruction in a station rotation procedure. Megan provided lesson plans, the outlines of her student assignments, redacted copies of student IEPs, which were used to identify the educational needs of her students, and district provided materials dictating the use of VLE in academic instruction.

Margret

Margret was a social studies and science teacher for 98 students per subject. Margret was confident in the use of VLE and the incorporation of technology into her daily instruction. She had a student-centered teaching pedagogy with a firm foundation in TPACK. She used technology to differentiate instruction and personalized each lesson for her students. Margret used a form of station rotation to incorporate VLE into the personalized instruction of her students. Margret's classroom was very disorganized with piles of papers and instructional material all over the classroom. Margret was observed to have little classroom management skills and struggled to maintain control of her students' behavior. Margret gave the students freedom to alter assignments to include their interests. Margret used VLE as a resource to further direct instruction. Margret provided lesson plans and outlines of student assignments.

Julie

Julie taught science and social studies to 110 students. Julie used a student-centered TPACK teaching pedagogy. Julie spent her spare time becoming familiar with the current trends in education and believed that technology was an essential part of 21st-century education. Julie had a very clean and organized classroom that had very few decorations and no student work exhibited. Julie was very energetic and excited about teaching. Julie differentiated and personalized academic instruction for each of her students with VLEs. Julie utilized VLE and OER in her daily instruction. Julie provided lesson plans, research articles, and outlines of student assignments.

Barbra

Barbra taught special education and had 45 students on her case load. Barbra pushed into the general education classroom and pulled the students she served out of the classroom to

address specific academic and behavioral needs according to their IEPs. While Barbra was currently teaching in the United States, she had taught outside of the United States over the last 10 years. Barbra used a student-centered teaching pedagogy. Barbra was very concerned about VLE's ability to meet the learning needs of the students that she served. Barbra was observed in her own classroom with a group of third-grade students. The students came from various homerooms and had dissimilar learning needs, which made creating ability-based groups very difficult for Barbra. Barbra was not very comfortable with technology use and felt as though she needed more training for the successful use of VLE in the classroom setting. She was using VLE in the personalized instruction of her students. Barbra provided lesson plans, redacted IEPs, outlines of student assignments, and district provided materials pertaining to the use of VLE in instruction.

Carol

Carol taught in a fifth-grade general education classroom and was responsible for teaching all subjects to her students. Carol felt technology was an important part of daily instruction and used VLE to personalize the academic material and lessons for each of her students. Carol was a mentor to other teachers in their use of technology and personalized learning. Carol used both the VLEs recommended by the district, as well as personally discovered VLE in the personalized instruction of her students. Carol spent her spare time researching current teaching practices. Carol was working to obtain her specialist in education degree to further her teaching abilities and education. Carol was observed to be positive in her interactions with her students and provided a supportive learning environment. Carol was very comfortable in her teaching abilities and was excited about the use of technology in the

classroom. Carol provided lesson plans, outlines of student assignments, and district provided teaching materials that identified VLE's instructional use.

Results

This transcendental phenomenology qualitative study achieved triangulation while obtaining an understanding on the perspectives of 13 elementary educators on the use of OER in personalized learning through the use of interviews, observations, and document analysis. Triangulation, the use of multiple data collections methods, established a comprehensive understanding of the phenomenon, thereby, establishing validity to the study through a convergence of information (Patton, 2015). The data collected were coded for themes using clustering coding and horizontalization. Horizontalization identified invariant horizons within each of the participants' experiences, observations, and documents analyzed and grouped it into coded themes (Moustakas, 1994).   A detailed coding table, (see Table 2), was used to connect the codes and themes from the data collected to ensure the data were horizontalized (Moustakas, 1994; Patton, 2015).

Themes Development

The data coding revealed six distinct themes consisting of feedback, personalized learning, instructional tool, gamification, behavioral issues, and flipped learning. The data collected revealed an unexpected theme of flipped learning. Flipped learning consists of the student learning the material at home on their own and then practicing in the classroom with the educator instead of first being exposed to the material in the classroom and practicing at home (Cabi, 2018). Five of the participants spoke to the need for flipped learning in 21st-century education and expressed VLE's ability to facilitate this manner of learning. The remaining five

themes were directly related to the central and guiding research questions discussed later in this section. Following Table 2 each of the six themes are discussed in detail.

Table 2

Coding Table

Open Codes	Enumeration of open-code appearance across data set	Themes
Feedback required for students	69	Feedback
VLE lack of adequate feedback	54	
Students do not use VLE feedback	34	
VLE differentiation	12	Personalized
VLE individualizes	19	Learning
VLE can be adjusted to meet students' needs	10	
Personalization required for achievement	20	
Meeting IEP/academic needs	33	
VLE makes personalization possible	11	
Practice tool	19	Instructional Tool
Remediation tool	16	
Intervention tool	15	
Not direct instruction	23	
Small group	44	
Engagement	19	Gamification
Buy-in	11	
Reward	11	

Clicking	21	Behavior Issues
Off task	22	
Frustration	21	
Flipped Learning	23	Flipped Learning
Flipped Classroom	11	

Feedback. All 13 participants spoke to the feedback provided by VLE as well as the personal feedback that they provided to students. All participants stated feedback was the most important component of 21st-century learning. The participants stated that the students needed the feedback to academically progress in their understanding and skills. Susan stated in her interview that, "Learning can only occur if they [the students] can understand how they are performing." The observation supported the importance of feedback for students as they only progressed in understanding when adequate feedback was provided. The district guideline for VLE use stressed the importance of feedback for students by stating that it was "imperative to provide feedback to students about their progress" (Lakeside School District, 2019).

In my observations I noticed that students relied heavily on their teacher to provide the fundamental feedback needed to progress in their understanding and that the feedback provided by VLE was completely disregarded by the students. In all 13 of the observations, the students would take their computer to the teacher to ask for assistance on the VLE work assigned before moving on to the next section of work. During the observation of Frank and Carol's classroom, the students stated they could not understand what the VLE feedback was explaining to them and so they went to the teacher or a peer to get clarification. Students did not progress in the understanding of instructional material if they did not get the clarification on the feedback, and continued to make the same mistakes.

Observing students progressing through the VLE IXL lessons in Ruth, Megan, Margret, and Barbra's class revealed extreme frustration from all of the students as they tried to understand the feedback that was provided by the VLE site. Students fell into two categories when working with the feedback: they either sought outside help to understand the feedback and progressed in their understanding, or they clicked through the feedback provided and did not progress in their foundational understanding of the practice material. Students in all observations asked peers or the teacher for assistance in understanding the feedback that was provided or simply moved on to the next problem without developing a conceptual understanding of the task. Feedback was shown to be the critical feature in academic progression for students when using VLE.

All participants and observations aligned with Julie's statement in her interview that VLE "feedback is just one way of doing it, you know most of the students just click past it and never know what went wrong." Eleven of the participants spoke to the feedback being frustrating for students as it did not match all modes of learning and "the students with academic needs get angry and frustrated refusing to engage with the program any further" (Barbra, personal communication, December 17, 2019).

In contrast to what the teachers said about the feedback provided by the VLE, I found the following information when I examined it. The feedback provided by VLE is a key feature in successful academic advancement for students. District and school documents spoke to the use of feedback to address student misconceptions and increase understanding. The district and school documents detailed what aspect of the VLE site to use for each area of academic weakness for students. The district documents spoke more to the use of I-Ready and IXL as VLE programs to address student academic needs since they provided the student with

constructive feedback. The school and district use the feedback that is generated from the VLE platforms to understand specific student areas of weakness and growth. The school and district scheduled meetings that used the feedback from the VLE sites to track student academic growth in content standards. The meetings were grade-level meetings, grade band meetings, academic content meetings for all of the educators in the entire district, and administrative meetings. Investigation of the state frameworks tasks revealed that all of the VLE sites, like Estimation 180 and Khan Academy, suggested that education utilize feedback to facilitate depth of knowledge through connective learning. However, the technology links listed in the state frameworks task do not rely on feedback but rather personalized practice to increase student academic comprehension by creating connections.

The participants stated in their interviews in reference to the first guiding question that VLE, when used in the classroom, provided instant feedback to the students as they practiced the assigned academic material on their own. Julie stated in her interview that, "VLE allows the students to have immediate feedback on their answers, you know faster than; I could give it to all of them individually." Susan made the comment in her interview that, "VLE gives students feedback on what they have completed and it shows them why they got it wrong." The observations supported these statements as students received immediate feedback on their work and were given supportive feedback that allowed them to see the correct answer. During the 13 observations, all students received immediate feedback on their progress that was displayed on the screen for them. The document analysis revealed a system based on constructive student feedback. Educators were provided with "feedback toolboxes" specific to the district expectations that allowed the educators to access banks of resource material specific to certain VLEs, I-Ready and IXL; used for the students.

The participants stated in their interview when addressing guiding question two that VLE allowed them to maintain small group instruction with their students regardless of the larger class sizes. Eleven of the participants stated that VLE provided the immediate feedback that was required for the students to practice the standard individually, which freed the educator to target academic needs of the other students. Carol commented in her interview that, "VLE is sometimes like a babysitter. It helps them practice what they need to giving them the feedback they need to keep going." Margret said in her interview that, "Having VLE gives me that extra helper in the room to run the group that I am not at."

The observations revealed that VLE is able to provide students with feedback at a rate that the educator cannot match. The educator was only able to provide instant feedback to a small number of students at one time, whereas all students using VLE received instant feedback. During the observations, students were observed struggling to understand the feedback given and relied on their peers and educator to understand the explanation that was given. The feedback that was provided was standards-based in the terminology that was used, and in the strategies provided to solve the problems in the feedback it was noted that the students struggled to understand what the feedback was telling them.

The document analysis revealed the importance of feedback for students when using VLE, as well as with traditional instruction. While investigating district documents I discovered a common theme on the perception of feedback. The district, school, and educators felt that feedback allowed them to understand the misconceptions that students had and enabled them to address the areas of weakness for each student. The district stated that part of the educator's job was to ensure that feedback that was provided was "constructive" and helped the student to progress in understanding. None of the reviewed documents spoke to VLE feedback directly.

The participants all referred to the inefficacies of VLE feedback to meet the academic and instructional needs of their students in their interviews when addressing guiding research question three. Nine of the participants stated, as Bonnie did in her interview that the VLE feedback was "generic and did not match the learning style of the students." Twelve of the participants stated, as Mary did in her interview, that the feedback was "frustrating for students" which caused them to misbehave and disengage from the lesson. Participants felt as Barbra dod and stated in her interview that "the feedback does not change to meet the students' needs" or level of understanding. Kelly (personal communication, December 11, 2019) stated that the "feedback is not individualized to the student and the mistake that they made so they cannot grow from the feedback." Julie stated in her interview that, "only teachers can clear misconceptions, not the feedback." The observation data collected highlighted the VLE feedback issue.

Throughout the observations, it was noted that the feedback given was not in a student-friendly language, which resulted in confusion and failure to progress academically. In addition, the observed feedback provided did not address the mistake that was committed that resulted in the wrong answer and was also generic in nature. While observing Kelly and Susan's classroom it was noted that students got so upset that they had an emotional breakdown trying to understand the feedback that was provided. While observing Sherry's classroom the students made a comment stating, "but that does not help me," as the student clicked the hint button for the third time (personal communication, December 15, 2019). I also noted that high levels of frustration associated directly with the feedback provided by the VLE. I also noted the feedback for students was the same no matter the mistake that was made. The observation data contained the theme of feedback failure just as the interviews and documents did.

Analyzing the documents revealed the feedback theme throughout the collected data. The state department of education spoke directly to the need for feedback in the statement in their technology plan that educators need to "engages in negotiation, stimulates and monitors discussion" as they help "students to construct their own meaning by modeling, mediating, explaining when needed, redirecting focus, providing options" (Georgia Department of Education, 2008, para 15). Feedback is an integral part of the district technology implementation plan. The district stated that "effective use of technology" for instructional purposes is for the "information acquisition, retrieval, manipulation, distribution, storage, and the enhancement of student learning," which is accomplished through constructive feedback.

All the participants stated in their interviews, as Carol did, that in reference to guiding question four that 21st-century students required "constant feedback" in order to master academic information. Susan stated in her interview that:

> Feedback is critical for them. They will not move on until you tell them they are doing well, you know, um, they just keep asking until you give them that constructive feedback. When they are not working directly with you. Even in my group I have to constantly give feedback to each student individually before we can move on.

The observation illustrated the critical importance of feedback for 21st-century students. Students would seek feedback on work from each other and the educator before they would move on to the next section of the activity. Students lacked the self-confidence in their academic abilities to move through the academic material independently. The document analysis data demonstrated the importance of feedback for students as the district stressed the need to "increase online instructional activities that provide students with feedback on their activities" to enable students to develop conceptual understanding and pass courses and graduation

requirements.

Personalized learning. Personalized learning is self-regulated learning with customized instruction that is paced with the academic needs of each individual student (Office of Ed Tech, 2017). Data collected revealed that VLE allowed for the personalization of academic material to meet the academic needs of students within the classroom setting. The participants personalized all the material in relation to their feedback for students, level of instructional material provided, and teaching strategies used as a result of VLE use in the classroom. In her interview, Sherry described the personalized learning in VLE in this manner:

> VLE allows me to adjust the material to the student, you know where they are, academically. I can lower the skill level or raise it but that is hard since I can only raise it so high and you know it needs to be higher for some students and lower for others. I can also adjust how they show me what they have mastered using the VLE. It would be impossible today to personalize lessons without it.

The observation and document analysis revealed that students were able to work on different material than their peers within the same classroom without impeding classroom instruction of the educator as a result of VLE use. The observations in the 13 classrooms revealed that VLE allowed educators to personalize the instructional material to the students' unique learning needs. When I went into Megan's classroom, I observed the blueprint for all of the other 13 classrooms, as some students were working on Reflex and others on IXL. The ones who were working on IXL were not all working on the same lesson but rather a lesson that targeted their unique learning needs. The observation illustrated that VLE was the vehicle that allowed educators in a 21st-century classroom to personalize the material for students. When observing, I noticed each of the classrooms had I-Ready reading and math textbooks that were

stacked in the corner of the classroom. In some classes, the books looked brand new and unused whereas in other classrooms the books were clearly used. These textbooks and VLE were the only modes of differentiation and personalization of instruction that were used in the classrooms. In her interview, when I asked Megan about the textbooks, she stated, "We use them but they are not easy for the students to use. They use the computer easier." During the observations, the students did appear to use the VLE site easier than they did the textbook.

The document analysis indicated that VLE was the most recognized method for educators to personalize instruction for students. The Georgia Department of Education (2019) provides a technology link on the framework's tasks that allows the educator to personalize the practice material that students work with to develop conceptual understandings. The lesson plans that were provided by the educators illustrated that the educators were using VLE as the mode to personalize the instructional material for students. Student needs were detailed on the lesson plan in an abbreviated form and VLE lessons were listed next to each of the particular student needs. Based on the lesson plans, the educators used small group instruction to address misconceptions and VLE to provide individualized practice for each student.

Participants stated in their interviews in reference to the first guiding question that VLE allowed them to personalize the material to the specific academic standard strain upon which they were focused. Margret commented in her interview that "VLE allows me to give the student the practice material that they need at that moment, I can personalize the lessons." The participants all agreed with Megan's statement in her interview that "VLE is the only real way that we can personalize the lessons for our students, it gives us a way to make the lesson individual to them." While observing the students interacting with VLE, it was noted that students were working in small groups on the same set of lessons on the VLE platform which

allowed them to network knowledge with their peers. The VLE was personalized to the students based on the group in which they were working.

During the observation, I noted that VLE allowed the educators to personalize the individual practice for each of the students. VLE was being used by all educators to provide individual practice and remediation lessons for each student based on their unique academic needs. I observed that all students were working on the same VLE site, but on different lessons within that site. For example, in Ruth's classroom, 10 of the students were working on the VLE IXL site; however, three of the 10 students were working on multiplication properties, two students were working on multiplication facts practice, two students were working on polygon shapes, one student was working on time, and the remaining two students were working on equivalent fractions. The observations showed that VLE was the preferred mode of personalizing practice lessons for students. In all 13 of the observations, VLE was the only instructional approach being used to personalize instruction for students. When working with the educator, students were grouped together based on common academic needs. The students were not getting personalized tutoring from the educator; however, they were from the VLE program.

While analyzing the documents associated with VLE use in public elementary school it was evident that the state of Georgia also recognized VLE as the mode to personalize instruction for the digital learning students of the 21st-century. The state framework tasks established to help educators teach the standards included a section entitled "technology links," which includes various links to VLE sites that will allow educators to personalize student practice (Georgia Department of Education, 2019). The Georgia K-12 Technology Plan establishes VLE as the mode to personalize instruction for students, which can be seen in the detailed chart that states "technology integration to personalize our education system" is necessary to make the transition

to 21st-century education for Georgia students (Georgia Department of Education, 2008). The

district and school documents also support VLE use to personalize instruction for students which

can be seen in their student success statement of being on the "cutting edge of incorporating

technology into the classroom teaching" and includes developing a "multi-year plan to not only

encourage greater use of technology but help to facilitate it" with the use of VLE.

All the participants stated in their interview when addressing guiding question two that

they felt "VLE allows me to personalize what students are practicing as they work in their

groups" (Carol, personal communication, December 15, 2019). VLE allowed the participant to

reduce the number of students that they were working with, thereby; allowing them to focus their

attention on the unique needs of each student. Additionally, Susan stated in her interview that:

> Without VLE we would not have a way to individualize the instruction, you know we
>
> don't use textbooks anymore, so it is the only thing we have besides ourselves to make
>
> the lessons personal to the students' learning needs.

The observations illustrated that the participants were provided an I-Ready textbook that

was new in appearance and not used by the students at all. The students were grouped in ability

groups and assigned the same work on the VLE platform. I noted that the feedback that was

given from the participant on student work was personalized to that student; however, the

feedback that was given by the VLE was not personalized to students. The state of Georgia

documents, frameworks tasks, and suggested activities to teach standards; that were analyzed

revealed that there were not personalized to the student but were instead for general use (Georgia

Department of Education, 2019). The document analysis of the material provided by the

Department of Education for the state of Georgia revealed that the state fully supported

personalized learning for students with a section dedicated to personal learning and VLE use for

academic instruction with various VLEs such as Interactivate, Khan Academy, and National

Council of Teachers of Mathematics.

In their interviews when addressing guiding research question three the participants felt

that 21st-century education was based on personalized learning and differentiating instruction for

each of the students. Twelve of the participants spoke to the issues of using VLE to personalize

learning for students. Susan stated in her interview that "VLE is not able to move down low

enough in instruction to meet the needs of all learners." Barbra and Megan both stated that VLE

is not able to read the body language of students to see if they understand the material and are

ready to move on or are too frustrated to continue. Frank stated in his interview that:

VLE only offers learning for one type of student, VLE is very standardized in how it

presents the material and gets the answers. It is not able to meet all the learning needs of

all students and is really only working on the surface to personalize learning.

All the participants stated that VLE was not able to be used to personalize learning for all

students. Sherry said in her interview that "VLE is not able to be manipulated to move high

enough to meet the needs of the high performing students we are restricted how high we can go."

Megan said in her interview that "VLE is not really able to meet all of the student's needs listed

on their IEP except like read aloud," so you really are not personalizing it for the students.

The observations data demonstrated the same theme of personalization of learning using

VLE that the interviews did. While observing Sherry's classrooms it was noted that the VLE

was not able to progress high enough to meet the academic needs of four of the students. Four of

the students were performing third-grade levels above their chronological grade level and were

forced to complete work that was below their academic performance level, thereby, creating

more of a time-consuming activity when VLE was used instead of as a learning opportunity. I

asked the students if they could move to the higher grade level material and was informed that

that was not a possibility because they did not know the full scope of the higher-level material so

it was too hard for them to understand and they could only get credit for the grade level material

that they completed and nothing else. When I was observing Susan's class, I noted the same

issue as with the students in Sherry's class, except the VLE was not able to go low enough to

meet the academic needs of students who were performing below grade level. The students did

not have the conceptual knowledge to complete the grade-level material assigned to them, as

they were one to two grade levels below their current grade. The observation data revealed that

the VLE was not able to recognize the conceptual gaps in understanding and move the students

to the appropriate practice material to build their understanding, and it was not able to advance

students to a deeper level of understanding but instead gave them the same depth of knowledge

practice questions. It was observed that even with the manipulation of the VLE as an

instructional tool by the educator, the VLE was not able to address the academic needs of the

students who were below or above grade level.

The theme of VLE creating personalized learning in a 21st-century classroom was also

found throughout the documents that I reviewed. The district technology plan stated that "Web-

based learning can significantly enhance both the teaching and learning processes" enabling

quality differentiated instruction. The district and school documents did not highlight the issues

that are created when trying to personalize instructional material using a VLE, but rather spoke

to the ability of VLE to allow educators to create personalized learning. Examining the lesson

plans that educators provided revealed the personalization theme of VLE. The educators listed

three to four different VLEs on their lesson plans to address the personalized learning needs of

their students. The educators had to locate lessons on each VLE site that addressed the learning

needs of their students and these selected lessons were notated on the lesson plans. The state documents supported VLE as a personalized learning instructional tool that enables students to "have opportunities to explore new ideas/tools, push the envelope in ideas and research" (Georgia Department of Education, 2008).

Instructional tool. All participants considered VLE as an instructional tool necessary for the instruction of the digital learners that comprise the 21st-century classrooms. Eight of the participants characterized VLE as a "practice tool that allows student to review" the material that the educator has already covered with them (Carol, personal communication, December 11, 2019). Throughout the observation, all the participants had students in small groups for instruction with one group working on a VLE platform such as IXL and I-Ready practicing material that the educator had already taught to the whole class using direct instruction and teacher group individualized instruction. Three of the participants characterized VLE as an "intervention tool" used to remediate instruction for students to increase academic understanding. The document analysis of district provided data, particularly the academic subject newsletters, referred to the use of VLE as an intervention tool for addressing areas of misunderstanding. The Lakeside School District mathematics monthly newsletter for December encouraged educators to "tutor with I-Ready using the teacher toolbox provided to address student academic needs." Two of the participants characterized VLE as a rewarding tool that allowed them to get the students engaged in the lessons.

The observations identified VLE as an instructional tool used to teach the digital learning students of the 21st-century. Observing in Julie, Barbra, and Carol's classrooms I noticed that VLE was the only instructional tool that was being used without the direct instruction or guidance of the educator. Throughout the observations, the educators used VLE as an

instructional tool to allow students to practice material that had been covered prior by the educator. During the interview with Sherry, concerns were raised of VLE being a babysitter for students and not an actual educational tool; however, this is not what was observed in the 13 classrooms that I attended. Each classroom had students engaged using a VLE platform as an instructional tool to practice an area of weakness.

Analysis of the lesson plans revealed that VLE is an instructional tool used to meet the academic practice needs of students (Julie, personal communication, December 21, 2019). All of the educators provided lesson plans and student assignment outlines that detailed the use of VLE as an instructional tool. Sherry, Mary, and Heather provided the outlines for student projects that detailed how the students were to exhibit their understanding of various standards. The commonality between the project outlines was the use of VLE as an instructional tool to find, validate, and exhibit conceptual understanding. The Georgia Department of Education lists various VLE sites as instructional tools for educators to use with students to increase comprehension of the skill being taught (Georgia Department of Education, 2019). The district mathematics December newsletter stated that VLE "is a tool that should be used to meet student needs when practicing for milestones."

The participants stated in their interviews in reference to the first guiding question that VLE is a tool used with students outside of direct instruction. Participants described VLE as a "practice tool" (Frank, personal communication, December 15, 2019) used to reinforce material that had already been taught, as an "intervention tool" used for struggling students (Barbra, personal communication, December 17, 2019), and as Megan stated in her interview, as "a reward for target behavior." All the participants emphatically stated that VLE was not a direct instruction tool to be used with the whole class. The observations revealed that the participants

used an OER as a direct instruction tool 90% of the time and VLE 10% of the time. The observations also revealed that educators thought that they were using a VLE, when in fact they were using an OER. When I was observing Mary's classroom, Mary was observed to be using a Youtube video during direct instruction. When asked Mary indicated that the Youtube lesson was part of her incorporation of VLE into her daily instruction. Youtube is an OER and not a VLE. OER was used throughout the classrooms during the observations as direct instruction tools. The document analysis illustrated that OER and VLE are instructional tools of the 21st-century classroom. The educators provided a briefing from the district detailing the use of OER and VLE as "mandatory instructional tools to be used with the students" in 21st-century classrooms.

The participants stated in their interview when addressing guiding question two that they saw VLE as an instructional tool that allowed them to personalize the instructional material, thereby; allowing digital learning students to connect to the instructional material in a meaningful way. Margret stated in her interview that, "VLE is the how I connect to the students, they learn with technology, so they need the VLE to connect to what I am teaching." Ruth (personal communication, December 20, 2019) stated "VLE is our mode of teaching students." The observations and document analysis revealed that VLE is the mode of instruction for personalized learning in a 21st-century classroom.

The observations aligned with the interviews on the use of VLE as an instructional tool used to personalize the instructional material as the educators used VLE as a tool for meeting the personal instructional needs of their students. In each of the interviews, VLE was the only instructional tool that was used to personalize the instructional material for students. While the educators did have textbooks available to them and they could have used worksheets to

differentiate and personalize instruction for students, they only used VLE. The students observed were very comfortable with the use of VLE and all of the lessons were personalized to the students.

The document analysis also aligned with the interviews and observations on the use of VLE as an instructional tool used in personalized learning. The Georgia Department of Education stated, "Technology is perceived as a tool to identify and solve authentic problems" that are relevant to the individual student, thereby; allowing them to perform at higher levels of "student cognitive processing and in-depth examination of the content" (Georgia Department of Education, 2008). The district documents supported VLE use as an instructional tool in personalized learning, which can be seen in the district technology implementation plan. The plan states that the district's goal is to "improve student academic performance through the integration of curriculum and technology."

The participants stated in their interviews when addressing guiding research question three that they felt that VLE was an instructional tool used for repetitive practice and not for mastery. Mary stated in her interview that VLE "is great for guided practice but not for deeper understanding or, you know, individual tutoring." Mary defined guided practice as practice with the teacher in order to interpret the feedback, explain the questions, and watch student behavior as they move through the material. Ruth (personal communication, December 20, 2019) stated that VLE educators had to closely monitor VLE because "VLE can't determine a weakness or scaffold information it's just a practice tool." The observation data revealed the theme of VLE as an instructional tool for guided practice with immediate feedback. The students were observed in the 13 classrooms to be using VLE as a guided practice tool that afforded them immediate feedback on their work, however, the students did not develop a deeper level of

understanding as they were unable to relate to the VLE feedback given to them. The document analysis revealed that the VLEs were not presented with the directions of the activity, but instead listed were instructional support under headings such as "Technology Connection," "Intervention," and "Independent Practice" (Georgia Department of Education, 2019).

Gamification. Gamification is game-based learning where students play games based on academic skills or are rewarded with game items such as badges or points based on their activity in the assigned lessons (Ruiperez-Valiente et al., 2016). All the participants referred to the importance of gamification to increase student buy-in when using VLE. The participants were in agreement with Julie, who stated in her interview that gamification of the VLE "encourages students to keep doing the lesson even when they are getting them wrong so they can change their avatar or get a new skin." Ruth clarified the use of gamification in her interview when she stated;

> If they are not playing games, they don't want to do the work, you know all they want to do is play the games so we have to work with that to get them to do the practicing that we need them to do.

Throughout the 13 observations student engagement was high when they were working with a VLE that had the gamification component. Students wanted to work with the VLE and asked repeatedly to work with it when it had a gamification component as noted in Ruth, Sherry, and Heather's observations. When students were working with IXL, a VLE with no gamification, associated with the lessons given to the students, they had low engagement and clicked through the lesson without giving much attention to the material presented (personal communication, December 14, 2019). The students' entire focus was on getting through the lesson so that they could play on Prodigy, a VLE with a high degree of gamification.

The VLEs that are recommended for use by the district for instructional intervention do not include gamification components at all. The VLE sites that the district recommended for extended practice included gamification. The VLE sites that are recommended by the Georgia Department of Education for instructional support in the 21st-century classroom include gamification (Georgia Department of Education, 2019). The use of gamification VLE sites was something that the educators and state used to increase student engagement. The VLE supported by the district according to their website, newsletters and communication with educators included several VLEs with gamification components such as Prodigy, IXL, and Reflex.

All of the participants referred to the gamification of VLE in their interviews in reference to the first guiding question as an instructional component that allowed them to increase student engagement and buy-in. Megan stated in her interview that:

VLE cannot be used as any sort of instructional tool without gaming aspect to it, you know students only want to play games so it gets them to play games around what we are trying to teach them.

Ruth, Margret, and Julie each spoke to the need for gamification to, as Julie commented in her interview, "bridge the gap to 21st-century learner" since it is how they learn. Heather stated in her interview that "gamification helps get the students involved in the learning in a way that lets us reach them."

Gamification was a theme the was consistent across the observations. The students worked harder and were more engaged in the VLE lesson if it included gamification. The students that were working on IXL were not as eager to progress to the next level, get the correct answer to the problem, or be on the IXL platform as the students who were working on the Reflex or prodigy site. While observing Megan, Ruth and Heather's class I noted high desires in

the students to progress to the next level on their Reflex lesson and to get the answer correct, which made the students pay more attention to the feedback given to them and to seek understanding from their peers and educator when they were stuck. However, the students in the other classes, such as Susan's class, were observed to take more time to progress through the lesson and to just click through to the next problem without seeking to understand their error.

Analysis of the state, district, and school documents revealed no mention of gamification at all. The documents did not speak to using VLE sites that are founded on gamification to increase student engagement. The VLE sites that were recommended for use by the district included both gamification VLE and non-gamification VLE sites. The district documents focused on using non-gamification sits such as IXL and I-Ready for remediation and independent practice in the classroom. The VLE sites with gamification were listed under parent resources. The VLE sites that the state recommended for use were gamification sites. There were sites listed as instructional support sites that did not have the traditional gamification aspect, but are similar to a game such as Estimation 180.

Behavioral issues. All the participants spoke of several behavioral issues that were directly observed during the observations. All participants referred to students "clicking through the material trying to just get to the end or [the] game" (Susan, personal communication, December 14, 2019) and to "trying to get onto other sites then the one assigned you have to watch them more closely then with the traditional books" (Frankie, personal communication, December 15, 2019). Carol commented in her interview that "They also bully each other using the site like in the comments section or send things to each other." VLE was also used as a reward for target student behavior. Mary stated in her interview:

I put them on as a prize for doing what I asked them to do. They love it but they are not

really getting anything from it, just a reward. Some of them really like Prodigy so they

will finish what I want them to do and then I have them get on IXL or Prodigy or

something you know that will allow them to practice without them really knowing that

they are doing.

During the observations, I observed several behavioral issues. While in Susan, Carol,

Mary, and Julie's classroom I noticed several students who kept clicking off the assigned VLE

site and onto a game or email. Three of the students who were sending emails were sending

emails that contained aspects of bullying and had to be disciplined by the educator (personal

communication, December 20, 2019). Throughout the observations, I noted that the educator

had to constantly and intently monitor the students' online activities and behavior. The educators

accomplished this by having the screens all facing them so they could quickly look up to see

activity. In addition, the district is using Bloski, a technology monitoring system, that monitors

all of the students' activities online at all times. During Carol's observation, the principal came

in to retrieve two students who had accessed inappropriate sites at home the night before.

The analysis of the documents revealed a concern for student behavioral issues in several

documents. The district had an established list of monitoring expectations for teachers to

regulate student behavior on the computer. The district stated that the "Internet is a privilege, not

a right, and inappropriate use will result in cancellation of those privileges," and included 30

different items that would be considered inappropriate behavior. With such a distinct list of

behaviors and clear statement, it is evident that behavior issues are a concern for the district as

they strive to protect each student. The Georgia K-12 Technology Plan states that teachers must

monitor student behavior, thereby; illustrating that there are behavioral issues when students use

technology (Georgia Department of Education, 2008).

Participants stated in their interviews in reference to the first guiding question, that using VLE as an instructional tool created many behavioral issues that impacted classroom instruction and management. All of the participants referred to the students "just clicking through the material to get to the games" as Susan stated in her interview and not really learning on a deeper level the material that was being practiced. Frank summarized the behavior issues in his interview:

> It creates a new behavior issue because students are trying to get onto other sites instead of what they are supposed to be on. They can click between screens really fast. They can get real mean to each other in the comments or help sections or send emails the call texts to each other. You have to watch them a lot closer with the computers then with old fashion[ed] paper [and] pencils.

The observations revealed several behavior issues related to the use of VLE as an instructional tool. Students were observed rapidly clicking to get through the material; students were on different websites that were not the assigned sites; and students were obtaining the answers from peers in order to progress further. During Susan's observations several students simply got the correct answer from their peers and moved on to the next problem resulting in no conceptual understanding. The observations showed that VLE as an instructional tool had many behavioral issues that prevented the students from actually practicing the assigned material.

Analysis of the documents provided illustrated that there are concerns with behavioral issues when using VLE as an instructional support in the classroom. Five of the lesson plans submitted had specific notations of students that had to be monitored while using the VLE. In addition, the project outlines and student assignment instructions detailed a list of expected student behaviors and sites to be on. The district and school demanded that educators monitor

student behavior while using technology to ensure that students were "effectively using technology in a productive manner."

Flipped learning. Sherry stated in her interview that "VLE is really the only way we can allow the students to have flipped learning." Mary replied in her interview that:

Having students learn the material in small doses before going into deeper instruction with the teacher is the best way for special education students to understand the material. It just gives them more time with the material. So VLE allows me to flip the way students learn and I could not do that without the VLE.

Participants felt that VLE was the only way they could allow students to preview instructional material. All the participants stated that it was imperative for student success for the students to preview the material prior to direct instruction with the material. The observations illustrated that the students who had just learned the material with the educator did not do as well with the feedback that was provided on the VLE as the students who were encountering the material for the third time.

The observation data provided the theme of flipped learning as well. Sherry's observation revealed that she used flipped learning to instruct her students. Students were expected to preview the material on their own at home and come to class ready to practice the material with her. During the observation, it was apparent that three of the students did not preview the material prior to the lesson and were struggling to follow along. Flipped learning was successfully employed in Sherry's classroom with the use of VLE. There were two other classroom observations that revealed that VLE was being used to facilitate flipped learning. The students who had previewed the material were able to thrive with the flipped learning instruction and the students who did not struggle some but with the help of VLE, they were able to catch up

to their peers.

When analyzing district data, I noted that it spoke often of being on the "cutting edge of education;" however, it did not speak to flipped learning at all. The school documents provided by Sherry indicated that educators should proceed with caution when using flipped learning as not all students had Internet access or educational support at home that would allow them to be successful with this method of instruction. The state documents I reviewed included the theme of flipped learning as it spoke to the use of flipped learning to address the learning needs of digital learners. The state documents established flipped learning as a mode of personalized learning available for the 21st-century classroom.

Research Questions Responses

The central research question, How do elementary educators explain their perceptions of the use of OER and VLE in personalized instruction for students? was addressed by all of the participants through the interviews, observations, and in the documents analyzed. All of the participants explained their perceptions of the use of OER and VLE in relation to personalized instruction for students by identifying OER and VLE as instructional tools used to personalize lessons. The participants saw VLE as an integral part of 21st-century education. All of the participants described VLE as Frank did in his interview, as "a tool use to differentiate" instructional material, and as Julie stated in her interview that it was "a reinforcing tool giving students a way to practice what they just learned." Seven of the participants described VLE as a way to address the educational needs of 21st-century students. Sherry stated in her interview that "VLE is the only way students will be able to meet the demands of life when they are done with school," and Susan added to this concept by stating in her interview that "VLE is how students' brains are made to think and have to think that is what they are doing as toddlers with phones."

Margret stated in her interview, "You can't personalize the learning without VLE."

The observations revealed that the educators perceived OER and VLE in relation to instruction for students as a differentiation tool used to implement personalized learning in a 21st-century classroom. When observing Frank's classroom, students were using VLE to complete assigned work that was unique to their group. VLE was differentiating instruction based on the group that the students were working in as well as the material that each student was working on. In Sherry's class, students were all using VLE to complete individual assignments at their own pace. The students in Margret's class mimicked the students observed in the other 10 classes as they were using VLE to complete work that targeted their unique practice needs. Students were aware of what they had to work on based on information given to them from the educator. Each of the observed educators dictated what instructional activity the student would be working on including the specific VLE site, for example in Carol's class three students were observed to be working on the VLE site IXL completing lessons, while two other students were working on the VLE site Reflex completing different lessons. VLE and OER differentiated the instructional material for students, thereby; allowing them to practice on the academic material that was specific to their learning needs.

The documents that were analyzed supported the educators' perceptions that OER and VLE are tools used to differentiate instruction in a 21st-century classroom. Each of the 13 lesson plans included specific notations of VLE use as a differentiation tool used to provide students with individual practice on particular lessons. The district documents analyzed included personalized instructional documents using I-Ready, a VLE designed to target student instructional needs. The district advocated through the various subject newsletters, the use VLE to differentiate instructional material to meet students' academic needs. The newsletters stated

using the VLE "provides a low floor and high ceiling" which "allows students of all ability levels to engage while still being challenging." The analyzed data revealed six themes; feedback, personalized learning, instructional tool, gamification, behavioral issues, and flipped learning.

Guiding Question One

The participants answered the first guiding question of, how do elementary educators use VLE as an instructional support in the classroom, by stating it was a tool used in small group instruction to reinforce the material taught with direct instruction. Seven of the participants agreed with Susan when she said in her interview that VLE was a "way for students to practice what they just learned;" four said it was a remediation tool, and two said it was an intervention tool.

The observation data collected illustrated that 11 of the educators used VLE as an instructional support, reinforcing skills and concepts that were taught by the educator prior. Eleven of the participants used VLE in small group instruction in a station rotation. In station rotation, the students spend a predetermined amount of time at each instructional station established by the educator. The eleven participants were observed with a teacher station, worksheet station, and a VLE (IXL, I-Ready, Reflex, or Study Island) station. Students spent 30-45 minutes using VLE during each rotation. Two of the participants were observed using VLE with direct instruction in a flipped classroom concept setting. Flipped classrooms are "where the student sees the class stuff at home or on their own first and then practices with the teacher in the classroom" as described by Sherry in her interview. All 13 of the participants were observed using VLE as a reward and as an early finisher activity.

The documents provided for analysis illustrated that VLE is an instrument used to facilitate instruction with students in three ways; remediation, practice, and introduction.

Sherry's lesson plans demonstrated VLE being used in the flipped classroom concept where students were practicing with her but the new concept was learned at home the day prior. The lesson plans provided, student assignment outlines, and student projects all had students using VLE as a reinforcing or practice tool. Three of the lesson plans had notations for VLE use as an intervention for a select group of students. Three of the educators provided redacted IEPs for students to show the relation of VLE to the student with special learning needs instruction. The IEP did not speak directly to the use of a VLE, but rather to the accommodations that the student needed in order to be academically successful. Several of the accommodations could not be provided through a VLE, such as nonpunitive feedback, hands-on examples, and talk to text features. The document provided by the district that outlined the use of technology in the classroom stated, "It was an instructional support" to be used to facilitate individual practice, not as a direct instruction tool.

Guiding Question Two

The participants answered the second guiding question, how do elementary educators explain the role of VLE in 21st-century education and digital learning, by stating that VLE was an important component of classroom education. All participants agreed with Bonnie's statement from her interview that "Students now days don't learn the way we did as kids, they think differently, and they need virtual learning to succeed in the work world." Carol concisely stated in her interview how the others felt when she said, "It kind of connects real life home to school" and "It is how they learn, are engaged, and have to practice things it is just part of how their brain thinks." The participants felt that the 21st-century was characterized by digital learning, as the students were "technology based in their learning and desire to learn" (Margret, personal communication, December 14, 2019). Julie stated in her interview that VLE gave

educators a way to reach their students and make a meaningful connection between what they know and what they need to know.

The observation data demonstrated that VLE is an important aspect of 21st-century learning. All of the educators were observed using VLE to establish a conceptual understanding through practice with constructive feedback. All of the observations started with a portion of direct instruction with the educator using an OER and then moved on to students using VLE to develop conceptual understanding of assigned skills. During the 13 observations the role of VLE was to bridge the gap of understanding and conceptual knowledge for digital learners. VLE was used as a mode of independent instruction for students.

The document analysis illustrated that VLE's role is to provide effective instruction that connects the academic material to the digital learners of the 21st-century. The Georgia Department of Education (2008) stated the role of VLE was to "increase personalized learning by setting challenging goals, providing effective feedback and supports" and to expand the "educational opportunities in order to maximize student engagement, meet a variety of student interests, and ensure the relevance of learning."

Guiding Question Three

When the participants answered the third guiding question of, how do elementary educators perceive VLE in relation to meeting the academic needs of the diverse learners within their classroom, they spoke of VLE's inability to provide constructive feedback to all learners, inability to work with all learning types, and that it did not meet the academic learning needs for all students. Kelly and Susan stated that students "just click right through the feedback and it makes no sense to them" (Kelly, personal communication, December 11, 2019). Bonnie stated in her interview that the students "do not develop the deeper metacognitive thinking skills, they

just move through it doing surface stuff," thereby indicating further as the other participants

stated, that students are not having their academic needs met using VLE. All 13 of the

participants stated that the 21st-century classroom was filled with diverse learners who ranged in

academic abilities from special needs to academically gifted. All of the participants felt that

VLE did not meet the academic needs established by their students' IEPs; in fact 10 of the

participants stated that students got "extremely frustrated with the program" (Megan, personal

communication, December 16, 2019) and needed "direct one on one with teacher to work on the

VLE" (Mary, personal communication, December 16, 2019). Three of the participants stated

that the students who have special learning needs, "really need to preview and work with the

information with a teacher before they can go online then the teacher has to sit with them and

work through" the VLE site just as Megan did in her interview.

Carol stated in her interview that VLE "is not a one size fits all so we have to use many

different ones to get it to work for everyone."   Bonnie stated in her interview that "Virtual

learning does not work for all the students; it just does not work for all learners." Ruth said that

VLE was not able to advance as far in each section of the standard that gifted students needed it

to, and it "can't tell when they have a misconception or need to be retaught" (personal

communication, December 20, 2019).

The observation data demonstrated that VLE was not able to meet the academic needs of

all students. When observing Mary, Megan, and Barbra's class, I noted that students were not

able to complete the VLE tasks on their own. Students with special learning needs struggled to

get onto the correct section to practice and then once in the correct section they could not

understand what they were supposed to do to answer the question. Students were observed

putting random answers in and clicking out of the VLE to get to a game. Educators had to sit

with the students with special needs and coach them through answering the questions. When observing Bonnie's classroom, it was noted that students did not understand the feedback that was provided by the VLE which forced them to seek outside help. Students ended up receiving mini-lessons from the educator on what the feedback was telling them. According to the observations data, VLE was not the most effective mode of instruction for students with special learning needs.

The document analysis revealed that the state department of education also noted that VLE is not a one size fits all for students. The state lists several different VLE for educators to use with students, rather than just one. The district also has several different VLE and suggests the use of "the most appropriate for each student," thereby indicating that there is not one VLE that will meet the academic needs of all students. The lesson plans that were provided also indicated that several VLE had to be used to meet the learning needs of students. It was noted that educators did not have students with special learning needs work on standard-based feedback VLEs such as IXL on their own, but rather put them onto the game-based VLE practice sites. The district technology plan stated that educators should use hands-on learning activities in conjunction with VLE to establish conceptual comprehension, thereby, establishing VLE's inability to meet the academic needs of all students.

Guiding Question Four

The participants answered the fourth guiding question, how do elementary educators perceive the learning needs of 21st-century students, by stating that 21st-century students "use outside resources will have to have technology embedded somehow in their learning" (Ruth personal communication, December 20, 2020). All the participants felt that 21st-century students were independent learners who performed well alone and struggled to collaborate with their

peers. The participants said that students were "connective in their learning" (Susan, personal communication, December 14, 2020) and "They use a lot of resources to learn," as Frank said in his interview. All of the participants referred to a need for 21st-century students to develop "social skills," just as Carol did in her interview and as being "very active and like hands on" learning, as Kelly did in her interview.

The observation data revealed that elementary educators perceive the learning needs of 21st-century students to be connective, digital in nature, and include short purposeful lessons. During the observations, all of the students were scheduled to work for 30-45 minutes and move on to something else; however, at 25-30 minutes the students became disengaged from the lesson and began to engage in inattentive behavioral issues such as talking to a peer or playing a game on their computer. The observation data demonstrated that the students developed understanding when they connected what they knew to the feedback that VLE provided and to the knowledge that their peer or educator shared with them. This connective learning is what enabled the students to progress through the VLE lessons. During the observations, it was noted that the students who were using VLE were highly engaged in learning as compared to their peers who were using worksheets to practice. The observation data revealed five classes that had students working on worksheets to practice their conceptual skills. The students who were working with the worksheets were drawing pictures on the worksheets, copying their peers' answers, not actually working on the worksheet, or working on the wrong section of the assigned worksheet; therefore, no conceptual practice was taking place.

The document analysis data revealed that 21st-century students are digital learners who use various resources to develop conceptual knowledge. The state department of education technology plan states that learning is "situated in relationship" between the student and

coaching material, which enables the students to "develop ideas and skills that simulate the role of practicing professionals" (Georgia Department of Education, 2019). Evaluation of the lesson plans and student assignments revealed that students require hands-on activities to grasp the academic concepts in a meaningful manner, as all of the educators listed a hands-on learning activity with each of the tasks for students to complete. The state frameworks task also includes a majority of hands-on games and learning to develop the conceptual knowledge needed to progress in understanding. The district stated that students needed to work with technology, as it was an integral part of their learning in a 21st-century classroom.

Summary

Chapter Four presents the findings from my transcendental phenomenological study, which was established to understand the perceptions of elementary educators who had developed a personalized learning classroom through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. Chapter Four presents the findings on the central research question and four guiding research questions that were used to guide the study. Chapter Four presents the rich description of the perceived phenomenon experiences of 13 elementary educators through a demographics table and narrative. The educators had developed personalized learning classroom perceptions of VLE use as an instructional academic support for students. The participants participated in a semi-structured interview with open-ended questions and participant mode observations of classroom instruction.

The data collection also included the document analysis of school, district, and state documents that directly pertain to OER and VLE use in the classroom and personalized learning. The findings revealed six themes; feedback, personalized learning, instructional tool,

gamification, behavioral issues, and flipped learning. The themes were presented as they related to each of the central and guiding research questions, thereby; illustrating the rich data collected on the perspectives of elementary educators.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom through the use of virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. Thirteen elementary educators participated in semi-structured interviews, a participant mode observation of an instructional period of their day, and submitted documents pertaining to VLE use in their classroom. I also analyzed documents related to VLE use in personalized learning from the Lakeside School District and the state of Georgia. Chapter Five includes a summary of the findings from the synthesis of the data collected, a discussion of the study's findings, the theoretical, empirical, and practical implications of the study, and the delimitations and limitations of the study. Chapter Five concludes with recommendations for further studies and a summary.

Summary of Findings

The data revealed six distinct themes, consisting of feedback, personalized learning, instructional tool, gamification, behavioral issues, and flipped learning. The findings of this study revealed that VLE is not working for students with specific academic needs and is more of a general practice tool used to reinforce direct instruction. The study had a central research question and four guiding questions that were answered by the participants through semi-structured interviews, participant mode observations of instructional periods, and document analysis of district, school, and state documents directly related to personal learning and VLE use within the classroom.

The central research question, how do elementary educators explain their perceptions of the use of OER and VLE in personalized instruction for students, findings revealed that the participants perceived VLE as an integral component of a 21st-century education. Participants perceived VLE as a tool that allowed them to personalize instruction, students to practice assigned material on their own, and provide their students with immediate feedback. In answering first guiding question, how do elementary educators use VLE as instructional support in the classroom, the participants perceived that VLE is a virtual tool that can be used to allow students to practice in small group instructional settings on previously taught material.   The participants' perceptions of the second guiding question, how do elementary educators explain the role of VLE in 21st-century education and digital learning, was that this is a necessary part of the 21st-century classroom. However, the participants felt that they are not able to connect the academic material to their students in a meaningful way or personalize the lessons to meet the needs of general education student without the use of VLE as an instructional tool. The third guiding question asked, how do elementary educators perceive VLE in relation to meeting the academic needs of the diverse learners within their classroom. The findings for this question demonstrated that participants did not feel as though VLE was able to meet the academic needs of students with special learning needs. The participants felt that VLE only addressed the students that learn best through reading. The participants felt that VLE did not address the learning needs of visual, auditory, writing, or kinesthetic learners. In addition, the participants felt that VLE was only working on the surface. The students were not actually gaining any conceptual understanding on the material that was being practiced. The participants felt that the students had learned how to manipulate the site, by clicking; in order to make it appear as though they were learning when in fact they were just moving through each lesson without obtaining

understanding of the material being practiced. The study findings for the fourth guiding

question, how do elementary educators perceive the learning needs of 21st-century students,

revealed that the participants perceived that students required technology embedded lessons with

a need for significant resources and constructive feedback. The participants stated in their

interviews that 21st-century students are independent learners who are constructive in their

thinking processes and struggle to collaborate with their peers in project work. In the

observation nine of the classrooms, I noticed that the students were constructive in their learning

just as the participants had stated as they students acquired new knowledge by connecting the

information that they had with the feedback that they received from their teacher, peers, and the

VLE feedback in order to construct a new understanding. In Frank, Sherry, and Susan's

classroom observations, students were literally connecting information that they acquired from

the VLE, their peers, and the teacher with what they already knew to create a new understanding.

Discussion

Educators are relying on the adaptive learning resources found in VLE's learning

platforms to provide self-reflective learning to meet the academic needs of their 21st-century

students, as well as, to meet the global demands for productive human capital (Alismail &

McGuire, 2015; Bishara, 2016; Gerard & Goldie, 2016; Liu et al., 2017; Nusir et al., 2013). The

21st-century learning needs of elementary students require the educators to personalize the

educational material to meet the unique academic needs of their digital learners by providing

various ways for the students to connect what they know and understand with the knowledge of

others. Students acquire knowledge from the feedback that they receive and from the

connections that they make when constructing new information (Gerard & Goldie, 2016;

Siemens, 2005). This new format of learning, connectivism, has developed as a result of digital

learners who learn through connectivism (Siemens, 2005). Connectivism explains how 21st-century students acquire knowledge and transfer information from the student's internal world to their external data base (Siemens, 2005). Understanding that students need VLE in personalized learning environments to acquire new information it is imperative to understand the perception of educators on the use of VLE in personalized learning classrooms.

The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom through virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. The data collected provided answers to the central research question and the four guiding research questions, thereby, developing an understanding on the use of VLE in the 21st-century classroom. The data collected revealed that VLE is an integral instructional tool used in a 21st-century classroom; however, the data suggested that it was not a tool that could be used with all types of learners and to meet all types of academic needs.

Theoretical Literature

Throughout the state of Georgia, schools are replacing textbooks with computers on a one-to-one basis as the primary instructional resource as a result of Georgia's technology initiative (Georgia Department of Education, 2008). Therefore, educators and textbooks are no longer the only academic instructional tool available to students (Cooney, 2017; Downs, 2005; Siemens, 2005). Susan stated in her interview that "We do not have textbooks: we use the laptops to differentiate instruction for students." The classroom observation for all 13 participants revealed that all students had a laptop device or Ipad issued to them for their personal learning. Technology has dramatically transformed how students engage with and

acquire new information, which has resulted in the traditional learning theories no longer being able to fully explain how students transfer, store, retrieve, and learn new material (Downs, 2005; Dunaway, 2011; Gerald & Goldie, 2016; Kelly, 2012; Lesko, 2013; Mattar, 2018; Siemens, 2005).

Traditional learning theories are linear in their forward progression of information retrieval, storage, and mastery; however, 21st-century students' brains are not "wired" to learn in this manner (Moore, 1997). In her interview, Mary stated that "21st-century students need the game-based learning that VLE can give them to master the material." Students engage with the feedback that they receive by checking the VLE platform for a hint, conferring with peers and the teacher, and then look up other strategies online to help solve the problem (Megan, personal communication, December 19, 2019). The findings from the data collected illustrated that students do not learn in a linear method and instead learn in a connective manner. Connectivism is the learning theory that accounts for the external information processing that takes place in 21st-century students' interactions and collaboration with VLEs (Siemens, 2005).

Connectivism is engaged collaborative learning in a student-centered personalized learning that is based on the transfer of knowledge between a student's internal and external networks (Downs, 2010; Siemens, 2005). Connectivism is based on feedback. The participants stated feedback was the most important component of learning. During the classroom observations, I noticed that the students sought to understand the feedback provided by going to a peer or their teacher before they would move on to the next concept, thereby; illustrating connectivism in 21st-century digital learning. The participants deliberately planned instruction around the student's use of VLE to practice the material that was covered in class. The document analysis revealed the need for a technology connection for the students to network

their knowledge through collaborative platforms to make the academic connections necessary for intellectual growth.

This study illustrated that students used the VLE platforms to find patterns, synthesize ideas, and information as they focused on patterns, connections, and similarities that they simultaneously shared, thereby shedding new light onto the connectivism theory of learning in the 21st-century classroom. This study established insight on VLE's manner of learning exposing the foundation of connectivism supporting VLE instructional use in the classroom, therefore, extending connectivism learning theory application into the 21st-century classroom.

Empirical Literature

This study confirmed and corroborated previous research conducted on the application of VLE in the classroom. All the participants' classrooms were 21st-century classrooms with student-centered instruction driven by self-regulated learning using the adaptive resources of VLE which was consistent with the findings of prior studies conducted by Bishara, (2016), Ganapathi (2018), Liu et al. (2017), and Schuetz et al. (2018). This study also confirmed prior research conducted by Anderson et al. (2014) and Weeraratne and Chinn (2018) establishing the essential inclusion of VLE in 21st-century classrooms as an instructional tool used to individualize instruction for digital learners.

Prior research found that neuroscience and whole brain theorists recommended VLE use to meet societal and student learning demands for lower preforming students since VLE increases the cognitive load for students not identified as gifted learners (Anderson et al., 2014). However, this study contradicted these findings and instead found that lower performing students were not able to process the feedback given on the VLE platform in such a way that they could increase their cognitive thinking processes. Lower performing students and students with unique

learning needs were not served in the same manner as their grade level peers. The students who were identified as on-grade level (an average of 55-57% of the student population), did not have an Individual Learning Plan (IEP), or were considered gifted in their intellectual abilities, were able to use the constructive feedback and adaptive learning features of the VLE to increase their cognitive understandings without large amounts of educator interventions. Therefore, this study confirmed the ineffectiveness of VLE as an instructional tool for 43-45% of the class (Anderson et al., 2014; The Governor's Office of Student Achievement, 2018).

All instructional material used must conform to the standards established for equal access to education, which are located in the Web-based tools Web Content Accessibility Guidelines (WCAG) 2.0 (World Wide Web Consortium [W3C], 2011) and Section 508 of the Rehabilitation Act (2000). These standards specify how web pages must be designed so that students with disabilities are able to understand, perceive, and operate them (W3C, 2011). Smith and Harvey (2014), using the Universal Design for Learning (UDL) framework, found that VLEs do not meet the learning standards set forth by WCAG and Section 508 of the Rehabilitation Act, which aligned with Cabi (2018) findings that VLE do not meet the learning needs of students with learning disabilities. In contrast, Bottage et al., (2014); found that students identified as having learning disabilities outperformed their peers when using VLE, and Bishara (2016) found that the collaborative nature of VLE assisted students with disabilities.

This study's findings extended the findings of Cabi (2018) and Smith and Harvey (2014) but diverged from the findings of Bottage et al. (2014) and Bishara (2016) by finding that students with learning disabilities experienced high levels of frustration when using VLE. Participants stated that the VLE was not able to "read" the students to see when they needed a break or did not understand the material (Megan, personal communication, December 19, 2019).

Additional findings revealed that VLE do not meet the IEP requirements of students with

learning disabilities and the students did not "understand the feedback provided without teachers

explaining it to them" as stated by Barbra in her interview. The VLEs provided by the

Department of Education for the state of Georgia were not the exception to this. In fact, several

of the VLE sites provided by the state did not work and participants were forced to conduct

research on their own time to find replacement sites for that particular VLE.

Various studies have demonstrated that VLE was successful for meeting the students'

academic needs as a remediation and supplemental tool for students with low socio-economic

status and low academic abilities (Baylan & Saxon, n.d.; Neupane, 2014). The findings from the

current study illustrated that VLE was successfully used as a "practice tool" to meet the

academic needs of all students (Susan, personal communication, December 14, 2019). The key

to successful use of VLE as a practice tool or remediation tool was that the students had already

had direct and small group individual instruction with the educator. The educators in this study

stated in their interviews and I noted during the classroom observations that the students did not

use the instructional features of VLE, but instead, just clicked through to the next problem,

accessed a different site, or got the correct answer from a peer. The students did not experience

academic advancement with the use of VLE alone.

VLE is not able to identify misconceptions, conform to learning disabilities, and is not

culturally sensitive; therefore, it can be argued that it should only be used as a practice tool.

Dayag (2018) found that VLE was only minimally successful for English Language Learning

(ELL) and English as a Foreign Language (EFL) students if the educator uploaded a substantial

amount of resources to account for the language and cultural barriers. Findings from the current

study demonstrated that participants did not have the time or resources to supplement the VLE

sites used to meet the individual academic needs of students and instead used VLE in teacher

lead instruction with students who had special learning needs or were ELL/EFL students. None

of the documents provided by the Lakeside School District and Turner Elementary assisted as a

resource for ELL or EFL students in the use of VLE.

This study further concurred with and extended the Dayag (2018) study's findings by

discovering that VLE use created a significant time constraint for educators, due to uploading the

material and monitoring student activity. Classroom observations revealed that the educator

spent a third of their instructional time monitoring student use of VLE to prevent inappropriate

student behavior, such as bullying and harassment between students during and after school

hours. Document analysis findings found that educators were expected to monitor student

behavior and use of the technology at all times of the day, including during non-school hours.

Educators were provided with resources to assist them in monitoring student activities online but

were not provided with training on how to adequately use these resources. Furthermore,

participants spoke to the vast amount of time it takes to find VLEs that meet the academic needs

of each student and the need to use several different platforms to obtain data that provided an

academic picture of their students' individual cognitive abilities. For example, I found that it

took me five hours to review the monthly training and material pertaining to VLE use in

personalized learning and classroom application provided by the school and the district for the

month of December alone. The educators are provided with an abundant amount of useful

material and training; however, they do not have the time to review this material during their

regular work hours and must spend personal time becoming familiar with it.

This study concurred with prior research that illustrated how VLE provides equal access

to educational material for all students regardless of their socio-economic status, cultural

background, or academic abilities (Baylan & Saxon, n.d.; Cooney, 2017; Ganapathi, 2018; Neupane, 2014; Rolfe, 2017), and provides students with access to material that they would otherwise not have access to in a traditional classroom (Butler, Marsh, Slavinsky & Baraniuk, 2014). However, the act of providing more educational material does not mean it is educationally appropriate for students. VLE is able to provide more educational material at one time than an educator is able to and can provide immediate feedback faster. Even with all the extra information and faster response time, Anderson et al. (2014) found that VLEs are not academically appropriate for advanced students since there was no significant support for them. Some of the findings from my study diverged from prior research by illustrating the act of providing *more* does not necessarily mean *better* in education. VLE is only working on the surface for a small population of students who are considered average in their abilities and needs. As the findings revealed that VLE only appears to be working and is not actually meeting the academic needs of a significant portion of students, this study was able to provide a novel contribution to the current field of education.

This study extended the findings of Ruiperez-Valiente et al. (2016) and Volk et al. (2017) by providing evidence that VLE with gamification increases student engagement and buy-in. The study extended the findings of Pearce (2013) who found that the most used form of technology by classroom educators was YouTube. "YouTube is effectively a repository of digital content" that provides a vast area of collaborative information (Pearce, 2013, p. 722); however, YouTube is not a VLE.

These findings further extended research by Belikov and Bodily (2016) and Doan (2017) regarding the use of VLEs to personalize the student's instruction, practice lessons, and provide interventions in an inexpensive manner that adds depth to student's understanding and meets the

connective learning needs of 21st-century students. Participants used VLE to differentiate and individualize instructional material to create personal learning classrooms. VLE was the only way educators could personalize learning for their digital learners because it was the only mode of individualization available that could be manipulated in such a way to provide independent instruction with quick feedback. VLE is a successful tool for personalized learning.

Various research has shown that the incorporation of VLE use into classroom instruction afforded economically advantaged students with the ability to increase their understandings and skills at a faster rate than their lower socioeconomic peers, thereby, increasing the socioeconomic gap (Brown, 2012; Noer, 2012; Witte, Haelermans, & Rogge, 2014). Research found that VLE increased the socioeconomic gap between students, thereby, placing at-risk students further behind their peers, by creating equality in the classroom and not equity (Brown, 2012; Noer, 2012; Witte, Haelermans, & Rogge, 2014). By providing every student with the exact same technology and access to VLE/OER resources equality was established for all students. However, equality is not the same thing as equity. This study's findings illustrated that VLE has provided equality for students, but not necessarily equity. For example, students were assigned a computer they could bring home, but may not had Internet access at home or someone there who was able to help them interpret the VLE feedback in such a way as to increase their cognitive understandings. The data from this study illustrated that VLE was placing low socioeconomic students at risk of failure instead of closing the socioeconomic gap.

Implications

This transcendental phenomenological study on the perceptions of educators on VLE has implications for VLE researchers, adaptive technology developers, and educators. The theoretical, empirical, and practical implications may enable more efficacious professional

development of pre-service and in-service educators as well as further technological

advancements in VLE in relation to personalized learning. The theoretical, empirical, and

practical implications are listed below.

Theoretical Implications

The theoretical implications of this transcendental phenomenological study were the

detailed understandings of the role of VLE and OER in a student's development of knowledge

through collaborative learning, thereby, adding to the theoretical framework of connectivism.

All participants spoke to the need for constructive feedback and the reliance on resources to

develop academic understandings. Participants felt that students needed feedback to develop

meanings to what they had just learned. The classroom observations supported the connectivism

learning theory in digital learners, as noted the students' use of peers, online resources, educator

feedback, and VLE feedback to develop understanding.   The theory that guided this study was

Siemens' (2005) connectivism learning theory, as it explains how 21st-century students acquire

knowledge and further develop skills through digital learning. Connectivism was developed

from the constructivist learning theory (Siemens, 2005) after the advances in technology began

to develop digital learning, which took acquiring knowledge and transferring information from

the student's internal world to their external data base (Gerard & Goldie, 2016; Siemens, 2005).

Knowledge is no longer created entirely in the student's brain but rather from connections

between the student and the connections to the world around them.

The connectivism learning theory asserts that knowledge and skill acquisition are

"disruptive" and "consist of networks of connections formed from experience and interactions

between individuals, societies, organizations, and the technologies that link them" (Gerard &

Goldie, 2016, p. 1065). The process of learning and creating knowledge no longer resides

internally in the students but now include external networks of information systems (Dunaway, 2011; Gerard & Goldie, 2016; Kelly, 2012; Kizito, 2016; Mattar, 2018; Siemens, 2005). Digital learning is a collaborative learning process where students acquire information and transfer knowledge through extrinsic information processing in a non-individualistic collaborative format (Gerard & Goldie, 2016; Siemens, 2005).

The connectivism learning theory is built on the theory that students build conceptual understanding by connecting their knowledge and experiences to the knowledge of experts through the use of an online network (Siemens, 2005). However, some of the learning that students participated in during the classroom observations, as well as the learning that was detailed by the educators in their interviews, resulted from the social interactions that students made without the use of technology. My study findings illustrated that learning was an external process where students connected their understanding with others to develop conceptual knowledge at a deeper level. Students used the feedback that they were given by the VLE site, peers, and the educator to construct meaning. The connectivism learning theory does not include a social network aspect; however, student learning includes a social networking aspect where the students use the feedback that they receive from VLE platforms in conjunction with the information that they receive from their grade level peers and teacher to develop knowledge. Therefore, the connectivism learning theory needs to include a social network, as well as the online network of experts and communities.

Empirical Implications

The empirical implications of this transcendental phenomenological study derived from the understanding that was obtained on the connection of VLE to student learning in a personalized learning environment. VLE is an integral component to the academic instruction of

digital learners in a 21st-century classroom. VLE allows students to practice the assigned

academic material and receive immediate feedback that would not be afforded to them otherwise.

In addition, this study closed the literature gap surrounding the educators' perceptions on

the use of VLE as an instructional support in a personalized learning 21st-century classroom with

digital learners. The study also provided an explanation to the inconclusive research results on

the use of VLE with all types of learners. The study found that VLE is suited well for type of the

learner who learns best using reading, but is not as well suited to meet the academic needs of

students who learn best using other modes of learning (e.g., visual, auditory, kinesthetic). VLE

is a practice tool that allows students to practice material with which they have already been

presented. This implication would lend to the use of flipped learning in 21st-century classrooms,

as well as inform educator training practices.

Practical Implications

The practical implications of this transcendental phenomenological study derived from

the understanding that the participants provided. The understanding provided allows current and

future elementary educators to successfully adapt their teaching pedagogy to technological

pedagogical content knowledge (TPACK), thereby, permitting them to shift from teacher-

centered to student-centered instruction. Educators using VLE to personalize instruction for

digital learners provide 21st-century students with the foundational education required for them

to become productive members of the global workforce.

An additional practical implication is the development of TPACK for pre-service and in-

service educators through professional development courses and refined teacher education

programs that focus on the use of VLE in student-centered teaching in personalized learning

environments. Further implications from this study are the understandings that may allow

individuals contributing to VLE creation to alter the formation of the VLE to better meet the diverse learning needs of 21st-century students.

Delimitations and Limitations

Delimitations of a study are the boundaries that restrict the components of the study prior to the start (Simon & Goes, 2018). One delimitation of the study was the participants' years of teaching experience. The participants who had graduated in the last five years were much more comfortable with technology than the participants who had not recently gone through the certification process. The transcendental phenomenological research framework was selected for this study because the purpose of the study was to obtain the perceptions of elementary educators working with 21st-century students for the last three years. Educators who were newer to the field of education may be more comfortable and fluent with VLE then their peers who did not use VLE throughout their schooling; therefore, had a vaster perception. The focus of the study was on the instructional use of VLE in personalized learning. Concentration on the current elementary educators who have had three years of experience using VLE in personalized learning alleviated any perceptions that may have been missed regarding the use of VLE with digital students in a personalized learning environment.

Limitations of a study are the weaknesses that are out of the researcher's control (Simon & Goes, 2018). The study was conducted in a suburban school with an identified student population of 52% of students who were eligible for free/reduced meals (The Governor's Office of Student Achievement, 2018). Students who attended the school did so as a result of their attendance zone. As a result of this, the participants of the study did not have control of the student population that they served. With over half of the students eligible for free/reduced

lunch the student population would not be coming from affluent parents, thereby, creating a unique student population that may not be as comfortable or confident in VLE use.

In addition, the participants all worked within the same school and school district. Therefore, they are all subject to the same district training, which was limited to the VLE that the district had selected for district wide use. The perceptions of the participants could have been impacted by the district training and monthly support that they received.

<div align="center">**Recommendations for Future Research**</div>

The results of this study provided several suggestions for further study. Five of the participants spoke to feeling as though they did not have enough training in the use of VLE to fully incorporate VLE into classroom instruction. A suggestion of further study would be a qualitative study on the perceptions of participants after they have been provided with training on VLE use and see if that impacted how they used VLE within classroom instruction. The participants in the study were provided with several trainings and instructional material on the use of VLE in the classroom, however, those five participants still expressed a need for more training.

Additionally, all of the participants spoke to the time that it took to locate an appropriate VLE to use with their students, as well as the time it takes to interpret the data across the various VLE platforms. With the limited time available to educators to devote to locating resources, a suggestion for further qualitative study could target the VLE platforms themselves. A further qualitative study on the various available VLE platforms to see if there is a platform that is a one size fits all and can meet the learning needs of all students. The VLE platforms that the participants used in this study were not able to meet the needs of all students which forced the participant to use several different VLE. Since the participants only used IXL, I-Ready, Reflex,

and Khan Academy, this study is limited in its ability to answer the question regarding which, if any, VLE platform can serve the needs of all 21st-century learners regardless of their unique learning needs.

A final recommendation for further study would be in the target population. This study focused on public elementary school educators, thereby; limiting the findings. A study focused on educators in the upper grades in public schools may produce different findings than were presented in this study. A qualitative study with a target population of elementary educators of a virtual school may produce different findings as well. Carol, when asked in her interview if there was anything that was not asked, stated,

> You did not ask me about the academy, if the virtual learning schools would be different than how we do it. The answer is I do not know I have only taught in the traditional school setting so that would be interesting to know.

Since qualitative studies look at the holistic perspectives of participants and the perspectives of educators will determine the success and use of a VLE, it is appropriate to use qualitative approach for these further study suggestions.

Summary

The purpose of this transcendental phenomenological study was to understand the perceptions of elementary educators who had developed a personalized learning classroom through virtual learning environments (VLE), an open educational resource (OER), as an instructional academic support for students. Chapter Five presented the conclusion to the findings of this study, which included 13 elementary educators who participated in semi-structured interviews, a participant mode observation of an instructional period of their day, and submitted documents pertaining to VLE use in their classroom. The theoretical implications

from this study provide that connectivism is the learning theory of the 21st-century and is the learning theory that best explains how digital learning students acquire new information. The most significant implication from this study is the practical implication that speaks to the need of VLE developers to adjust the platform to better meet the learning needs of diverse students. VLE is not properly servicing a large portion of students and is only working on the surface. Educators need a VLE platform that will conform to all their students' needs and not just a small portion of them. This is the only way equity can start to be inserted into the classroom.

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APPENDIX A: IRB APPROVAL

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

November 11, 2019

Victoria Diana Stephens
IRB Exemption 3992.111119: Elementary Educator's Perceptions of Open Online Educational
Resources in a Personalized Learning Classroom: A Phenomenological Study

Dear Victoria Diana Stephens,

The Liberty University Institutional Review Board has reviewed your application in
accordance with the Office for Human Research Protections (OHRP) and Food and Drug
Administration (FDA) regulations and finds your study to be exempt from further IRB review.
This means you may begin your research with the data safeguarding methods mentioned in
your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2), which identifies specific situations in
which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (2) Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude,
> achievement), survey procedures, interview procedures, or observation of public behavior (including
> visual or auditory recording) if . . . the following criteria is met:
>
>> (iii) The information obtained is recorded by the investigator in such a manner that the identity of the
>> human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an
>> IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Please note that this exemption only applies to your current research application, and any
changes to your protocol must be reported to the Liberty IRB for verification of continued
exemption status. You may report these changes by submitting a change in protocol form or a
new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether
possible changes to your protocol would change your exemption status, please email us at
xxx@xxxxxxxxxx.

Sincerely,

████████████████

Research Ethics Office
LIBERTY
UNIVERSITY.

Liberty University | Training Champions for Christ since 1971

APPENDIX B: RECRUITMENT LETTER

December 1, 2019

Valued Educator

Turner Elementary
xxxxx
xxxxxx, Ga. xxxxx

Dear Valued Educator,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to understand the perceptions of educators that use virtual learning environments to meet the academic instructional needs of their diverse student base of digital learners, and I am writing to invite you to participate in my study.

If you are 18 years of age or older, an elementary educator who teaches students, characterized as Knowledge Age learners and Generation Z, who have attended elementary school within the last 3 years and have some experience with virtual learning environments, such as Dreambox and IXL as an instructional resource. Generation Z students are born between 1995 and 2012 (Schroer, 2018). Knowledge age also referred to as the 21st-century, is the current era of time. The Knowledge age is defined as the era where a "collective intelligence" is used instead of individual experts and knowledge and ideas are the main source of economic growth ("Shifts to 21st Century Thinking," 2018). You have taught a diverse student base that is characterized by students who are considered gifted, special education, and regular education students. You have experience with virtual learning environments, such as Dreambox, IXL, Minecraft Education. If you are willing to participate, you will be asked to participate in an interview, have your classroom observed during an instructional period, and provide a copy of documents that you use with students regarding virtual learning environments (VLE), such as your lesson plans. You will also review the transcribed interview and observation for validity within 72 hours of completion of both the interview and observation. It should take approximately 134-204 minutes for you to complete the procedures listed. Your name and/or other identifying information will be collected as part of your participation, but this information will remain confidential.

To participate, click on the hyperlink provided HERE and complete the screening survey. If you are eligible to participate based on your screening survey, I will contact you to schedule the interview.

A consent document is attached to this email and contains additional information about my research. Please sign the consent document and return it to me at the time of the interview.

Sincerely,
Victoria Stephens Ed. S
xxx-xxx-xxxx
xxxxx@xxxxxx.xxx

APPENDIX C: FOLLOW-UP RECRUITMENT EMAIL

December 10, 2019

Valued Educator

Turner Elementary
xxxxx
xxxxxx, Ga. xxxxx

Dear Valued Educator,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. Last week an email was sent to you inviting you to participate in a research study. This follow-up email is being sent to remind you to complete the screening survey if you would like to participate and have not already done so. The deadline for participation is [Date].

If you choose to participate, you will be asked to participate in an interview, have your classroom observed during an instructional period, and provide a copy of documents that you use with students regarding virtual learning environments (VLE) such as your lesson plans. You will also review the transcribed interview and observation for validity within 72 hours of completion of both the interview and observation. It should take approximately 134-204 minutes for you to complete the procedures listed. Your name and/or other identifying information will be collected as part of your participation, but this information will remain confidential.

To participate, click on the hyperlink provided HERE and complete the screening survey. If you are eligible to participate based on your screening survey, I will contact you to schedule the interview.

A consent document is attached to this email and and contains additional information about my research. Please sign the consent document and return it to me at the time of the interview...

Sincerely,
Victoria Stephens Ed. S.
xxx-xxx-xxxx
xxxxx@xxxxxx.xxx

APPENDIX D: SCREENING SURVEY

1. You are an elementary educator who teaches students, characterized as Knowledge Age learners and Generation Z, who have attended elementary school within the last 3 years.

    a. Agree

    b. Disagree

2. You have taught student that are characterized as digital learners and learn best through the use of technology.

    a. Agree

    b. Disagree

3. You have taught a diverse student base that is characterized by students who are considered gifted, special education, and regular education students.

    a. Agree

    b. Disagree

4. You have experience with virtual learning environments, such as Dreambox, IXL, Minecraft Education.

    a. Agree

    b. Disagree

5. Your best contact phone number and email are

    a. Phone

    b. Email

APPENDIX E: ACCEPTANCE/DECLINE EMAIL

-Acceptance Email

Dear Valued Educator,

Thank you for completing the screening survey for my research study on educator's perception on the use of virtual learning environments as instructional resources in elementary education. Congratulations, you have been selected to participate in the study. A consent form is attached to this email. Please print and sign consent form and return this to me at the time of the interview. You will be given a copy of the consent form at the time of the interview for your records. The consent document contains additional information about my research.

.

Thank you for your time and participation,

Victoria Stephens

xxx-xxx-xxxx

-Decline Email

Dear Valued Educator,

Thank you for completing the screening survey for my research study on educator's perception on the use of virtual learning environments as instructional resources in elementary education. At this time your assistance is not needed to participate in the study.

Thank you for your time and participation,

Victoria Stephens

APPENDIX F: IRB INFORMED CONSENT FORM

CONSENT FORM

Elementary Educators' Perceptions of Open Educational Resources in a Personalized
Learning Classroom: A Phenomenological Study
Victoria Diana Stephens
Liberty University
School of Education

You are invited to be in a research study on the understanding of elementary educators' perceptions on the use of open educational resources (OER) in personalized learning. You were selected as a possible participant because you are an elementary educator who teaches students, characterized as Knowledge Age learners and Generation Z, who have attended elementary school within the last 3 years. You have taught students that are characterized as digital learners and learn best through the use of technology. You have taught a diverse student base that is characterized by students who are considered gifted, special education, and regular education students. You have experience with virtual learning environments, such as Dreambox, IXL, Minecraft Education. Please read this form and ask any questions you may have before agreeing to be in the study.

Victoria Stephens, a student in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of this transcendental phenomenological study is to understand elementary educators' perception of open educational resources (OER) and virtual learning environments (VLE) as instructional academic support for elementary students.

Procedures: If you agree to be in this study, I would ask you to do the following things:
1. Participate in an interview. The interview will last between 45-60 minutes and will be audio-recorded.
   a. I will personally transcribe the interview. The transcription will take approximately 72 hours after the completion of the interview.
2. Be observed during an instructional period between 8:00 am and 2:20 pm. I will use audio technology to capture the observation.
   a. The observation will not include any specific student data and will focus entirely on the teacher's use of online educational resources.
   b. The observation will last 45-60 minutes.
   c. I will personally transcribe the observation. The transcription will take approximately 72 hours after the completion of the observation.

3. Provide documents that relate to online educational resources used with students, a copy of lesson plans, any online intervention and/or acceleration lessons used with students, and a copy of any material depicting student or educator expectation of online educational material use.
   a. Documents should be given to the researcher via email or in person within a week of the interview.

Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Benefits: There are no direct benefits to the participant for participation in this study. Participation in this study may benefit society through the contribution to the research on the understanding of OER use as instructional tool in the classroom. By establishing an understanding of how effective current technology practice is, educators may be able to adjust how they implement technology into a 21st-century classroom to maximize its effectiveness.

Compensation: Compensation will not be provided for participation in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely in a locked safe that only the researcher will have access to. All documents in paper form will be stored in locked safe and electronic data will be stored on a password locked computer that only the researcher has access to.

- Participants will be assigned a pseudonym. I will conduct the interviews in your classroom after school hours so that we are in a secure location where others will not easily overhear the conversation. The pseudonyms will be kept on a password protected cloud site, the hard copy data will be kept in a locked safe that only the researcher has access to, and the audio recorded data will be transferred to a flash drive and stored in a separate safe.
- After three years, all electronic records will be wiped from the flash drive and cloud site, the flash drive will then be taken with all hard copy data to be shredded at UPS of Newnan, a recognized confidential material disposal site
- Interviews will be recorded and transcribed. Recordings will be stored on a flash drive and locked in a safe for three years and then erased. Only the researcher will have access to these recordings.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

How to Withdraw from the Study: If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

Contacts and Questions: The researcher conducting this study is Victoria Stephens. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at xxx-xxx-xxxx or email xxxxx@xxxxxx.xxx. You may also contact the researcher's faculty chair, Dr. Christopher Clark, at xxxxx@xxxxxx.xxx

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understand the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ The researcher has my permission to audio-record me as part of my participation in this study.

_____

Signature of Participant   Date

_____

Signature of Investigator

APPENDIX G: INTERVIEW PROTOCOL

- **Standardized Open-Ended Interview Questions**

1. Please introduce yourself to me.

2. Please walk me through your teaching pedagogy.

3. What impact does a teacher's pedagogy have on the educational material used? The instruction format used? Use of technology in the classroom?

4. What do you feel is the most important activity to achieve student academic success?

5. How would you describe the learning needs of your students?

6. What are the things you consider imperative to students achieving academic success?

7. How would you define 21st-century learning?

8. How would you define personalized learning?

9. How would you define online education resources as they relate to elementary education?

10. How would you explain your perception on the use of virtual learning environments (VLE) in personalized instruction for all students?

11. Of the components of learning you have identified, which would you say were the most significant?

12. What makes them significant?

13. What else would you like to add to the concept of VLE used in personalized instruction?

14. How have you used VLE as instructional support in the classroom?

15. How would you define the term "21st-century students"?

16. How do your students currently learn new concepts best?

17. How would you explain the academic needs and grade level abilities, skills, and knowledge of your students?

18. How do you explain the role of VLE in 21st-century education and digital learning?

19. How do you perceive VLE in relation to meeting the academic needs of the diverse learners within your classroom?

20. I greatly appreciate your time and assistance. We've covered a lot of information today and I have one final question. What are the questions that I should have asked in relation to VLE use in personalized learning?

APPENDIX H: SAMPLE INTERVIEW

Researcher-
Please introduce yourself to me.

Participant-
Hi, my name is Carol. I am a fifth teacher here at Turner Elementary. I have a daughter named Candy, and a cat, cat named Cotton and black lab named Jerry. And I have been married for four and a half years, and I went and got my degree at Georgia Southern in early childhood education.
.
Researcher-
Please walk me through your teaching pedagogy.

Participant-
All right in my class, we have a lot of small groups. So my teaching pedagogy, I like to teach a mini-lesson whole group and then I like to break into small groups so that I can individualized instruction. We will have a small mini lesson will break up into groups and then I will break them up and conference with them after assessments, and we will confirm and correct things that they need help on. I believe students learn best when they are able to confer with the teacher and practice in small groups. CRA is important in learning and that can only really happen with small group instruction. You have to help students grasp that the information better. So you can scaffold by being there for them and helping them through each part of whatever you're working on. I think that technology in the classroom can make learning more engaging for students. And I think you have to present your instruction in different ways so that you can meet all your students' needs.

Researcher-
What impact does a teacher's pedagogy have on the educational material used? The instruction format used? Use of technology in the classroom?

Participant-
Um, high impact so I think that teachers, a teacher teaching style has a heavy impact because they tend to do activities and do lessons that are kind of in their comfort zone, if you will, so I think that it has a high impact on it on. like how you teach the classroom and any technology that you use. All right, my classroom is ran with many lessons to go over the new skill will break up into small groups will have four small groups. One group will be a technology group. And I will use I Excel something that's based on the standards and the kids can go in and get some type of feedback right or wrong. And then we'll rotate twice each subject.

Researcher-
The instruction format used? Use of technology in the classroom are impacted as well?

Participant-
Yea especially the materials used that would go for the instruction format and technology use as well. If you feel very comfortable with technology, I think you use it more if you are hesitant of, you know, clicking and if you're worried about the size that students can get on that I think you steer away from it at all cost.

Researcher-
Okay. What do you feel is the most important activity to achieve student academic success?

Participant-
Feedback. The most important for me so far has been sitting down one on one with the students and conferring over their work. Giving students the feedback on their work and discussing their thinking is the most important thing for their success. We can talk about their understandings and misconceptions. I can look closely at their strategies and see what they have mastered and what they still have to work on.

Researcher-
Okay. How do you describe the learning needs of your students?

Participant-
All students are different, so I am differentiating my groups were moving around the room every 20 minutes because it's a very active group. There are some students that are considered Gifted and pick up the material faster. There is no one a full grade above but there are a few that are further along. And I have some that have a IEP and are below. You have to differentiate the lessons for the students they are not all at the same spot. I have a high group and a low group. They are very active and like hands on learning.

Researcher-
What are the things you consider imperative to students achieving success?

Participant-
I think small group is very important, there's a group of, I have a group of 25 students so small group so that I can get a little bit of one on one with the students is helping them become successful. Small group and feedback that is detailed, that gives them, you know that tells them just what they need to do to master the standard. Students need that small group instruction and feedback to better understand the material.

Researcher-
How would you define 21st century learning?

Participant-
Short attention span. Lots of hands on and rotating every 15 to 20 minutes, this group is active. So, I have to change up the lesson or group every 20 minutes. They need more hands on learning and are really good with technology. They love the computers and want to use them for everything.

Researcher-
How would you define personalized learning?

Participant-
Conferring over we have spirals every other week and math and so we sit down one on one, and confer over then we correct it. I take what that student needs and give them games and different activities to differentiate what they need. So, it is specific to what that student needs.

Researcher-
How would you define online education resources, as it relates to elementary education?

Participant-
Online education resources, this so, we use Reworks every week on Fridays for their cold reads and it gives me a feedback on what they understand. And it's a quick feedback with the students. We also

conference over that on a Monday. We'll use IXL during our small group and Reflex to build up math multiplication fluency. So, they are the online things that students use every day to learn.

Researcher-
How would you explain your perception of the use of virtual learning environments in personalizing instructions for students?

Participant-
With Reflex and IXL will give them a feedback immediately, but it does it give them feedback on what they miss it just says they missed it. So, it has them keep practicing that skill and gives general feedback on how to solve it. Each student will continue at, you know, um their own pace.

Researcher-
Okay, so it doesn't really individualize the feedback for the students?

Participant-
No, it does not. The feedback does not tell them what they are all doing wrong. It helps some students but most just click past it or get frustrated trying to figure it out. Feedback is a necessary part of the teaching environment. But they just click right through the feedback and it makes no sense to them. You know the VLE feedback is not specific to them. The feedback is not individualized to the student and the mistake that they made so they can not grow from the feedback.

Researcher-
Of the components of learning you have identified which would you say are the most significant for student learning?

Participant-
That would it be the small group and the conferencing is the most beneficial for the my class right now but each class is different.

Researcher-
Why would you say that it is significant to this group of students?

Participant-
Because there's 25 and I get a little bit of one on one with each of them to figure out what they're doing and what they're doing wrong.

Researcher-
What else would you like to add to the concept of the VLE use in personalized instruction?

Participant-
Yes, I would like to get some feedback like for the kids instead of saying it's wrong maybe explain what they did wrong or why it was wrong. So show the student more than just the one strategy to solve.

Researcher-
Okay. How have you used VLE as an instructional support in the classroom?

Participant-

It is one of my small group stations in LA and reading time and a math time, so it's one of the rotations every day. I used it to reinforce what we do in small group.

Researcher-
So, you would say it's more of a reinforcing tool and not a direct instruction tool?

Participant-
Yes, it is used to tutor the students in what they need help with. I use it whole class to help do direct instruction but I never let it do that first on its own. It is okay for reinforcing but not to introduce. They need more hands-on learning first and they struggle to understand the computer on their own.

Researcher-
How would you define the term 21st century students?

Participant-
Very active. They have to move a lot and talk a lot. They need hands on things to learn and likes hands on things.

Researcher-
How do your students currently learn new concepts best?

Participant-
Mine likes the mini lessons. Then once we dive into it in a small group, we do hands on activities and they seem to pick up the new concept quickly that way.

Researcher-
Would you say they learn best with technology or using manipulatives?

Participant-
It depends on the group, some groups are better with a technology, some are better with a hands-on manipulative. But overall, they learn best if they can see it and touch it first.

Researcher-
Okay. How would you explain the academic needs and grade level abilities, skills, and knowledge of your students?

Participant-
So, yeah, all students are different, so each week I kind of sit down and look at things so I have to differentiate between what each group or each student needs. It ranges from student to student. There is not a solid group all at the same exact spot but they are close to each other so I group them together. Some need more time with me and some are ready for reinforcement and some can move on.

Researcher-
Okay. How do you explain the role of VLE in 21st century education and digital learning?

Participant-
I'm using it as a tutoring tool, and to reinforce the skills that have been taught. I would like to use it as a flip classroom where you know they learn at home the new item and we practice together at school. But they just are not there yet. They do not get it on their own and no one can help them at home, you know the computer can not say you are doing this and you need to do that.

Researcher-
How do you perceive VLE in relation to meeting the academic needs of the diverse learners within your classroom?

Participant-
And to me, in IXL or Reflex, the feedback is just general, it just say they got it wrong and they got it wrong but it's not explained and maybe how they could do it right the next time. So really it can just be a reinforcer for small group.

Researcher-
So more of a tutoring tool and not an introducing tool?

Participant-
Yes, I can use it whole group to intro a mini lesson but I have to do it. They use it to practice what I have taught them.

Researcher-
I greatly appreciate your time and assistance. We've covered a lot of information today, and I have one final question: what are the questions that I should have asked, in relation to VLE use in personalized learning?

Participant-
No, I can't think of any question that you haven't asked No.

Researcher-
Beautiful. Thank you

APPENDIX I: OBSERVATION PROTOCOL

Abbreviations and Definitions of Terms

Abbreviation	Definition

Background-

Participant	Subject being taught	Type OER	Other material used	student engagement	Notes

APPENDIX J: OBSERVATION SAMPLE

Abbreviations and Definitions of Terms

Abbreviation	Definition
TI	**Technology was used as an introduction**
TS	**Technology was used as a station**
PL	**Personalized learning**
YT	**Youtube video**
GAM	**Gamification**
DOK	**Depth of Knowledge**

Background- Students were familiar with how to use VLE program. Students all had their own devices and all devices appeared to be new. TS was used for all subjects. TS had students working on various lessons. Students conferred with each other over feedback. Student expectations were listed on the board and the teacher had to monitor the technology group heavily while running her small group.

Participant	Subject being taught	Type OER	Other material used	student engagement	Notes
Susan	Math	IXL, Reflex math TS	Paper worksheets, task cards	Students highly engaged in task cards and worksheet; students just clicking until answer is given or skipping section to avoid hard questions	Feedback from IXL frustrating for some students as they did not understand it; students rely on peers and teacher to complete IXL but work through other assignments on their own; GAM. Preferred; students have deeper level of DOK with teacher
		IXL		moderate	2 students had different games not assigned; some just looking at internet for answers; some use

					feedback but it does not match their strategy for solving; feedback frustrating for the lower students
		TI	YT used to introduce lesson	high	PL in place for all students with all but task cards

APPENDIX K: DOCUMENT RUBRIC PROTOCOL

Document Title_____

Located from_____

Participant Access to document_____

Type of document_____

	Exemplar 5pts	Excellent 4pts	Good 3pt	Acceptable 2pts
OER	The VLE use described or depicted in the document in done so with the focus on individualized instructional paths for students. The VLE depicted has easy access for educators and students. The VLE is adaptable to educator and student needs.	The VLE use described or depicted in the document in done so with the focus on individualized instructional paths for students. The VLE depicted has easy access for educators and students.	The VLE use described or depicted in the document in done so with the focus on individualized instructional paths for students. The VLE is adaptable to educator and student needs.	The VLE use described or depicted in the document in done so with the focus on individualized instructional paths for students.
Student agency	The document promotes student agency, self-regulated learning, and engagement in lessons. The document provides guidance on how to include the VLE in the personalized learning process.	The document provides guidance on how to include the VLE in the personalized learning process.	The document can be adapted to use with an VLE in classroom.	With manipulation from the educator the document can be adapted to use with an VLE in personalized learning classroom.
Rigor	The document is rigorous in the use of VLE. VLE incorporation in	The document is rigorous in the use of VLE. VLE incorporation in	VLE incorporation in classroom instruction is the foundation	VLE incorporation in classroom instruction is a small part of the document.

	classroom instruction is the foundation of the document. The document increases the depth to which VLE is used in the classroom.	classroom instruction is the foundation of the document.	of the document.	
Breadth	The document is able to provide direction for all academic subjects on the use and implementation of VLE.	The document is able to be used two-three academic subjects.	The document is able to be used two academic subjects.	The document is able to be used one academic subjects.

APPENDIX L: DOCUMENT ANALYSIS SAMPLE

Document Title__I-Ready Use for classrooms 3-5_____
Located from__District Professional Learning Google Classroom_____
Participant Access to document_ yes_____
Type of document_____guide for use in classroom_____

	Exemplar 5pts	Excellent 4pts	Good 3pt	Acceptable 2pts
OER	<mark>The VLE use described or depicted in the document is done so with the focus on individualized instructional paths for students. The VLE depicted has easy access for educators and students. The VLE is adaptable to educator and student needs.</mark>	The VLE use described or depicted in the document is done so with the focus on individualized instructional paths for students. The VLE depicted has easy access for educators and students.	The VLE use described or depicted in the document is done so with the focus on individualized instructional paths for students. The VLE is adaptable to educator and student needs.	The VLE use described or depicted in the document is done so with the focus on individualized instructional paths for students.
Student agency	<mark>The document promotes student agency, self-regulated learning, and engagement in lessons. The document provides guidance on how to include the VLE in the personalized learning process.</mark>	The document provides guidance on how to include the VLE in the personalized learning process.	The document can be adapted to use with an VLE in classroom.	With manipulation from the educator the document can be adapted to use with an VLE in personalized learning classroom.
Rigor	The document is rigorous in the use of VLE. VLE	The document is rigorous in the use of VLE. VLE	<mark>VLE incorporation in classroom instruction is</mark>	VLE incorporation in classroom instruction is a

	incorporation in classroom instruction is the foundation of the document. The document increases the depth to which VLE is used in the classroom.	incorporation in classroom instruction is the foundation of the document.	<mark>the foundation of the document.</mark>	small part of the document.
Breadth	The document is able to provide direction for all academic subjects on the use and implementation of VLE.	The document is able to be used two-three academic subjects.	The document is able to be used two academic subjects.	<mark>The document is able to be used in one academic subject.</mark>

APPENDIX M: RESEARCH REFLEXIVE JOURNAL

Comment	Date
I am a public-school elementary educator and have taught within a personalized classroom using VLE for a diverse student base of students that included gifted, special education, and regular education students.	July 20, 2019
I have personal experience with VLE, such as Khan Academy and Dreambox, as intervention tools and instructional resources for fifth and third-grade digital learning students.	July 20, 2019
I am recognized as a highly qualified teacher and coaching, gifted, and mathematics endorsements for instruction with students K-5.	July 20, 2019
I believe that education is composed of various perspectives from educators, society, parents and administrators that overshadow the education that students receive, and the tools used for instruction.	July 20, 2019
I believe that individualizing instruction for each student can only be achieved successfully with VLE when classroom sizes range in the 20's. Students are only able to make academic gains when the instructional material is differentiated to meet their unique learning needs.	July 20, 2019
I use VLE in my classroom instruction. I personalize instruction and material to meet the student's instructional needs.	December 1, 2019
I believe current elementary students are digital learners that learn based on the principals of the connectivism learning theory.	December 1, 2019
I believe there are other ways to personalize learning other than just VLE.	December 1, 2019
I believe students should be given clear expectations on what is expected of them as far as their behavior and learning expectations.	December 14, 2019
I believe a technology station alone is not sufficient in meeting the digital learning needs of students.	December 14, 2019
I believe assigning the same VLE to the entire class and having them rotate through doing station rotation is not personalized learning.	December 14, 2019
I believe gamification of VLE is necessary for student engagement.	December 14, 2019
I believe VLE provides high rigor for students. I believe the feedback is not helpful for students and causes misbehavior and frustration.	December 14, 2019

APPENDIX N: AUDIT TRAIL

Date	Event
April 28, 2019	Obtained research articles on OER, VLE, personalized learning, educator's perceptions
May 30, 2019	Developed interview questions, observation protocol, document analysis rubric, screening survey, recruitment email, follow-up recruitment email.
July 20, 2019	Created a reflexive journal.
September 15, 2019	Obtained a review from experts in the field to ensure face and content validity to my research questions and interview questions as well as the rubric used to conduct observations and analyze documents.
October 7, 2019	Obtained approval from school district and school to conduct study.
November 11, 2019	Liberty University Institutional Review Board (IRB) approval
November 15, 2019	Conducted a pilot interview with a small sample of participants outside of my study
December 1, 2019	potential participants were emailed a recruitment letter with screening survey
December 10, 2019	Reviewed surveys and selected potential participants. Acceptance and decline emails sent out. Acceptance email with consent form
December 12-14, 2019	Obtained written consent from all participants using the approved Liberty University consent form (Appendix F)
December 14-January 15, 2019	Participants interviewed, observations conducted, documents collected. All participants reviewed transcribed interviews and observations.
January 16-February 20, 2019	Coded data collected and identified themes. Analyzed data.