K-12 Public School Teacher Perceptions Regarding their Experiences as Instructors Who Volunteered to Teach in the Online Learning Environment in 2020-2021 (COVID-19)

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ABSTRACT

In this study, the topic of K-12 public school online learning is addressed in the context of the pandemic-related circumstances of 2020 and 2021. The study used a qualitative analysis of data sources in the form of one-on-one interviews. The study examined teachers' input regarding factors they believe impacted academic outcomes for students in the online learning environment in 2020-2021. A total of 15 K-12 public school teachers who volunteered to provide instruction in the online learning environment during the 2020-2021 school year participated in a one-on-one semi-structured interview. The questions asked during the interview were organized in sections according to themes that were reviewed in the review of literature and existing research components of this study: professional development, pedagogy, learner engagement, and equity in the K-12 online learning environment. Findings and conclusions from this study offer multiple considerations for future planning and implementation of K-12 public school instruction in the fully online learning environment. Instructors need adequate and advanced preparation and professional development that is intentionally focused on the fully online learning environment. Parents and students need to have an understanding of the expectations of active engagement in the fully online learning environment. Consistent and clear communication about expectations of learners is a predominant factor in ensuring increased student achievement in the K-12 public school fully online learning environment.

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In this study, the topic of K-12 public school online learning is addressed in the context of the pandemic-related circumstances of 2020 and 2021. The study examined teachers' input regarding factors they believe impacted academic outcomes for students in the online learning environment in 2020-2021. A total of 15 K-12 public school teachers who volunteered to provide instruction in the online learning environment during the 2020-2021 school year participated in a one-on-one interviews. The topics of professional development, pedagogy, learner engagement, and equity in the K-12 online learning environment were addressed by the interview questions. The results of this study offer multiple considerations for future planning and implementation of K-12 public school instruction in the fully online learning environment. Instructors need adequate and advanced preparation and professional development that is intentionally focused on the fully online learning environment. Parents and students need to have an understanding of the expectations of active engagement in the fully online learning environment. Consistent and clear communication about expectations of learners is a predominant factor in ensuring increased student achievement in the K-12 public school fully online learning environment.

DEDICATION

"Give thanks in all circumstances; for this is the will of God in Christ Jesus for you."

1 Thessalonians 5:18

I have so much to be thankful for in reflection of the past three years which, coincidentally, have included some of the hardest times of my life. I am thankful to my family who continues to love and support me unconditionally, no matter my pursuit. I lost my father four days after passing my Prospectus Exam. He made his love and pride clear and I will always strive to honor him. My mother, Carol, brother, Kyle, sister-in-law, Kahla, father-in-law, Joe, and mother-in-law, Vicki, offer continual encouragement and support for which I am forever thankful.

My children, Addison and Travis, are the best I have to share with this world. Their love and support of me has demonstrated maturity beyond their years. My husband, Jason, is unwavering in his love, support, and dedication. Without him, these past three years would have been impossible.

I am so grateful.

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CHAPTER 1
INTRODUCTION OF THE STUDY

Introduction/Context

The circumstances of the 2020-2021 school year were unlike any other time in K-12 public education. The world of education was turned upside down due to the COVID-19 worldwide pandemic and schools faced unprecedented and unfamiliar circumstances (Scott-Webber, 2021). In this study, the topic of K-12 public school online learning is addressed in the context of the pandemic-related circumstances of 2020 and 2021. Opening public schools during a worldwide pandemic presented public educators with the challenge of supporting K-12 students' physical, academic, and social-emotional development in a brand-new way that was dictated by the need to minimize the spread of COVID-19 (The Centers for Disease Control and Prevention [CDC], 2020). Online learning was especially relevant as public school divisions opened schools for the 2020-2021 school year. Online learning was a necessary component of educational programs created to comply with local, state, and federal pandemic-related guidelines and mandates (VDOE, 2020f). Educators who instructed in online learning environments during this time had a variety of experiences. Some educators' worked in the online learning environment under these circumstances led to new, more effective educational programs (Kaden, 2020). Other educators' experiences in the online learning environment during this time led to frustration and a sense of isolation (McQuirter, 2020).

School Year 2020-2021

In November, 2020, The Center for Reinventing Public Education published *One Step Forward, One Step Back; Public Health Fears Keep America's School Districts on a Reopening Treadmill*, authored by Gross, Opalka, and Gundapaneni. It was an update of a previous summary of a nationally representative sample of 477 school systems from across the United States. At that time, 47% of school districts in the sample were operating fully in-person, 15% were operating in a hybrid or combination of in-person and remote learning, and 21% were operating in a completely remote format. According to Goss et al. (2020), 16% of districts in the sample had a combination of instructional formats that varied depending on grade levels or specific schools within their district. There was a clear distinction between rural and urban

school districts. City districts in the sample were far more likely to be utilizing a fully remote model of instruction as compared to suburban and rural districts. In-person learning was offered by far more rural schools than urban and suburban schools (Gross et al., 2020).

Compared to data from August 2020, Gross et al. (2020) found 30% of school districts in their sample of 477 had changed their mode of instruction in response to pandemic-related circumstances. Many of these changes focused on returning elementary age students and/or students with special needs or considerations to in-person learning. As of November 2020, almost 60% of school districts in the United States were offering full in-person learning for elementary grades while hybrid models persisted and were most common at the middle and high school level. School districts that operated in a fully-remote or hybrid model had adjusted their programs to provide specialized, in-person services for students with disabilities. Many school districts in the sample attempted to safely offer at least some of their most vulnerable students opportunities for in-person learning (Gross et al. 2020).

There were similar trends in the Commonwealth of Virginia during the 2020-2021 school year. The Virginia Department of Education (VDOE) (2020f) reported on the operational status of each of the 132 school divisions in the Commonwealth. As of September 8, 2020, eight percent of Virginia's school divisions were operating as fully in-person, which meant that all students reported to school at least four days a week for in-person instruction. At that time, 42% of school divisions were operating in a hybrid or partial in-person model meaning a portion of the division's student population participated in remote learning while another portion of the student population participated in in-person learning. The actual implementation of instruction in hybrid models and partial in-person models varied across divisions; however, younger students and those with special needs were often prioritized for in-person learning. In early September 2020, 50% of school divisions in Virginia were operating in a fully remote model of instruction.

By November 12, 2020, VDOE (2020f) reported changes in the instructional models being implemented within Virginia's public schools. The percentage of divisions operating in fully remote programs had decreased to 26%. The percentage of divisions opening in fully in-person programs had increased slightly to 11%. Most school divisions, 63%, were operating in a hybrid or partial in-person model.

Instructional models being implemented within Virginia's public schools continued to change throughout the winter and spring of the 2020-2021 school year. By April 26, 2021,

VDOE (2020f) reported the number of divisions operating predominantly remote programs had decreased to just one. The percentage of divisions opening in fully in-person programs had increased to 42%. At that time, there were 76 divisions operating in a hybrid or partial in-person model.

Definition of Terms

This section provides a list of terms used in this study and their definitions which may be useful in orienting the reader.

asynchronous learning environment - A learning environment in which students participate in learning opportunities anywhere at any time (Reason et al., 2017). There are no live interactions between teachers and students or between students and their peers. Students work independently on assignments and activities made available by their teacher. Learning Management Systems (LMS) organize electronic content and assist with communication between teachers and students to facilitate instruction in an asynchronous learning environment.

fully online learning environment - A course or class in which all content is presented in an online format with synchronous and/or asynchronous elements of instruction. Students and teachers are never physically present with one another in the same classroom or space (Picciano & Seaman, 2019). This term is synonymous with *all virtual* and *fully remote learning*.

hybrid instructional model- An instructional program that involved a portion of the division's student population participating in remote learning while another portion of the student population attended school to participate in in-person learning (VDOE, 2020f).

learning management system (LMS) - A digital platform that provides centralized K-12 curriculum and instruction for an online learning environment. Online course materials, grades, communication, and assignments can be managed and customized by the instructor (Instructure, 2022). Canvas is the LMS used by the school division that employed the teachers who participated in this study.

online learning - A course or class in which at least a portion of the content is presented in an online or web-based format that does not involve students and teachers being physically present in the same classroom or space (Reason et al., 2017).

PDF editor - A piece of software or technology that transforms a static document into an editable, interactive learning tool that allows teachers and students to collaborate and communicate within the document (Kami, 2021). Kami is the PDF editor used by the school division that employed the teachers who participated in this study.

remote learning - A model of instruction that involves students learning outside of the classroom and physically separated from their teachers and peers. Fully online learning environments involve remote learning (VDOE, 2020f)

synchronous learning environment - A learning environment in which all students experience the learning opportunities at the same time and in the same manner (Reason et al., 2017). Interactions and discussions between the teachers and students occur electronically in real-time. Students have the opportunity to interact with their peers through live conversation and collaboration despite being physically separated.

Purpose of the Study

The purpose of this study was to identify the perceptions of K-12 public school teachers who volunteered to provide instruction in fully online learning environments during the 2020-2021 school year. The intent was to seek teachers' input regarding factors they believe impacted academic outcomes for students in the online learning environment. Teachers who participated in the interview were asked to reflect specifically on issues related to their training and professional development, pedagogy, learner engagement, and equity as these topics relate to their experiences as instructors in the online learning environment. Interviewees were given the opportunity to offer their perceptions about factors they feel were especially impactful, positively or negatively, on students' academic progress in the online learning environment.

Significance of the Study

Prior research indicates most states support some type of K-12 online learning programs for public school students although there is a great deal of inconsistency with related policy and

legislation (Picciano & Seaman, 2019; Wicks, 2010). Research related to K-12 online learning has revealed effective strategies and instructional approaches for the online learning environment. The need for professional development specifically designed for educators who are supporting students in online formats has been emphasized (Farmer & West, 2019; Kaden, 2020). Learner engagement and equity in online learning environments are a focus of prior research, as well (Barbour & Harrison, 2016; Kwon et al., 2019). Research reveals advantages and disadvantages related to learner engagement and equity in online learning environments for K-12 public school students (Barbour & Harrison, 2016; Picciano & Seaman, 2019; Reason et al., 2017; Wicks, 2010). At the time of this study, there was limited published research related to pandemic-related circumstances that necessitated online learning in K-12 public schools in 2020-2021.

The sudden move to online learning that resulted from the COVID-19 crisis may be the catalyst that creates new, more effective educational programs (Kaden, 2020). Stakeholders indicate an understanding that online learning fulfills an important educational need for students (Picciano & Seaman, 2019). K-12 public educators can be successful in continuing to develop effective online learning environments and building on the strengths of current practices will be essential (McQuirter, 2020). Teacher collaboration must be facilitated and encouraged. Focused, systematic implementation must be supported across grade levels regardless of curriculum or content area (McQuirter, 2020). Online learning will likely remain a key component of educational programs offered by K-12 public school divisions beyond 2020-2021 (VDOE,202d).

Research Questions

This study began with the following research questions which guided the review of available literature and research and guided the development of interview questions.

1) In consideration of pedagogy, professional development, learner engagement, and equity, what factors in the fully online learning environment do teachers perceive as having a positive impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?
2) In consideration of pedagogy, professional development, learner engagement, and equity, what factors in the fully online learning environment do teachers perceive as

having a negative impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?

Justification of the Study

This study is important because K-12 public school teachers who instructed in fully online learning environments during the 2020-2021 school year identified distinct elements of the fully online learning environment that contribute to students' development of academic skills. These teachers also identified distinct elements they believe can strengthen student outcomes in future online learning programs. Teachers also identified distinct elements of the fully online learning environment they believe presented barriers to or negatively impacted students' development of academic skills in 2020-2021.

In previous research, teachers who taught in the online learning environment discussed important elements of professional development and teacher training that led to more effective instruction in the online learning environment (Farmer & West, 2019). Teachers shared instructional approaches that are more or less effective in the online learning environment based on their experiences. Teachers identified both successful and unsuccessful strategies for actively engaging students (Picciano & Seaman, 2019; Reason et al., 2017; Wicks, 2010). Teachers identified barriers that negatively impacted learner engagement in the K-12 online learning environment and identified strategies that positively impacted learner engagement, as well (Picciano & Seaman, 2019; Reason et al., 2017; Wicks, 2010). Teachers discussed issues related to equitable student access to the K-12 online learning environment based on their professional experiences in 2020-2021 (McQuirter, 2020).

The approach to public education that was required for the 2020-2021 school year was dependent upon online learning (Kaden, 2020). While the pandemic-related circumstances necessitating utilization of online learning as a fundamental element of K-12 public schools evolved and improved, online learning will continue to be a resource used by public school divisions (VDOE, 2020d). Examining teachers' perceptions related to instruction in online learning environments will provide valuable information that can be used to strengthen future online learning programs. Specifically, there is a need for teachers' feedback on the topics of professional development, instructional approaches, learner engagement, and equity (Barbour & Harrison, 2016; Pulham et al., 2018).

Limitations

This study focuses on teachers who volunteered to instruct at least one fully online course or class in 2020-2021 during the unique circumstances presented by the worldwide COVID-19 pandemic. The responses and perceptions of instructors who were assigned by their supervisors to teach in the fully online learning environment without being given a choice are not included in this study. This small sample population is a limitation. The data collected are from one K-12 school division in the Commonwealth of Virginia, limiting the generalization of the study. Despite these limitations, this study is important as it could be effective in strengthening the outcomes for K-12 public school students who participate in future online learning environments.

Summary

This qualitative study used interview responses to examine the perceptions of K-12 public school teachers who provided instruction in online learning environments during the 2020-2021 school year. The study is presented in five chapters. Chapter 1 introduces the topic, significance of the study, purpose for the study, research questions, and framework of the study. The second chapter of the study is a review of relevant and current literature. Chapter 3 addresses the methodology used in the study, including research design, data collection processes, instrument design, and data analysis. Chapter 4 describes the results of the study. Chapter 5 provides a discussion of the findings and the implications for future practice and research.

CHAPTER 2
A REVIEW OF LITERATURE

Introduction

This review of literature examines topics or themes of online learning in K-12 public education. The introduction is followed by a summary of the Virginia Department of Education's contributions to K-12 online learning programs, specifically Virtual Virginia. The chapter then addresses instructional approaches and professional development for K-12 online learning. Learner engagement in K-12 online learning programs is examined. Positive impacts of online programs on K-12 learner engagement, as well as negative impacts are addressed in this chapter. The impacts of online learning on equity in K-12 public education are addressed prior to the conclusion of the chapter.

Research on online learning was reviewed and selected with a focus on the following terms: online learning, distance learning, and virtual learning. Literature that addressed online learning in only higher education or only adult learning was excluded to ensure K-12 education was the focus of the search. There was a focus on literature made available since 2009. The following databases were searched for scholarly peer-reviewed studies and related publications: ERIC, WorldCat, EBSCOhost, ResearchGate. The Virginia Polytechnic Institute and State University Libraries databases were accessed, as well. Additionally, relevant resources available through the Virginia Department of Education were reviewed and selected.

Purpose of the Study

The purpose of this study was to identify the perceptions of K-12 public school teachers who volunteered to provide instruction in fully online learning environments during the 2020-2021 school year. Teachers were asked to share their perceptions of factors they believe impacted academic outcomes for students in the online learning environment based on their experiences. The review of relevant and recent literature was necessary to formulate valid and pertinent research design and questions. Themes were extracted from the review of literature to focus and guide the development of the study.

Circumstances of 2020

In early 2020, localities across the United States and around the world were forced to enact extensive mitigation efforts in an attempt to stop the spread of the COVID-19 virus. In many places, day-to-day life came to a halt. Throughout the country, K-12 public school divisions were closed with little to no warning and remained closed through the end of the 2019-2020 school year. Re-opening schools for the 2020-2021 school year during a world-wide pandemic presented challenges and considerations that had never existed. Beginning in mid-2020, the Centers for Disease Control and Prevention (CDC) encouraged school divisions to work in collaboration with state and local health officials to develop and implement mitigation efforts to establish behaviors to reduce the spread of COVID-19, maintain healthy environments, and prepare for student and staff illness (The Centers for Disease Control and Prevention [CDC], 2020).

The CDC's (2020) recommendations for opening schools for the 2020-2021 school year with limited risk included the implementation of a hybrid learning model that involved some students participating in virtual learning and other students participating in in-person learning. There were recommendations for small, in-person classes, and rigorously applied instructional calendars that involved cohorting, alternating, and staggered schedules for students to avoid mixing groups of students and teachers (CDC, 2020). Students, teachers, and staff were asked to follow steps to protect themselves and others at all times, including proper use of face masks, social distancing, and hand hygiene. Significantly strengthened cleaning and disinfection protocols were recommended to occur multiple times per day (CDC, 2020).

Considerations for opening schools in 2020-2021 were not limited to only the physical safety of students. The CDC (2020) encouraged schools to consider other concerns related to students' risk and well-being that could potentially result from long-term school closures or complete elimination of in-person learning. These included the potential adverse impact on students' social-emotional, behavioral, and mental health. Special consideration of the critical services provided to help mitigate health disparities and serve children in need were also encouraged. This included consideration for school lunch programs, special education services, after-school programs, and mental health services (CDC, 2020). There was recognition of the unique and critical role that schools play in society which made them a priority for reopening and remaining open, enabling students to receive both academic instruction and other critical services

and supports (CDC, 2020). According to the CDC (2020), it was possible for schools to meet the needs of their students and community, while reducing the risk of COVID-19 spread by strict implementation of the recommended mitigation strategies.

Opening public schools during a worldwide pandemic presented public educators with the challenge of supporting K-12 students' physical, academic, and social-emotional development in a brand-new way that was dictated by the need to minimize the spread of COVID-19. Online learning was especially relevant as public school divisions opened schools for the 2020-2021 school year (VDOE, 2020f). Online learning was a necessary component of educational programs created to comply with local, state, and federal pandemic-related guidelines and mandates.

Defining Online Learning in K-12 Public Education

In K-12 education, programs involving online learning have grown substantially, even before the COVID-19 crisis (Borup, 2016; Farmer & West, 2019; Pulham et al., 2018; Wicks, 2010). The initial adoptions of K-12 online learning programs emerged in the late 1990s. At that time, students had the option of enrolling in a full-time cyberschool or specific online courses offered by a state virtual school (Wicks, 2010). The online courses offered by a state virtual school supplemented students' coursework in their home school. By 2001, approximately 10 states offered state virtual schools and a few states offered full-time multi-district cyberschools. By 2019, 31 states allowed statewide online schools with an estimated enrollment of 310,000 students. Also at that time, 23 states supported state virtual schools serving about 420,000 students (Digital Learning Collaborative, 2019).

In 2010, Wicks published *A National Primer on K-12 Online Learning*, a qualitative analysis of K-12 online learning programs in the United States.. Wicks (2010) identified online learning as a web-based, educational delivery system characterized by a structured learning environment that provides enhanced and expanded educational opportunities. The most common program types were state virtual schools, charter schools, multi-district schools, and consortium-based programs (Wicks, 2010). "Fully online," "blended courses," "virtual courses," "e-learning," "hybrid courses," "mixed-mode," "asynchronous learning," "distributed learning," "web-facilitated," and "web-enhanced learning" are terms associated with the online learning environment (Picciano & Seaman, 2019; Wicks, 2010). Many definitions exist because the field

of online learning is rapidly evolving with educators integrating various aspects of online learning with conventional classroom instruction (Wicks, 2010).

In 2019, Picciano & Seaman published *K-12 Online Learning: A Survey of US School District Administrators* and defined online learning as a course with 80% or more of the content delivered online with typically no face-to-face meetings. Instruction of this nature is commonly called asynchronous. Blended/hybrid learning was defined as a course with 30-79% of content delivered online. More specifically, blended/hybrid learning was defined as a combination of online and face-to-face delivery of instruction that sometimes involved online discussions and face-to-face meetings (Picciano & Seaman, 2019).

Digital learning represents the strategic integration of a variety of technological tools to support the learning process (Selwyn, 2011). Online learning experiences that do not involve interactions occurring in the same place and at the same time are referred to as asynchronous learning because they are non-concurrent (Loeb, 2020). In this format, learning opportunities are available anywhere at any time (Reason et al., 2017; Wicks, 2010). Students have the discretion to begin and end at any time and can move through the course at a pace determined by the instructor (Wicks, 2010). As of 2015, the majority of K-12 online learning programs used asynchronous instruction (Barbour, 2015).

When online learning involves virtual or "live" interactions between teachers and students, it is known as synchronous learning. In this environment, all learners experience the learning opportunity at the same time and in the same manner (Reason et al., 2017; Wicks, 2010; Loeb, 2020). Synchronous learning environments are paced at the teacher's discretion just as they are in a typical face-to-face classroom (Wicks, 2010).

Reason et al. (2017) defined a blended learning approach as involving a teacher who delivers instruction to students in a traditional setting, including in-person instruction, with ongoing learning opportunities occurring simultaneously in an online environment. Wicks (2010) defined blended learning as a combination of online learning with other modes of instructional delivery. Teachers present face-to-face, real-time interactions for a portion of instruction. They then connect asynchronous learning opportunities that students engage in independently over a flexible, predetermined time frame (Reason et al., 2017). According to Reason et al. (2017), the most effective approach is a blended one in which there is at least some opportunity for

synchronous contact and connection followed by asynchronous opportunities for learners to thoughtfully and meaningfully engage the instructor, their colleagues, and the content.

The Virginia Department of Education's Virtual Virginia

In the mid-2000s, The *Code of Virginia*[1] mandated the VDOE to establish a statewide electronic classroom to be known as the Virtual Virginia Program (VVA) and make it available to every public high school in Virginia. The services of this program were intended for educational purposes including, but not be limited to, instruction in subject areas that are not available in all schools and in-service training for instructional, administrative and support personnel. VDOE may contract with one or more local school boards that have created online courses to make these courses available to other school divisions through the VVA. VDOE is expected to approve all courses offered through VVA, including those made available by local school boards to other school divisions. A school board that makes one or more of its online courses available to other school divisions through VVA cannot be considered a multi-division online provider[2] and can charge a per-course or per-student fee to school divisions to defray the costs of developing the course and providing course instruction using teachers employed by the offering school board. VDOE must approve fee schedules before a school board offers online courses through VVA.

Initially, VVA offered online Advanced Placement, world language, core academic, and elective courses to students in Virginia and across the nation (VDOE, 2021). As of early 2020, VVA offered online courses and digital content to over 6,000 students enrolled in 81 high school credit-bearing courses (VDOE, 2020d). VDOE established a plan to partner with WHRO Public Media to expand VVA for the 2020-2021 school year. This plan included an expansion of VVA offering to include elementary and middle school content and courses (VDOE, 2020d). The COVID-19 pandemic and resulting crisis of the spring of 2020 made this a particularly relevant resource for school divisions who were operating in virtual platforms.

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[1] Code of Virginia § 22.1-212.2;

[2] Code of Virginia § 22.1-212.23 - "Multidivision online provider" means (i) a private or nonprofit organization that enters into a contract with a local school board to provide online courses or programs through that school board to students who reside in Virginia both within and outside the geographical boundaries of that school division; (ii) a private or nonprofit organization that enters into contracts with multiple local school boards to provide online courses or programs to students in grades K through 12 through those school boards; or (iii) a local school board that provides online courses or programs to students who reside in Virginia but outside the geographical boundaries of that school division.

The expansion of VVA, in response to the needs of school divisions at the end of the 2019-2020 school year and throughout the 2020-2021 school year, offered Virginia's students and teachers increased access to online courses, professional learning opportunities, and digital content (VDOE, 2020e). All Virginia public K-12 school divisions had the ability to use online resources with their students on the expanded VVA platform at no cost to the school division (VDOE, 2020e). VDOE described these resources as K-12 Learning Modules that included fully-developed lessons and teacher-graded assignments. Teachers were able to modify and create modules to address additional content or provide new instruction while using VVA. VDOE also offered a statewide Professional Learning Network of educators that involved workshops and statewide training related to the available resources (VDOE, 2020e).

Instructional Approaches and Professional Development for Online Learning

Researchers and practitioners suggest a variety of instructional approaches for online learning environments (Borup et al., 2014; Loeb, 2020; Pulham et al., 2018; Reason et al., 2017; Wicks, 2010). Instructors who begin teaching in online formats are often unfamiliar with the specific instructional methods and approaches associated with the online learning environment. They need to be provided professional development that is specifically designed to enhance their knowledge and implementation of instructional methods and approaches that are specific to the online learning environment (Wicks, 2010). To realize the full potential of online learning, school districts must invest in the necessary professional development of teachers (Wicks, 2010). Scott-Webber published a mixed-methods study that examined teachers' perspectives during the fall of 2020. This study revealed teacher perceptions that the pandemic-related circumstances of 2020 resulted in a sudden move to online instruction in the absence of sufficient professional knowledge to prepare, deliver, and assess instruction in the online learning environment (Scott-Webber, 2021). Generally speaking, elementary and secondary teachers were offered little if any systematic training in full online delivery before being expected to teach in the online learning environment in 2020 according to McQuirter's narrative, *Lessons on Change: Shifting to Online Learning During COVID-19.*

Pedagogy

Just as in the traditional classroom environment, teachers remain one of the most essential elements of the learning process in the online learning environment (Wicks, 2010). Essential responsibilities of an online teacher are similar to those associated with in-person instruction. Online teachers guide and personalize learning by assessing student understanding of content, facilitating group discussions, and making continuous adjustments to course resources (Wicks, 2010).

Assessment of student learning and instructional planning are components of the online learning environment, just as it is in the traditional classroom environment. Teachers need to identify what students know and what they do not yet understand according to Loeb's 2020 narrative, *How Effective is Online Learning? What the Research Does and Doesn't Tell Us.* Teachers utilize assessment methods that demonstrate students' mastery of knowledge. Improvements to the quality of instruction in general and personalized instruction result from teachers' efforts to implement adaptive and performance-based assessments that are data-driven (Wicks, 2010). Developing the online course content and structure remains an essential function of the online instructor. This involves material delivery, content availability, and content development (Wicks, 2010). The manner and method in which online teachers accomplish these tasks are different from face-to-face learning environments. In fact, the skills necessary to instruct effectively online often extend beyond those required in a traditional classroom (Wicks, 2010).

Online learning environments require teachers to have extensive content area expertise and a deep understanding of online and blended pedagogy (Wicks, 2010). Technology and related tools have the potential to support effective instruction in the online learning environment by enhancing opportunities for networking, collaboration, communication, and personalized learning (Pulham et al., 2018). Pulham et al. published a literature review in 2018, *Generic vs. Modality-Specific Competencies for K-12 Online and Blended Teaching,* that warned against assuming desirable competencies for in-person teaching are also desirable in an online classroom and emphasized the importance of specifically identifying competencies that are effective in an online setting.

Online learning affords teachers the benefit of freedom and the ability to customize instruction for their specific students (Barbour & Harrison, 2016; Picciano & Seaman, 2019).

Online learning is perceived as an important component of K-12 education because it holds the potential to meet the needs of specific groups of students (Picciano & Seaman, 2019). Differentiated instructional opportunities and the ability to provide instruction that addresses students' individual needs were identified as benefits of the online learning environment according to Barbour & Harrison's 2016 quantitative research study, *Teachers' Perceptions of K-12 Online: Impacting the Design of a Graduate Course Curriculum.*

Pulham et al. (2018) found that specific variations of generic instructional competencies must be developed to address the circumstances of online and blended learning environments. Skills related to facilitating whole-class discussion in an in-person environment are not the same as the skills necessary for a teacher to lead online asynchronous discussions. Incorporating an asynchronous discussion within the in-person learning portion of a blended learning program involves even different instructional skills (Pulham et al., 2018).

Teachers need to establish norms for engagement with subject matter, their peers, and instructors in the online learning environment that are different from those in the in-person setting (Borup et al., 2014; Loeb, 2020). These should include requirements for students to routinely ask questions, respond, and interact (Loeb, 2020). In 2014, Borup et al. published, *The Adolescent Community of Engagement: A Framework for Research on Adolescent Online Learning,* and explained that meaningful collaboration and communication are not likely to occur in online learning environments if teachers do not facilitate this type of interaction. Teacher competencies related to communication are important to student achievement in any learning environment. These competencies are more crucial to the effectiveness of an online teacher because, in the online learning environment, all communication is through a distance medium and in-person follow-up is not available as it is in a conventional learning environment or a blended learning environment (Pulham et al., 2018; Wicks, 2010).

Preparation for Teachers

The need to adequately prepare K-12 teachers to design, deliver, and support online learning is especially important (Barbour & Harrison, 2016; Pulham et al., 2018). Barbour and Harrison (2016) found that teachers recognized the need for increased technical training and preparation to sufficiently manage the responsibilities of online learning. K-12 school

administrators and other stakeholders may not be fully equipped with adequate knowledge to support online learning (Barbour & Harrison, 2016).

In 2020, many K-12 public school teachers described a sense of isolation as they attempted to manage technical, social, and instructional challenges presented by the online learning environments in which they found themselves working (McQuirter, 2020). Teachers who provided online instruction reported significant pedagogical, operation, and student-related concerns. In 2019, Farmer and West published an interpretive phenomenological analysis study, *Exploring the Concerns of Online K-12 Teachers*, and recommended these should be areas of focus for professional development for online instructors.

If given the opportunity, teachers can positively impact student learning in online formats according to Tierney et al., in the 2011 publication, *Diversifying Digital Learning: Online Literacy and Educational Opportunity.* Similarly, Borup's (2016) case study using teacher surveys and interviews, *Teacher Perceptions of Learner-Learner Engagement at a Cyber High School*, revealed teachers have the opportunity to minimize barriers to the online learning environment (Borup, 2016). Empowering teachers through fostering opportunities for leadership, innovation, and collaboration ultimately has a direct impact on learner engagement with online learning. A teacher-led approach to professional development that reflects their priorities and is aligned with district-wide efforts can lead to increased student access to digital learning opportunities (Tierney et al., 2011).

In an online program, students need support with technical issues such as accessing the course and solving problems they encounter with devices or software. Students also need assistance related to tutoring and counseling needs (Wicks, 2010). When teachers joined Professional Learning Communities (PLCs) that were relevant to their interests and needs, they were more likely to experiment with using technology in their teaching. Increased teacher engagement with curricula tied to digital media occurred when teacher leadership, innovation, and collaboration were facilitated (Tierney et al., 2011). Teachers need to be trained to utilize online learning tools, especially those that are relevant to synchronous instruction, beyond the manner in which they have grown accustomed to using these tools in the traditional learning environment according to Barbour's (2015) study, *Real-Time Virtual Teaching: Lessons Learned from a Case Study in a Rural School*. Educators need to be prepared to foster students' support of

one another in order to develop a sense of community that can encourage students to be more active in their participation during online learning (Barbour, 2015).

Teachers must be equipped to communicate and provide efficient feedback to students in the online learning environment (Wicks, 2010). Quality online instruction involves significant teacher-student communication. It also involves online courses that focus on student-to-student interactions (Wicks, 2010). Online teachers need to consider the needs of less-engaged students and be prepared to engage them (Loeb, 2020). In an online learning environment, teachers guide students to develop the ability to use a wide variety of communication such as email, online discussion, sharing of documents, and journaling (Wicks, 2010).

Barbour and Harrison's (2016) data indicated some unsuccessful K-12 online learning environments could be explained by the lack of information provided to teachers, administrators, and other stakeholders about the possibilities and benefits of this method of instructional delivery. In many teacher-education programs, preparation for online learning involves only exposure to multimedia tools and digital resources that might be used in the classroom. Teachers must be prepared to serve the rapidly growing number of online students by developing skills for blended learning models of instruction according to Kaden's (2020) case study, *COVID-19 School Closure-Related Changes to the Professional Life of a K-12 Teacher*. Professional development for educators for online learning should focus on developing teachers' skills for motivating individual students, encouraging student interaction, developing alternatives to dependency on social cues, differentiating instruction based on specific learning styles, and creating or adjusting interactive lessons (Wicks, 2010). Professional development should focus on developing pedagogical approaches that focus on student-centered learning, the use of data to inform instruction, and the inclusion of engaging digital content and curriculum that also includes adaptive content (Wicks, 2010).

Successful implementation of K-12 online learning was dependent on all stakeholders being properly educated on the topic and receiving access to the appropriate technology (Barbour & Harrison, 2016). Picciano and Seaman (2019) suggested that professional development might be more successful if teachers begin to use online learning in a blended approach that allows them to continue to experience familiar and comfortable elements of instruction, such as direct interaction with students, as they develop new skills related to the online learning environment. Farmer and West (2019) supported this approach by encouraging a focus on professional

development of instructional skills that are applicable in both online and more traditional teaching environments. As professional development is provided to current teachers and pre-service teachers, precise and explicit language related to the online, blended, or in-person learning environment should be referenced. This practice will increase the value of guidelines that are presented to teachers and administrators (Pulham et al., 2018). These professionals will benefit from a clear indication of how the competency applied in the online or blended learning environment is different from the competency as it was acquired through traditional teacher education or professional development (Pulham et al., 2018).

VDOE Support of Professional Development in 2020

The Virginia Department of Education (VDOE) has historically provided support to educators, administrators, and other stakeholders in the form of training and education. VDOE routinely offers guidance and resources to assist school divisions in strengthening instructional opportunities, pedagogy, compliance with federal and state policies, and overall best practices for educating preschool through 12th grade students. The academic, social-emotional, vocational, nutritional, and safety needs of students have often been the focus of the professional development offered by VDOE. Learner engagement in the "5 C's: critical thinking, creative thinking, communication, collaboration, and citizenship" became the foundation of a significant portion of VDOE's guidance and resources prior to the COVID-19 crisis.

In spring 2020, VDOE published its *Continuity for Learning (C4L) Professional Development Guidance* document to assist administrators in attending to the professional learning needs of public school educators to support the continuation of quality instruction and services through the school closure of spring 2020 and the 2020-2021 school year. School divisions were forced to continue educating students through distance learning and online learning with little time to prepare prior to the Governor's order to close K-12 schools statewide in March 2020. VDOE encouraged administrators to provide teachers with access to anytime, anywhere, personalized professional learning to meet their specific learning needs. VDOE suggested school divisions should plan and implement professional learning that would prepare teachers for remote teaching and learning (VDOE, 2020c).

The circumstances of 2020 resulted in VDOE focusing its guidance on professional development and provision of related resources on six overarching considerations (VDOE,

2020c). Operational and logistic considerations to support professional learning opportunities for educators were a priority. VDOE offered guidance for school divisions to focus professional development and attention to long standing topics such as teacher licensure, specialty programs such as gifted services and special education, as well as other services specifically addressed in the *Code of Virginia* (VDOE, 2020c).

School divisions were encouraged to prepare staff to develop and implement supports designed to address the physical, social, and emotional needs of students, families, and the community (VDOE, 2020c). Professional learning guidance focused on addressing the needs of particularly vulnerable students with a continued focus on the critical issue of equity. VDOE offered professional development resources specifically focused on adult education, early childhood education, English learners, gifted and talented students, homebound instruction, outplaced students, special education and student services (VDOE, 2020c).

VDOE guided public school administrators to evaluate how programs may need to be adjusted to continue to meet staff, student, and community needs throughout the pandemic (VDOE, 2020c). VDOE directed guidance to promote school divisions' support of the physical and emotional well-being of students. Remote and online learning circumstances required additional professional learning opportunities for school staff to assist with building relationships with students and families (VDOE, 2020c). VDOE offered guidance for the training of specific subgroups such as maintenance, financing and accounting, food services and school nutrition, school counseling, school nurses, transportation, and technology (VDOE, 2020c).

Equitably serving learners of all abilities and effectively addressing learning gaps was also a focus of VDOE's guidance in 2020 (VDOE, 2020c). Instructional tools were provided to help school divisions target essential knowledge and skills for grade levels and content areas. Educators were provided support with using data to identify and bridge learning gaps. Instructional planning tools were offered to assist with identifying the vertical progression of specific content across grade levels or courses in order to align instructional content to prerequisite knowledge, skills, and future concepts. VDOE encouraged division-level administrators to determine the capacity of teachers to meet the needs of students and design professional development according to teachers' needs (VDOE, 2020c).

Assessment of instruction and evaluation of learning at the classroom, school and division level was an additional focus of the guidance and suggested resources (VDOE, 2020c).

Resources were provided to prepare teachers to use a variety of assessments during instruction and following instruction in order to identify gaps in understanding and mastery of content. Planning guides and resources for evaluating student progress in specific areas were provided by VDOE. These specific areas of focus included career and technical education, cross-curricular instruction, early childhood education, gifted education, resource and elective courses, and Virtual Virginia (VDOE, 2020c). VDOE encouraged creating professional development plans for data-driven approaches to instruction and mitigation efforts to address the impact of school closure on students. There was also an emphasis on creating professional development plans that addressed the interests and needs of individual educators to encourage opportunities for self-selection of training and preparation based on individual need and preference (VDOE, 2020c).

Finally, VDOE supported school division administrators with identifying the outreach necessary to meet the needs of varying stakeholder groups (VDOE, 2020c). Even in the circumstances of 2020, family and community involvement were important factors to student achievement and success. Schools were encouraged to sustain attention to engagement and partnership with families and the community. Resources and information were offered to support school divisions with preparing educators to establish and maintain engagement with a variety of groups such as English learners, families of students with disabilities, and military families (VDOE, 2020c). Professional development for all school staff, students, and families related to health, wellbeing, nutrition, physical, social and emotional needs were directly addressed by VDOE (VDOE, 2020c).

Learner Engagement in Online Learning

Prior to 2020, researchers identified online learning as having the potential to strengthen learner engagement (Barbour & Harrison, 2016; Picciano & Seaman, 2019; Reason et al., 2017; Wicks, 2010). While the online learning environment seems to encourage increased learner engagement in some sub-groups or populations of students, there are others for whom the online learning environment presents significant challenges to active participation and involvement (DeWitt, 2020; Loeb, 2020). The circumstances of the sudden transition to online learning during the 2020-2021 school year due to the COVID-19 pandemic brought to light some concerning trends related to learner engagement.

Increased Learner Engagement

Engaging students with technology is an effective way to leverage students' skills and interests (Tierney et al., 2011). Increased learner engagement is a perceived benefit of K-12 online learning because it offers alternatives, options, and choices for students that expand their educational opportunities (Barbour & Harrison, 2016; Wicks, 2010). Online learning provides an alternative to the traditional classroom that allows educators to meet the needs of diverse populations of students (Picciano & Seaman, 2019). Online learning offers students increased opportunity, flexibility, and convenience, regardless of where they live or their grade level. It offers immediate access to resources and supplemental content (Wicks, 2010).

In 2014, Borup et al. published *The Adolescent Community of Engagement: A Framework for Research on Adolescent Online Learning* which identified student interactions, collaborative learning, and student motivation as key factors to learner engagement in online learning. Student interactions can provide motivation which is a vitally important element of online learning. Learner engagement in online learning is likely to increase when students interact with and instruct one another using existing knowledge and skills. Collaborative learning opportunities that allow students to develop new knowledge while interacting with their peers will also strengthen learner engagement in online learning (Borup et al., 2014). Teachers in Borup's (2016) study reported that when students were able to form friendships with their online learning peers, they were more motivated to engage in learning activities.

Online learning formats also allow students to work at their own pace and choose the time of day they participate in instruction according to Reason et al. 's (2017) publication, *Creating the Anywhere, Anytime Classroom.* Students are self-directed as they interact with course materials and their teachers (Kwon et al., 2019). Allowing choices prepares students to be engaged with their own learning trajectory and capabilities (Reason et al., 2017). Asynchronous learning offers unique opportunities for learners to engage in an online format that aligns with students' natural learning rhythms which may extend beyond the regular school day (Picciano & Seaman, 2019; Reason et al., 2017; Wicks, 2010).

The online learning format allows students more time to think about discussion, access resources, and offer well-thought-out responses than does a traditional, real-time classroom environment (Reason et al., 2017). These elements of online learning may also support more active and appropriate participation by students. Barbour and Harrison (2016) identified the

potential for reduced class disruptions in an online learning format which allows teachers the time and opportunity to provide more focused feedback to students. Online learning offers new ways for teachers to reach students who have not previously been successful in traditional classrooms (Wicks, 2010).

Online learning creates an environment where the quality of a student's ideas become the focus instead of factors such as gender, height, voice, ethnicity, or emotion that may negatively influence a learner's willingness to participate in a face-to-face learning environment (Reason et al., 2017; Wicks, 2010). K-12 online learning removes social pressures that students sometimes feel in the classroom, such as acceptance and judgment by peers (Barbour & Harrison, 2016). Online learning can be beneficial for students who are at risk, sick or depressed, or shy, and those who primarily receive their education at home (Barbour & Harrison, 2016). Wicks (2010) added elite athletes and performers, students who have dropped out, students who have previously failed courses, migrant youth, students who are pregnant, and students who are incarcerated to this list of groups who potentially benefit from online learning.

Tierney et al. (2011) found that 63% of students in their study who reported high levels of exposure to digital media learning opportunities indicated their school work was meaningful and relevant, compared to 39% of students with low levels of access. Online learning enhances opportunities for students to develop a sense of agency and self-expression. It also allows them to act as advocates for change around social issues that matter to them (Tierney et al, 2011).

K-12 online learning provides additional exposure to courses and a world of resources and content that may not be available at the school (Barbour & Harrison, 2016; Picciano & Seaman, 2019; Wicks, 2010). This increased exposure connects students to tools that can be used in their future learning and careers (Barbour & Harrison, 2016). Students can reach beyond their immediate networks, connect and establish relationships with peers who have similar experiences, and connect with influential adults more than ever before. Online learning, when integrated thoughtfully, has the potential to offer students opportunities to build connections, amplify their voices, and engage with peers around the world (Tierney et al., 2011).

In 2019, Kwon et al.'s study, *A Snapshot of Successful K-12 Online Learning: Focused on the 2015-2016 Academic Year in Michigan,* found that learner engagement, defined as steady attempts by a student to complete learning tasks throughout the course, was a component of successful online learning. In addition to this sort of engagement, course pacing guides served as

a support to facilitate students' self-regulated learning. Adequate pacing by the instructor and proper use of study time by the student were indicators of quality online learning programs (Kwon et al., 2019).

Decreased Learner Engagement

Online learning environments cannot provide many of the informal social interactions students have in school (Loeb, 2020). Students who are participating in asynchronous learning environments may not have access to the same sense of connection to their teacher and classmates as those who are participating in synchronous learning environments (Borup, 2016; Wicks, 2010). According to Borup (2016), teachers who instruct in online learning environments reported that students' physical separation presented a major obstacle to students forming close relationships with their peers. They described online interactions as less social than in-person communication and, in some cases, described students as resistant to communicating with peers even when they were provided instructionally related opportunities to do so (Borup, 2016). Specific to the 2020-2021 school year, teachers shared concern that online and onsite students were apart physically and unable to collaborate easily (Scott-Webber, 2021).

In April 2020, Peter DeWitt did an analysis of 120 social media posts and comments from teachers about their experiences with the online learning environment that was necessitated by pandemic-related school closures. DeWitt (2020) shared his summary in an Education Week blog which revealed a lack of connection with instructors or negative feelings of worth as a class participant were factors in learner engagement. Students who had not established positive relationships with their teachers before the COVID-19-related school closure may not have been motivated to interact with them virtually. Students who felt unimportant or unnecessary in their traditional classrooms may not have been motivated to participate in an online classroom (DeWitt, 2020).

Student experiences in synchronous learning conditions were more consistent with a more traditional, face-to-face classroom environment according to Barbour (2015). When synchronous instruction was available, students were much more productive compared to their asynchronous class time when there was not a teacher to monitor students directly and keep them on task. Students reported a stronger sense of community support and interaction during

synchronous learning but this format was only a small portion of the actual online learning within virtual schools (Barbour, 2015).

According to Dewitt (2020), teacher comments in the spring of 2020 revealed significant differences between teachers' influence over student participation in the online environment versus the traditional classroom environment. Teachers expressed concern with students not signing into online classrooms, not participating in instruction, and not completing or submitting assignments. DeWitt (2020) observed that in the virtual classroom, teachers did not have access to typical strategies of control over learner engagement. They could not utilize physical proximity, the promise of good or bad grades, opportunities for privileges, or other positive social-emotional incentives (DeWitt, 2020).

In the spring of 2020, some older students were expected to take on work as essential employees in order to support their families during a time when overall job loss was high due to the pandemic (DeWitt, 2020). Time for work became a priority over time for education for many students. If students were not working outside of their home, they were often assigned increased responsibility within their homes and families. Students were expected to supervise and care for younger siblings. This sometimes involved assisting younger siblings with their online learning which distracted older students from attending to their own online learning responsibilities (DeWitt, 2020). When time was available for students to engage in online learning, many did not have a physical space to properly focus on and participate in their school work. Students may have made the choice to not connect with their teacher at all, instead of connecting amidst household distraction or disruption (DeWitt, 2020).

Equity in Online Learning

K-12 students are dependent on consistent support across all learning environments to access and remain engaged in educational opportunities (McQuirter, 2020; Wicks, 2010). The consistent availability of technology is a factor that has the possibility of limiting access for some populations of students according to Beagle et al.'s 2011 study, *An Analysis of States Policies Regarding Kindergarten through Twelfth Grade Online Education*. The perceived lack of socialization and interaction between students and instructors in the online environment is a concern for various populations of students (Barbour & Harrison, 2016). Online courses are not found to be as effective as in-person classes for many students (Loeb, 2020).

Inequity in Access to Resources

Students must be provided opportunities for online learning including access to a computer, basic software, and the Internet, regardless of their income level, geographic region, and ethnic group (Wicks, 2010). Access to technology in K-12 public education is an area that has been problematic over time. Inequities related to gender, race, home zip code, and socioeconomic status prevent many students who are already stigmatized as "at-risk" from effectively accessing online resources to learn, create, communicate, and participate (PSFNC, 2020; Tierney et al., 2011).

The unexpected impact of COVID-19 and the urgent need to almost immediately move delivery of educational programs to an online environment exacerbated an already inequitable implementation of digital technology (McQuirter, 2020). Problems with equity included the presence of a clear digital divide between educators and students that often involved no access or inconsistent access to internet connections (McQuirter, 2020). Often, students lacked access to appropriate Wi-Fi and/or devices to access their online learning (DeWitt, 2020).

In 2020, Public Schools First North Carolina (PSFNC), published *Pre-K through 12 Education and COVID-19: Landscape Analysis of Impact Indicators* stating the COVID-19 crisis heightened existing inequities and created new barriers to providing equitable access and opportunities for all learners. School is the only place many students, especially those who live in rural areas, have access to high-speed internet. During the 2020-2021 school year, students without or with limited home internet access and reliable devices were not able to access resources or complete and submit assignments with the same level of success experienced by their peers who had quality internet connection (PSFNC, 2020). School administrators, in collaboration with state and local officials, had to respond to challenges regarding student access to reliable internet across wide spans of urban and rural areas (Brinkmann et al., 2021).

Additionally, there were inconsistencies with the hardware and software students were expected to use (Scott-Webber, 2021). There was limited availability of computers for students which was often compounded when siblings were expected to share a device (DeWitt, 2020). While many school divisions provided students with devices, students and their families were often not well prepared to use the device successfully (DeWitt, 2020).

Developmental Readiness

Student age and grade level are areas of potential inequity. Online learning was especially challenging for elementary-age students who required more oversight in their learning (Gross et al., 2020). The readiness of elementary and middle school students to appropriately participate and be successful in an online learning format is a well-established concern (Barbour & Harrison, 2016; Picciano & Seaman, 2019). Developmentally, students may not be able to communicate well in a technology-mediated environment which could lead to problems with socialization and interactions. Barbour (2015) found there was a limited sense of community in the virtual learning environments that were studied. Students reported low levels of social presence and a lack of community with their online classmates (Barbour, 2015). Isolation could develop in K-12 online learning outside of a traditional classroom setting (Barbour & Harrison, 2016). The impact of online learning on younger students' social and emotional development is of concern (Picciano & Seaman, 2019).

Public school students who participate in online learning must be properly prepared for this particular learning environment (Barbour & Harrison, 2016; Picciano & Seaman, 2019). Students who do not possess the necessary prerequisite skills will be at a disadvantage as they attempt to access their education. Challenges related to navigating an unfamiliar format, self-direction, and time management can present significant barriers to a student's ability to master the course content in an online learning environment (Kwon et al., 2019).

Students with Special Needs

Rice and Carter, Jr.'s (2015) qualitative study examined online learning environments and students with disabilities and exceptionalities. Rice and Carter, Jr. (2015) posed the question of who assumes responsibility for students with exceptionalities who are not identified as students with disabilities in an online learning environment. Specifically, there was a concern for how educators proactively recognize and support students with special circumstances when educators are never physically present with the student (Rice & Carter, Jr., 2015). Stakeholders' focus on providing attractive online learning options for families, personalized online learning, and teacher productivity distracted them from providing individualized accommodations to students as required by law (Rice & Carter, Jr., 2015). Connected and collaborative efforts by all

stakeholders and in all contexts will provide the opportunity to increase equity for underrepresented student populations (Tierney et al., 2011).

Specific to the COVID-19 crisis, issues of equity were at the center of remote learning plans and required increased focus on special populations (Kaden, 2020). Despite the effort of public school divisions, not all students were able to be reached. Those who did not consistently participate in online education programs were among the most vulnerable. This included populations such as students with a history of transiency, students who were homeless, students with disabilities, and students living in poverty (Kaden, 2020). There were also circumstances in which families were struggling to keep up with their children's learning needs, sharing hardware and internet, and trying to maintain employment (Scott-Webber, 2021).

Conclusion

The sudden move to online learning that resulted from the COVID-19 crisis may be the catalyst that creates new, more effective educational programs (Kaden, 2020). Stakeholders indicate an understanding that online learning fulfills an important educational need for students (Picciano & Seaman, 2019). K-12 public educators can be successful in continuing to develop effective online learning environments. Building on the strengths of current practices will be essential. Teacher collaboration must be facilitated and encouraged. Focused, systematic implementation must be supported across grade levels regardless of curriculum or content area (McQuirter, 2020).

The future of education will need to address equity issues, new models for daily schedules and instructional calendars, costs of the necessary technology to build and sustain infrastructure, and pedagogy for online learning environments (Kaden, 2020). Better design and implementation of policies and programs are achieved when educators have an opportunity to reflect on their practices and programs (Tienken, 2020).

CHAPTER 3
METHODOLOGY

Purpose of the Study

The purpose of this study was to identify the perceptions of K-12 public school teachers who volunteered to provide instruction in fully online learning environments during the 2020-2021 school year. The study sought teachers' input regarding factors they believe impacted academic outcomes for students in the online learning environment. Teachers who participated in the interviews were asked to reflect specifically on issues related to their training and professional development, pedagogy, learner engagement, and equity as these topics relate to their experiences as instructors in the online learning environment. Interviewees were given the opportunity to offer their perceptions about factors they feel were especially impactful, positively or negatively, on students' academic progress in the online learning environment. Better design and implementation of policies and programs are achieved when educators have an opportunity to reflect on their practices and programs (Tienken, 2020).

Research Design

The study used a qualitative analysis of data sources in the form of one-on-one interviews. The qualitative approach allowed for analysis of the perceptions of K-12 public school teachers who volunteered to teach at least one fully online course/class during the 2020-2021 school year. The qualitative approach involving "one-on-one" interview responses allowed for an analysis of teachers' perceptions of their experiences. Interview questions were "open-ended" allowing teachers to articulate their individual perceptions, beliefs, and experiences, instead of selecting from predetermined responses embedded in the questions. Teachers were able to offer multiple responses to questions. The interview questions were semi-structured allowing the researcher to prompt for detail about each participant's experiences, perceptions, and beliefs regarding professional development, pedagogy, learner engagement, and equity in the K-12 online learning environment.

Research Questions

This study addressed the following research questions which guided the review of available literature and research and guided the development of interview questions.

1) In consideration of pedagogy, professional development, learner engagement, and equity, what factors in the fully online learning environment do teachers perceive as having a positive impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?
2) In consideration of pedagogy, professional development, learner engagement, and equity, what factors in the fully online learning environment do teachers perceive as having a negative impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?

Site/Sample Selection

Participants were recruited from the population of 66 K-12 teachers who volunteered to teach at least one course/class that involved a fully online learning environment during the 2020-2021 school year in the Virginia public school division. The population of 66 teachers included 27 elementary teachers, 9 middle school teachers, and 30 high school teachers. A survey sent via email (see Appendix E) with a subject line stating, "Please share your perception about and experiences with online learning environments in reflection of the 2020-2021 school year." was sent to all 66 teachers with a request for confirmation that they had volunteered to be a fully online instructor for 2020-2021. The survey also requested approximately an hour of their time for a one-on-one interview designed to solicit their perceptions of issues related to training and professional development, pedagogy, learner engagement, and equity in the K-12 fully online learning environment. Participants were informed they would also be asked to identify factors they believe impacted their instruction in the fully online learning environment in 2020-2021.

After receiving the initial survey, 31 instructors provided responses. There were 28 teachers who confirmed they had requested to teach at least one fully online course/class during the 2020-2021 school year. Communication occurred via individual email with these 28 teachers with a request to participate in a one-on-one interview. There were six elementary teachers who responded to say they were willing to participate in an interview, six middle school teachers who responded to say they were willing to participate in an interview, and 14 high school teachers who responded to indicate willingness to participate in an interview. In response to each teacher's indication of willingness to participate in a one-on-one interview, another email was sent directly to the teacher to request the teacher's preference of date, time, and location or video

conference for the one-on-one interview. Ultimately, 15 interviews were scheduled and conducted. This included interviews with five elementary teachers, four middle school teachers, and six high school teachers.

The Virginia public school division was selected for this study due to its convenience and relevance to professional commitments. In 2020-2021, this school division offered families the choice to select participation in a fully online learning environment instead of their child coming to school for in-person learning or participation in a hybrid learning model that involved in-person learning two days per week and participation in the online learning environment three days per week. The division offered this choice as a COVID-19 mitigation strategy. The school division utilized a Learning Management System (LMS), Canvas, to facilitate an asynchronous online learning environment during the 2020-2021 school year.

As a current administrator in the school division, there is an investment in and desire to contribute to the improvement of instruction of students and support of teachers. The research was conducted with objectivity because there was no direct involvement in the division's fully online instructional program during the 2021-2022 school year. This study provided an opportunity to strengthen instructional programming by using teachers' feedback and perceptions of their experiences in 2020-2021 to enhance future online learning environments offered by the division.

Data Collection Procedures

An electronic request for an interview (see Appendix E) was distributed to 66 K-12 public educators in the Virginia public school division who volunteered to teach at least one online course/class during the 2020-2021 school year. Interviews were conducted with the teachers who gave consent to be interviewed. Interviews were conducted one-on-one, in person at a location of the teacher's choice or via video conferencing.

Interview questions (see Appendix A) were developed and designed to prompt a detailed reflection of teachers' experiences in 2020-2021. Questions focused on learner engagement, equity, professional development/training, instructional approaches, and perceived outcomes for students in the online learning environment. The interview questions were organized in six sections associated with themes revealed in the review of relevant literature: professional development, pedagogy, and instructional approaches, learner engagement, and equity.

Additionally, questions were developed to solicit details regarding reasons teachers volunteered to teach at least one fully online course/class and teachers' perceptions of factors within the fully online learning environment that strengthened and/or negatively impacted students' academic achievement.

Data Gathering Procedures

Virginia Tech's Institutional Review Board (IRB) training in Human Subjects Protection (see Appendix B) was completed. For this study, social and behavioral research was also required. IRB training programs were completed through the Collaborative Institutional Training Initiatives (CITI). Before data collection, IRB approval was sought by completing and submitting the IRB Protocol to Virginia Tech's Division of Scholarly Integrity and Research Compliance. Once IRB approval was obtained, permission to conduct the study and seek assistance with recruiting participants was obtained from the Deputy Superintendent of the school division (see Appendix D).

The target population for this study was identified by reviewing the Virginia public school division's records related to K-12 teaching assignments for the 2020-2021 school year. Principals were asked to confirm the identification of specific teachers who volunteered to teach at least one fully online class/course. According to School Board policy, the Deputy Superintendent of the school division provided approval in response to the request for interviews after reviewing the details of the study (see Appendix D). There are no current or previous professional interactions between the researcher and the teachers that would influence the teachers' choice to participate in the interview process.

Instrument Design and Validation

This qualitative study was designed to examine the perceptions of teachers in reflection of their experiences as instructors during the 2020-2021 school year. Interview questions (see Appendix A) were developed after analysis of current and relevant literature and research (see Appendix C). The interview questions were organized in six sections associated with themes revealed in the review of relevant literature: reasons for volunteering to teach in the fully online learning environment in 2020-2021, professional development, pedagogy, and instructional

approaches, learner engagement, equity, and teachers' perceptions of factors that contribute to an effective online learning environment.

Questions were reviewed for clarity, conciseness, and understanding by a total of six K-12 public school administrators within the division during the 2020-2021 school year -- two elementary school principals, two middle school principals, and two high school principals. They were asked to provide feedback that was reviewed in an effort to ensure interview participants would interpret the questions with consistency and clarity. These principals did not participate in the study in any other manner.

The themes of professional development, pedagogy, learner engagement, and equity were apparent after a review of current and relevant research and literature (see Appendix C). Interview questions were developed in alignment with these four themes. Questions were organized into sections that aligned with these themes. For example, the review of literature revealed concerns related to the lack of learner engagement in online learning, particularly during the 2019-2020 school year when schools were forced to implement online learning due to COVID-19 (DeWitt, 2020). Therefore, an interview question was developed based on this theme, "How were you, as the teacher, able to influence students' level of engagement in the online learning environment?".

Data Treatment and Analysis

All personal identifiers were removed for the purposes of research and reporting. Personally identifiable information was not requested from participants. Participants were identified by a label such as Teacher #1. Interview responses were recorded, documented, stored electronically and password protected. Electronic transcription was used in each of the one-on-one interviews. Interview participants were given access to the transcription of their interview.

The process of coding is central to qualitative research and was utilized to interpret and logically arrange text collected from interview responses (Creswell & Poth, 2018). Coding of the data was performed to analyze the themes identified within the research. Main codes and subcodes or variations were identified. Main codes included: professional development, pedagogy, learner engagement, equity. Opportunities for inductive coding were acted upon during the analysis of data sources. Interview responses were reviewed and subcodes emerged based on patterns that were identified within responses.

The transcript of each interview was reviewed. Responses to each section of questions were documented on separate spreadsheets associated with each section. Sections two through five of the interview questions (see Appendix A) represented a main code: professional development, pedagogy, learner engagement, equity. Section one addressed reasons teachers volunteered to teach at least one fully online course/class in 2020-2021. Section six addressed teachers' perceptions of what factors contribute to an effective online learning environment. Each participant's responses were analyzed, sorted, and recorded on the spreadsheet according to emerging commonalities or themes within each main code or section of questions. This resulted in the compilation of subcodes within each of the four main codes of professional development, pedagogy, learner engagement, and equity. These subcodes represent study data and were reported as findings.

Data and analysis were compiled using electronic spreadsheets. Participant response data were stored electronically for three years following the conclusion of the study. After three years, interview transcripts and related analysis were permanently deleted.

Summary

The study used a qualitative analysis of data sources in the form of one-on-one interviews. The qualitative approach allowed for analysis of the perceptions of K-12 public school teachers who volunteered to teach at least one fully online course/class during the 2020-2021 school year. Open ended, one-on-one interviews were conducted with 15 teachers. Interview questions were organized in six sections associated with themes revealed in the review of relevant literature: reasons for volunteering to teach in the fully online learning environment in 2020-2021, professional development, pedagogy and instructional approaches, learner engagement, equity, and teachers' perceptions of factors that contribute to an effective online learning environment. Transcripts of each of the interviews were analyzed. The resulting data were compiled into subcodes and reported by theme as findings of the study.

CHAPTER 4
FINDINGS AND ANALYSIS OF DATA

Purpose of the Study

The purpose of this study was to identify the perceptions of K-12 public school teachers who volunteered to provide instruction in fully online learning environments during the 2020-2021 school year. The study examined teachers' input regarding factors they believe impacted academic outcomes for students in the online learning environment. Teachers who participated in the interview were asked to reflect specifically on issues related to their training and professional development, pedagogy, learner engagement, and equity as these topics relate to their experiences as instructors in the online learning environment. Interviewees, 15 K-12 public school teachers, were given the opportunity to offer their perceptions about factors they feel were especially impactful, positively or negatively, on students' academic progress in the online learning environment.

Explanation of Data

A total of 15 K-12 public school teachers who volunteered to provide instruction in the online learning environment during the 2020-2021 school year participated in a one-on-one semi-structured interview. The interview questions (see Appendix A) were organized in sections according to themes that were identified in the review of literature and existing research component of this study: professional development, pedagogy, learner engagement, equity in the K-12 online learning environment. Interview questions prompted teachers to reflect on their experiences, perceptions, and beliefs regarding professional development, pedagogy, learner engagement, and equity in the K-12 online learning environment based on their experiences in 2020-2021. Interviews were conducted with five kindergarten through fifth grade or elementary school level teachers, four sixth through eighth grade or middle school level teachers, and six ninth-12th grade or high school level teachers.

The process of coding is central to qualitative research and was utilized to interpret and logically arrange text collected from interview responses (Creswell & Poth, 2018). Inductive coding of the data was performed to analyze the themes identified within the research. Main codes and subcodes or variations were identified during the review of literature component of the

study. Main codes included: professional development, pedagogy, learner engagement, and equity. Interview questions to address each of these four themes were presented to the 15 teachers. Interview responses were reviewed and subcodes emerged based on patterns that were identified within responses.

The semi-structured interview allowed teachers to offer multiple responses to a particular section of questions. The percentages reported below represent the number of teachers who included the particular topic or code in their multiple responses to the questions associated with the particular section of the interview. The *n* represents the raw number of teachers whose responses were associated with the particular topic or code. Codes and topics were reported if six or more of the 15 teachers, or 40%, offered a related response as this represents a consistent, substantial response.

Description of Data and Findings

Section one of the interview questions addressed reasons for volunteering to teach in the fully online learning environment in 2020-2021 and skills or knowledge teachers already possessed to make them comfortable volunteering. These questions yielded participants' responses to more than one topic and code. Teachers, 40% (n=6), indicated they volunteered to teach in the fully online environment because they felt familiar with at least one online Learning Management System (LMS) because of previous, recent experiences with the LMS as an instructor or a college student. Teachers, 40% (n=6), indicated they volunteered to teach in the fully online environment because they proficiently used technology in their classrooms prior to the 2020-2021 school year. Almost half of the teachers, 47% (n=7), indicated they volunteered to teach in the fully online environment because of COVID-19 related health and safety concerns for themselves or a household member.

Section two of the interview questions addressed the theme of professional development in preparation for the 2020-2021 school year. These questions yielded participants' responses to more than one topic and code. Almost half of the teachers, 47% (n=7), indicated they participated in the professional development activities offered by their school division for Canvas, the LMS utilized by the school division. Teachers, 60% (n=9), indicated they had to seek out their own professional development activities and/or teach themselves to instruct in the online learning environment. Teachers, 67% (n=10), indicated they felt sufficient resources were

available to train and prepare for serving as an instructor in the online learning environment. More teachers, 73% (n=11), indicated they utilized the Instructional Technology Resource Teacher (ITRT) and/or Instructional Coach who was assigned to their school for training and professional development related to teaching in the online learning environment. The majority of the teachers who were interviewed, 80% (n=12), indicated they received and/or provided informal professional development and training from or to their grade-level or content-area instructional colleagues. This informal professional development and training occurred as teachers worked together to troubleshoot and problem solve instructional issues on a day-to-day basis, as situations arose through the natural course of their instruction in the fully online learning environment.

Section three of the interview questions addressed the theme of pedagogy and instructional approaches in the online learning environment in 2020-201. These questions yielded participants' responses to more than one topic and code. Teachers, 40% (n=6), reported they regularly used a PDF editor tool, Kami, in their online instruction. Teachers, 47% (n=7), indicated they planned and presented online instructional modules on the LMS, Canvas, one week at a time. Half of the teachers, 53% (n=8), indicated they believe increased synchronous opportunities would have strengthened the online learning environment. A greater number of teachers, 67% (n=10), indicated they made intentional efforts to include a variety of activities and resources in the instruction they provided to students in the online learning environment. The same number of teachers, 67% (n=10), indicated they utilized new grading practices that were less stringent than previous years as a part of their instruction in the online learning environment. The majority of teachers, 73% (n=11), reported they regularly offered opportunities for students to interact with teachers via Google Voice calls and/or Google Meets video conferences as part of the instructional activities they offered. Also, 73% (n=11) of teachers reported that due dates for their assignments were flexible and students were not penalized significantly, if at all, for turning in assignments after the posted due dates. Every teacher, 100% (n=15), indicated they regularly used videos to provide instruction to students in the online learning environment.

Section four of the interview questions addressed the theme of learner engagement in the online learning environment in 2020-2021. These questions yielded participants' responses to more than one topic and code. Teachers, 40% (n=6), reported students' success or failure in

their fully online class/course related to students' level of engagement in the class/course. The same number of teachers, 40% (n=6), reported barriers to establishing relationships with and among students in the online learning environment. Teachers, 47% (n=7), indicated they offered video conferences via Google Meet to support students in the online learning environment; however, students often did not log in or participate in these synchronous options. More than half of the teachers, 53% (n=8), indicated their students were successful if the students actively and consistently participated in the online learning environment. The same number, 53% (n=8), indicated students failed their class/course because the student rarely or never participated in the online learning environment. Also, 53% (n=8) of teachers indicated they believe a more synchronous online learning environment would have increased learner engagement. More than half of the teachers who were interviewed, 53% (n=8), indicated their students were employees in part-time and, in some cases, full-time jobs and this impacted students' level of engagement in their classes/courses. More teachers, 60% (n=9), reported their regular communication with students, including Google Meets, positively influenced students' engagement in the online learning environment. The same number of teachers, 60% (n=9), reported the lack of physical proximity to their students impacted learner engagement in the online learning environment. Again, 60% (n=9) of teachers indicated parent influence impacted students' engagement in the online learning environment. The majority of teachers, 73% (n=11), reported they used electronic messages, primarily email, to communicate regularly with students and/or parents in their online classes/courses.

Section five of the interview questions addressed the theme of equity in the online learning environment in 2020-2021. These questions yielded participants' responses to more than one topic and code. Teachers, 47% (n=7), referenced the impact of physical space to work and/or household members' presence in the work space of their students in the online learning environment. More than half of the teachers, 53% (n=8), reported having students in their online learning environments who did not have consistent access to hardware and/or wifi. Even more teachers, 67% (n=10), indicated they created paper copies or packets and made them available to students. The same number of teachers, 67% (n=10), referenced the impact of parents' involvement in and/or availability to support students' access to the online learning environment. The majority of the teachers, 80% (n=12), indicated they believe issues related to equity would have impacted a more synchronous online learning environment. Almost all of

the teachers, 87% (n=13), indicated their students were provided with computers and/or access to hotspots for wifi during the 2020-2021 school year.

Section six of the interview questions addressed teachers' perceptions of what factors contribute to an effective online learning environment based on their experiences in 2020-2021. These questions yielded participants' responses to more than one topic and code. Teachers, 67% (n=10), referenced clearly establishing expectations or requirements of students and/or parents in the online learning environment. Teachers, 67% (n=10), also referenced the importance of consistent communication between teachers, students, and/or parents. An additional topic that presented itself after analysis of responses was related to the rigor of the content and concepts students mastered in the online learning environment. Teachers, 40% (n=6), indicated they do not believe students learned academic content to the detail or depth in the online learning environment as compared to previous years in the in-person learning environment.

Table 1

Teacher Responses Based on Coding Themes

Interview Question Section	Teacher Responses	
1-reasons for volunteering to teach in the online environment	Familiarity with LMS	COVID-19-related health concerns
	Proficiency with classroom technology	
2-professional development	Division-provided professional development for the LMS	ITRT/Instructional Coaches
	Self-sought, self-taught	Collaboration with colleagues
	Sufficient resource	
3-pedagogy	Use of PDF editor	Google Voice/Google Meets
	Synchronous	Flexible due dates
	Variety of activities, resources	Videos
	New grading practices	
4-learner engagement	Success related to engagement	Student employment
	Barriers to relationships	Regular Communication
	Video conferences	Lack of physical proximity
	Active, consistent participation	Parent influence
5-equity	Failure related to limited participation	Electronic messages
	Synchronous	
	Physical workspace	Parental involvement, support
	Access to hardware, wifi	Synchronous
	Paper copies, packets	
		Provision of hardware, hotspots
6-factors contributing to an effective online learning environment	Clear expectations	Consistent Communication

Summary

Interview questions were presented in sections that aligned with themes identified in the review of related literature. This prompted clearly identifiable main codes within the responses from the 15 teachers who were interviewed. These main codes included: professional development, pedagogy, learner engagement, and equity. Subcodes were identified within responses associated with each section or main code.

Interview responses addressed reasons for volunteering to teach in the online learning environment and skills or knowledge teachers already possessed to make them comfortable volunteering. These responses yielded the following topics and subcodes: familiarity with online LMS, proficiency with instructional technology, COVID-19 related health and safety concerns. Interview responses addressed professional development in preparation for the 2020-2021 school year. These responses yielded the following topics and codes: professional development offered by the school division for Canvas, the chosen LMS, self-teaching and self-selection of professional development activities, availability of sufficient resources, utilization of an ITRT and/or Instructional Coach, collaboration with instructional colleagues.

More interview responses addressed professional pedagogy and instructional approaches in the online learning environment in 2020-2021. These responses yielded the following topics and subcodes: use of Kami, a pdf editor tool; weekly instructional modules in Canvas, the LMS; synchronous opportunities as a means of strengthening learning, including a variety of activities and resources in instruction, utilizing new grading practices, interacting with students via Google Voice calls and/or Google Meets teleconferences, flexible due dates and fewer to no penalties for students whose work was late, regular use of videos in online instruction. Interview responses addressed learner engagement in the online learning environment. These responses yielded the following topics and codes: students' success/failure related to their engagement, barriers to establishing relationships with students, lack of participation when synchronous options were offered, successful students actively and consistently participated, students who failed rarely or never participated, a belief that more synchronous options would increase learner engagement, students' jobs/work, regular communication with students, lack of physical proximity, and use of electronic messages to communicate

Other interview responses addressed equity in the online learning environment in 2020-2021. These responses yielded the following topics and subcodes: physical space for students to

work and/or household members' presence in workspace, lack of access to consistent hardware and/or wifi, creation of paper copies or packets for students, parental involvement and/or availability to support students, the impact of more synchronous instruction on equity, students were provided with computers and/or hotspots for wifi. Interview responses addressed teachers' perceptions of factors that contribute to an effective online learning environment. These responses yielded the following topics and subcodes: clearly established expectations or requirements of students and/or parents, consistent communication. Finally, interview responses also revealed the following subcode: rigor of content and concepts mastered by students.

CHAPTER 5
SUMMARY AND CONCLUSIONS

Purpose of the Study

The purpose of this study was to identify the perceptions of K-12 public school teachers who volunteered to provide instruction in fully online learning environments during the 2020-2021 school year. The study examined teachers' input regarding factors they believe impacted academic outcomes for students in the online learning environment. Teachers who participated in the interviews were asked to reflect specifically on issues related to their training and professional development, pedagogy, learner engagement, and equity as these topics relate to their experiences as instructors in the online learning environment. Interviewees, 15 K-12 public school teachers, were given the opportunity to offer their perceptions about factors they feel were especially impactful, positively or negatively, on students' academic progress in the online learning environment.

This study addressed the following research questions which guided the review of available literature and research and guided the development of interview questions.

1) In consideration of pedagogy, professional development, learner engagement, and equity, what factors in the fully online learning environment do teachers perceive as having a positive impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?
2) In consideration of pedagogy, professional development, learner engagement, and equity, what factors in the fully online learning environment do teachers perceive as having a negative impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?

Summary of Findings

Interview questions (see Appendix A) were presented to participants in sections that aligned with themes identified in the review of related literature. This prompted clearly identifiable main codes within the responses from the 15 teachers. These main codes included: professional development, pedagogy, learner engagement, and equity. Subcodes were identified within responses associated with each section or main code.

Interview responses addressed reasons for volunteering to teach in the online learning environment and skills or knowledge teachers already possessed to make them comfortable volunteering including familiarity with online Learning Management Systems (LMS); proficiency with instructional technology; and COVID-19 related health and safety concerns. Responses addressed professional development in preparation for the school year. Teachers consistently referenced professional development offered by the school division for Canvas, the chosen LMS; self-teaching; self-selection of professional development activities; availability of sufficient resources; utilization of an Instructional Technology Resource Teachers (ITRT) and/or Instructional Coach; and collaboration with instructional colleagues in response to these questions.

The themes of professional pedagogy and instructional approaches in the online learning environment in 2020-2021 were addressed with teachers. They discussed their use of Kami, a pdf editor tool; weekly instructional modules in Canvas, the LMS; synchronous opportunities as a means of strengthening learning, including a variety of activities and resources in instruction; utilizing new grading practices; interacting with students via Google Voice calls and/or Google Meets teleconferences; flexible due dates including fewer to no penalties for students whose work was late; and regular use of videos in online instruction. Responses addressed learner engagement in the online learning environment. Teachers' comments consistently mentioned students' success/failure related to their engagement; barriers to establishing relationships with students; lack of participation when synchronous options were offered; successful students were those who actively and consistently participated; students who failed rarely or never participated; a belief that more synchronous options would increase learner engagement; the impact of students' outside employment; regular communication with students; lack of physical proximity to students; and use of electronic messages to communicate with students and parents/guardians.

Other interview responses addressed equity in the online learning environment. In response to these questions, teachers discussed physical space for students to work and/or household members' presence in workspace; lack of access to consistent hardware and/or wifi; creation of paper copies or packets for students; parental involvement and/or availability to support students; the impact of more synchronous instruction on equity; and the fact that students were provided with computers and/or hotspots for wifi access. Teachers discussed their perceptions of factors that contribute to an effective online learning environment. Teachers

discussed the need for clearly established expectations or requirements of students and/or parents and consistent communication. Finally, responses revealed consistent references to the decreased rigor of content in the online learning environment and the limited concepts mastered by students.

The semi-structured interview allowed teachers to offer multiple responses to the questions that were presented. The percentages reported represent the number of teachers who included the particular topic or code in their multiple responses to the questions presented to them. The *n* represents the raw number of teachers whose responses were associated with the particular topic or code. Codes and topics were reported if six or more of the 15 teachers, or 40%, offered a related response as this represents a consistent, substantial response.

Teachers' responses included the consistent topics within the themes of professional development and pedagogy in relation to their ability to positively impact their students' academic achievement in the fully online learning environment given the circumstances of the 2020-2021 school year. Teachers' responses to the interview questions intended to address the themes of learner engagement and equity did not produce consistent patterns that could be used to draw substantial conclusions. Teachers' responses included consistent topics that allowed conclusions to be drawn related to the themes of learner engagement, equity, and pedagogy in relation to factors they perceive as negatively impacting their students' academic achievement in the fully online learning environment. Teachers' responses to the questions intended to address the theme of professional development did not produce consistent patterns that could be used to draw substantial conclusions.

Discussion of Conclusions Related to Research Question Number 1

The first research question stated, "In consideration of pedagogy, professional development, learner engagement, and equity, what factors in the fully online learning environment do teachers perceive as having a positive impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?" Teachers' responses included the consistent topics within the themes of professional development and pedagogy in relation to their ability to positively impact their students' academic achievement in the fully online learning environment given the circumstances of the school year. Conclusions are related to the themes of professional development and pedagogy. Teachers' responses to the

interview questions intended to address the themes of learner engagement and equity did not produce consistent patterns that could be used to draw substantial conclusions about their perceptions of factors related to learner engagement in the online learning environment that positively impacted students' academic achievement.

Professional Development

The theme of professional development and its relationship to teachers' ability to positively influence students' achievement in the fully online learning environment offered the opportunity for multiple conclusions. Teachers referenced previous professional development and professional knowledge as a basis for their confidence to instruct in the fully online learning environment. Formal and informal professional development was available throughout the school year as they worked to positively impact their students' academic achievement.

Teachers, 40% (n=6), indicated they volunteered to teach in the fully online environment because they felt familiar with at least one online LMS due to previous experiences with the LMS as an instructor or a college student. Teachers, 40% (n=6), indicated they volunteered to teach in the fully online environment because they proficiently used technology in their classrooms prior to the 2020-2021 school year. One teacher commented, "I was introduced to Canvas, and I started using it, then I started making geometry videos, and I was using it for tests and quizzes. So, I felt like I was as ready as anybody to tackle that opportunity." Another stated, "I had also just finished my Master's the year before and used Canvas (LMS) as a student … so I had some background in Canvas." Having prior experience with related technology made the participants in this study more inclined to volunteer to teach in the online learning environment. Prior professional development and experience with a LMS in the online learning environment made teachers more confident in their ability to effectively provide instruction to their students.

Continual efforts to build and strengthen their skills as instructors in the online learning environment were consistently described by teachers in their responses related to professional development. Teachers, 67% (n=10), indicated they felt sufficient resources were available to train and prepare for serving as an instructor in the online learning environment. Additionally, 60% (n=9) indicated they sought out their own professional development activities and/or taught themselves to teach in the online learning environment. One teacher shared, "I had to learn a lot as I went … had to train myself, kind of." Another teacher shared, "It was a lot of professional

development on my own." There were 47% (n=7) of teachers who indicated they participated in professional development activities offered by the school division for Canvas, the LMS utilized in 2020-2021. A teacher stated, "The division gave us the training with Canvas (LMS) at the beginning of the year so I used some of that training to help me prepare."

Teachers in this study indicated they felt sufficient resources were available to prepare and support their instruction in the fully online learning environment. Some of the resources were presented in formal professional development offered by the school division. More often, the resources were accessed more informally and more independently as teachers realized they needed more information or needed to strengthen their instructional skills in the online learning environment. This finding contrasts the findings of Scott-Webber who published a mixed-methods study that examined teachers' perspectives during the fall of 2020. Scott-Webber's (2020) study revealed teacher perceptions that the pandemic-related circumstances of 2020 resulted in a sudden move to online instruction in the absence of sufficient professional knowledge to prepare, deliver, and assess instruction in the online learning environment.

Teachers, 73% (n=11), indicated they utilized the ITRT and/or Instructional Coach who was assigned to their school for training and professional development related to teaching in the online learning environment. One teacher reported, "I had to start figuring out why links aren't working and I did a little bit of triage with our ITRT and worked really closely with her so as I would find a link that didn't quite work right, I would then make an appointment with our ITRT, and we would figure it out together. If I couldn't figure it out on my own." The majority of the teachers, 80% (n=12), indicated they received and/or provided informal professional development and training from or to their grade level or content area instructional colleagues.

This informal professional development and training occurred as teachers worked together to troubleshoot and problem solve instructional issues on a day-to-day basis as situations arose through the natural course of their instruction in the fully online learning environment. A teacher shared, "I ended up actually being one of the trainers for everyone else because I'd had a little bit of that experience. That's what we did here. We teachers who had the experience basically trained other teachers on certain aspects." Another offered, "I talked a lot with a colleague who was a second grade teacher for virtual. We spoke a lot together and bounced ideas off each other. So that's kind of how I came up with what to use."

The 80% of teachers in this study who mentioned informal professional development referenced their experience as positively impacting the academic achievement of their students. Teachers indicated they had access to sufficient resources to prepare themselves to be instructors in the fully online learning environment. They perceived their professional development efforts to have positively impacted their students' achievement. Teachers received limited formal professional development for their instructional roles and, instead, independently sought out and/or created their own professional development in collaboration with instructional colleagues. Additionally, teachers reported an inclination to work with their colleagues and access human resources for a collaborative approach to informal professional development and problem-solving.

These findings seem to support McQuirter's (2020) assertion that elementary and secondary teachers were offered little if any systematic training in fully online delivery before being expected to teach in the online learning environment in 2020. Conversely, these findings can be interpreted as contrary to McQuirter's (2020) finding that many K-12 public school teachers described a sense of isolation as they attempted to manage technical, social, and instructional challenges presented by the online learning environments in which they found themselves working. Tierney et al.(2011) concluded that empowering teachers through fostering opportunities for leadership, innovation, and collaboration ultimately has a direct impact on learner engagement with online learning. A teacher-led approach to professional development that reflects their priorities and is aligned with district-wide efforts can lead to increased student access to digital learning opportunities (Tierney et al., 2011).

Pedagogy

Teachers responded to interview questions related to instructional pedagogy with the mention of specific approaches to their provision of instruction in the fully online learning environment that were intended to positively influence student's academic achievement. Teachers were intentional with offering students the opportunity to see and hear instruction. Many teachers extended synchronous learning opportunities to students in the form of video conferencing in an effort to positively impact student achievement.

More than half the teachers, 60% (n=9), reported their regular communication with students, including Google Meet video conferences, positively influenced students' engagement

in the online learning environment. A teacher stated, “I think the more that I contacted them and reached out to them, the more that they were able to engage … that was probably my most important role.” Another teacher offered, “The ones that would communicate with me via Google Meet became much more engaged in the work.” The majority of teachers, 73% (n=11), reported they regularly offered opportunities for students to interact with them via Google Voice calls and/or Google Meet as part of the instructional activities they offered. A teacher responded, “I set up a Google Voice phone number as well so they could contact me on my phone because a lot of the students or a lot of the parents were more comfortable texting me through that Google Voice and I can get through a lot faster than through email.”

Every teacher, 100% (n=15), indicated they regularly used videos to provide instruction to students in the online learning environment. Many teachers discussed creating videos of themselves explaining content and concepts as a way to provide initial instruction to their students. For example, “At the beginning of each week as we tackled a new mini lesson or a new concept, I would put a video on with me walking through (the concept) ... having just my face cast in the corner and showing them the examples as we went through them.” Teachers, 53% (n=8), indicated they believe increased synchronous opportunities would have strengthened the online learning environment. One teacher shared, “I could have at least asked questions. I could have gotten more feedback from the students of what they understood and where they were at … I think it would have been much more helpful and at least I would have gotten a little bit better feel of where my kids were at and who was actually somewhat participating or not.” Teachers’ perceptions as expressed in their interview responses indicated they believe synchronous learning opportunities had a positive impact on students’ academic achievement. As a result, teachers sought out opportunities to provide students with video or live instructional opportunities in the fully online learning environment.

The belief that more synchronous opportunities would have more positively impacted student achievement is aligned with Borup et al.’s (2014) findings that supported collaborative learning opportunities as a conduit for students’ development of new knowledge while interacting with their peers which strengthens learner engagement in online learning. Additionally, teachers in Borup’s 2016 study reported that when students were able to form relationships with their online learning peers, they were more motivated to engage in learning activities. When synchronous instruction was available, Barbour (2015) found students were

more productive compared to their asynchronous class time when there was not a teacher to monitor students directly and keep them on task. Students reported a stronger sense of community support and interaction during synchronous learning (Barbour, 2015).

Fully online learning offered students the opportunity to engage in multiple learning activities that were designed to offer variety and enhance creativity. Teachers, 67% (n=10), indicated they made intentional efforts to include a variety of activities and resources in the instruction they provided to students in the online learning environment. A teacher reflected, "I tried to gamify a lot of my curriculum in some ways…more creativity and variety in instructional activities." Another stated, "There were worksheets. There were videos. There were interactive videos. There was a lot of different opportunities. I was able to figure out ways to differentiate throughout the school year." Teachers' perceptions as expressed in their interview responses indicated intentional efforts were made to offer a variety of learning activities to students in the fully online learning environment.

This finding is supported by the results of Pulham et al.'s 2018 study which indicated technology and related tools have the potential to support effective instruction in the online learning environment by enhancing opportunities for networking, collaboration, communication, and personalized learning. Differentiated instructional opportunities and the ability to provide instruction that addresses students' individual needs were identified as benefits of the online learning environment according to Barbour & Harrison's 2016 quantitative research study.

Discussion of Conclusions Related to Research Question Number 2

The second research question stated, "In consideration of pedagogy, professional development, learner engagement, and equity, what factors in the fully online learning environment do teachers perceive as having a negative impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?" Teachers' responses included consistent topics that allowed conclusions to be drawn related to the themes of learner engagement, equity, and pedagogy in relation to factors they perceive as negatively impacting their students' academic achievement in the fully online learning environment given the circumstances of the 2020-2021 school year. Teachers' responses to the questions intended to address the theme of professional development did not produce consistent patterns that could be

used to draw substantial conclusions about their perceptions of factors related to professional development in the online learning environment that negatively impacted students' academic achievement.

Learner Engagement

Student achievement was impacted by the level of engagement students had in the fully online learning environment. The more engaged students were, the better they achieved. Teachers identified a variety of factors that limited learner engagement and, therefore, negatively impacted students' achievement. Teachers' comments defined engagement as routinely logging on to the LMS, reviewing and completing assignments as directed, and regularly communicating with their teacher through email, Google Meet, or other electronic messages. The factors that limited learner engagement included irregular participation, limited relationships with teachers and peers, distractions within and/or limitations in access to physical workspace in students' homes, and to part-time or full-time employment for high school students.

Teachers, 40% (n=6), reported students' success or failure in their fully online class/course related to students' level of engagement in the class/course. A teacher said, "The kids that were engaged and actually did the work, they were successful." Teachers, 47% (n=7), indicated they offered video conferences via Google Meet to support students in the online learning environment; however, students often did not log in or participate in these synchronous options. One teacher reported, "There were times where I would log on to my Google Meet and nobody would show up." Another stated, "I offered Google Meets each week. Students did not take advantage of them. I only really had three students and by the end it was down to one student who actually joined me when I was offering anything live."

More than half of the teachers, 53% (n=8), indicated their students were successful if the students actively and consistently participated in the online learning environment. A teacher responded, "If students participated in the online learning system, I feel like they learned the essential aspects of what I was trying to teach them if they participated." Another teacher stated, "If they engaged, they did well. If they engaged intermittently, they did okay or pretty well. If they didn't engage or didn't regularly engage, they did not do well." The same number, 53% (n=8), indicated students failed their class/course because the students rarely or

never participated in the online learning environment. A teacher shared, “I think there were like four or five students that literally did nothing. They didn't achieve if they didn't engage. Grades were pretty bad.” Another teacher offered, “I couldn't get those two kids who failed to take the journey because I couldn't get them engaged. And that was a result of it being online.”

These responses related to the impact of active engagement in the fully online learning environment align with Dewitt’s findings from the spring of 2020. Teacher comments in the spring of 2020 revealed significant differences between teachers’ influence over student participation in the online environment versus the traditional classroom environment. Teachers expressed concern with students not signing into online classrooms, not participating in instruction, and not completing or submitting assignments. DeWitt (2020) observed that in the virtual classroom, teachers did not have access to typical strategies of control over learner engagement.

Teachers, 40% (n=6), reported barriers to establishing relationships with and among students in the online learning environment. A teacher stated, “There wasn't the opportunity for any group activities, peer learning … none of that happened, which is very sad. They really need that.” Another stated, “I would have liked to have seen more participation because some of the kids it was the only socialization they were getting. The negative side to it is that it took socialization out of learning.” A third teacher shared, “ I would have liked to have had the ability to meet with more students at a time. I think it would have given them a sense of camaraderie and the fellowship that they get when they're in a classroom.”

This finding is supported by the conclusions of several pieces of previous research. Online learning environments cannot provide many of the informal social interactions students have in school (Loeb, 2020). Students who are participating in asynchronous learning environments may not have access to the same sense of connection to their teacher and classmates as those who are participating in synchronous learning environments (Borup, 2016; Wicks, 2010). According to Borup (2016), teachers who instruct in online learning environments reported that students’ physical separation presented a major obstacle to students forming close relationships with their peers.

Teachers, 60% (n=9), reported the lack of physical proximity to their students impacted learner engagement in the online learning environment. A teacher responded, “You can't physically engage them. There's no guided learning. There's no face-to-face. Face-to-face

instruction means so much. I can't read their body language or their facial expressions. I don't know as a teacher, 'Do they understand? Are they just regurgitating information? Are they learning at all?' I have no real idea, except for those that communicated with me."

The impact of a lack of proximity, physical or virtual, to students aligns with the findings of previous research, as well. Students who are participating in asynchronous learning environments may not have access to the same sense of connection to their teacher and classmates as those who are participating in synchronous learning environments (Borup, 2016; Wicks, 2010). Teachers who instruct in online learning environments reported that students' physical separation presented a major obstacle (Borup, 2016). DeWitt (2020) concluded that a lack of connection with instructors or negative feelings of worth as a class participant were factors in learner engagement in the online learning environment. When synchronous instruction was available, Barbour (2015) found students were much more productive compared to their asynchronous class time when there was not a teacher to monitor students directly and keep them on task.

The home or household environment as a learning space was also addressed. Teachers, 47% (n=7), referenced the impact of a lack of consistent physical space for students to work on their academics and/or household members' presence in the workspace of their students in the online learning environment. A teacher reported, "There were a couple of families when I did the Google Meet that you could tell that the parents were there. But the sibs were there too and so it was really distracting for those students to try to focus on their work. The one family, there was a crying baby in every Google Meet and it was really hard for her to feel like she could participate because every time she turned on her microphone, you would hear the crying baby." Another response was, "I think the distraction of the home sometimes makes it hard for kids to focus … In a virtual environment we're expecting them to do the bulk of the learning in the unstructured environment and that is a challenge. I might be sitting at the kitchen table or I might be sitting in my room and I'm hearing all of the noise around me. 'How do I focus on learning that material for the first time?' I don't think that the kids all had a consistent space."

These responses also align with Dewitt's (2020) conclusions. If students were not working outside of their homes, they were often assigned extra responsibility within their homes and families. Students were expected to supervise and care for younger siblings. This sometimes involved assisting younger siblings with their online learning which distracted older

students from attending to their own online learning responsibilities (DeWitt, 2020). When time was available for students to engage in online learning, many did not have a physical space to properly focus on and participate in their school work. Students may have made the choice to not connect with their teacher at all, instead of connecting amidst household distraction or disruption (DeWitt, 2020).

More than half of the teachers, 53% (n=8), indicated their students in the online learning environment were employees in part-time and, in some cases, full-time jobs, and this impacted students' level of engagement in their classes/courses. One teacher offered, "I think there were a lot of kids that really needed to be in person (who) worked. I really had a hard time getting in contact with them. They would tell me that they work full-time." Teacher responses indicated the time students spent in employment, often during traditional school hours, distracted students from giving appropriate effort and focus to their online classes/courses. Teacher responses in this study indicate students who were employed were not able to properly manage their limited time for study, which negatively impacted the quality of their online learning experience. This perception stands in contrast to the findings of previous studies that indicated synchronous learning offers unique opportunities for learners to engage in an online format at hours or times of their choice which may extend beyond the regular school day (Picciano & Seaman, 2019; Reason et al., 2017; Wicks, 2010).

The responses of teachers in this study indicate agreement with Kwon et. al (2019) that proper use of study time by the student is an indicator of a quality online learning program. These comments also align with the conclusion of Dewitt (2020). In the spring of 2020, some older students were expected to work as essential employees to support their families when overall job loss was high due to the pandemic. Time for work became a priority over time for education for many students (DeWitt, 2020).

Equity

Despite the efforts by the school division to equip students with the necessary hardware for participation in the fully online learning environment, students across the school division did not have equitable access to wifi that was a necessary component of the fully online learning environment. The majority of teachers, 87% (n=13), indicated the school division provided their students with computers and/or access to wifi. More than half the teachers, 53% (n=8), reported

having students in their online learning environments who did not have consistent access to hardware and/or wifi.

Teachers' responses referenced both geographical and socioeconomic reasons that students did not have consistent access to reliable internet. Some students lived in areas where internet access is limited or completely unavailable due to the local geography. Other students' access was limited because of their families' financial situations. A teacher said, "We had a lot of students who said that they didn't have internet or that they had very spotty internet. They were using all of their family's data just to be able to log on to classes, let alone, do the work and classes. I think the fact that a lot of kids did not have good internet access, was why they didn't get their work done." Another teacher shared, "I had some kids that would have to go to the library and log on using their wifi or pull into the parking lot of the high school to download what they could and then go home and work offline … Some of them would go into (town) and would borrow wifi from different businesses and so forth. They sat in the parking lots and got things done." This teacher went on to describe situations in which her students lived in areas that could not reach any sort of signal for a wifi connection, "They were dead in the water because even a hotspot doesn't won't work."

Teachers, 67% (n=10), indicated they created paper copies or packets of assignments and content and made them available to students. A teacher reported she made packets available for students whose families reported lack of consistently available wifi, "I did have some cases where I would print everything for my students and then their parents would come pick them up or I would go drop them off, so that they at least had paper copies of what we were working on. Most of the time, that stuff didn't get turned back in." Another teacher explained, "We would send the note packets and the worksheet packets for them to do." Teachers' perceptions as expressed in their interview responses indicate students across the school division did not have equitable access to wifi that was a necessary component of the fully online learning environment.

Concerns regarding limited access are reflected in the findings of several previous studies. The consistent availability of technology is a factor that has the possibility of limiting access for some populations of students according to Beagle et al. (2011). Access to technology in K-12 public education has been problematic over time. Inequities related to multiple factors including home zip code and socioeconomic status prevent many students who are already

stigmatized as “at-risk” from effectively accessing online resources to learn, create, communicate, and participate (PSFNC, 2020; Tierney et al., 2011). Problems with equity included the presence of a clear digital divide between educators and students that often involved no access or inconsistent access to internet connections (McQuirter, 2020). Often, students lacked access to appropriate wifi and/or devices to access their online learning (DeWitt, 2020). Students without or with limited home internet access and reliable devices were not able to access resources or complete and submit assignments with the same level of success experienced by their peers who had quality internet connection (PSFNC, 2020).

Over half the teachers, 60% (n=9), indicated parent influence impacted students' engagement in the online learning environment. A teacher said, “It makes a difference too if their parents were around. I think some of the ones that struggled, their parents weren’t there. So, nobody was really making them. I think some parents were frustrated too.” Teachers, 67% (n=10), also referenced the importance of consistent communication between teachers, students, and/or parents. A teacher explained an effective online learning environment by saying, “So there's really constant communication…more so than they would have in a regular classroom.”

Students did not have equitable access to adult/parental support and attention to their educational progress in the online learning environment. Teachers, 67% (n=10) of the teachers also referenced the impact of parents’ involvement in and/or availability to support students’ access to the online learning environment. A teacher shared, “The reason why they weren’t getting their work done was because the parent wasn’t pushing them.” Another stated, “I discovered pretty early on that there were many parents that were doing nothing with their children. They were just sitting them at the Chromebook and telling them to do the work. There were a lot of parents that had to work long hours. Some of them worked in the evenings and there might be one parent working during the day and then the other one was working in the evenings. So, there was a lot of miscommunication that took place.”

A synchronous online learning environment would have intensified issues of inequity in the online learning environment. Teachers expressed that limited access to reliable wifi and hardware would have presented an even greater barrier to access if students had been expected to interact synchronously at a certain time each day. The majority of teachers, 80% (n=12), indicated they believe issues related to equity would have impacted a more synchronous online

learning environment. A teacher responded, “I feel like we would have struggled to do any kind of face-to-face learning because of the lack of internet, not great internet, parent/grandparents support/availability. I think that would have been harder for the families and maybe me too. I think it might have been harder to keep it equitable.” Another stated, “I think it would have been harder because they would have to schedule around their parents work or have a new place to stay. So, I think it might have been more inequitable in a lot of ways just because their schedule wasn't as easy to adapt to.” Teachers’ perceptions as expressed in their interview responses indicate a synchronous online learning environment would have compounded issues of inequity in the online learning environment.

These efforts to address equitable access for students are consistent with the conclusions of very recent research. Issues of equity were at the center of remote learning plans and required increased focus on special populations (Kaden, 2020). Despite the effort of public school divisions, not all students were able to be reached. Those who did not consistently participate in online education programs were among the most vulnerable. This included populations such as students with a history of transiency, students who were homeless, students with disabilities, and students living in poverty (Kaden, 2020). There were also circumstances in which families were struggling to keep up with their children’s learning needs, sharing hardware and internet, and trying to maintain employment (Scott-Webber, 2021).

Pedagogy

Teacher facilitation of regular communication with students and parents is an important element of the fully online learning environment. Teachers’ perceptions as expressed in their interview responses indicate instruction in the fully online learning environment should include regular communication with students and their families. The majority of teachers, 73% (n=11), reported they used electronic messages, primarily email, to communicate regularly with students and/or parents in their online classes/courses. A teacher explained, “Emails were easier and so we would email questions back and forth and (students) could communicate. I spent time communicating with parents by emailing. I found out parents do not like to talk on the phone. They would rather you just shoot him an email and they can answer you back.” Teachers often expressed frustration with the lack of responses and replies to their efforts to communicate with parents and students.

While the teachers in this study articulated an understanding of the importance of communication, their frustrating experience may indicate they did not successfully establish expectations of communication within their online courses/classes according to previous research. They may need support with establishing expectations and schedules for regular communication with students and parents/guardians, as well as, support with knowing which resources are available to facilitate this communication. Teachers need to establish norms for engagement with subject matter, their peers, and instructors in the online learning environment that are different from those in the in-person setting (Borup et al., 2014; Loeb, 2020). These should include requirements for students to routinely ask questions, respond, and interact (Loeb, 2020). Borup et al. (2014) explained that meaningful collaboration and communication are not likely to occur in online learning environments if teachers do not facilitate this type of interaction. Instructor competencies in the area of communication are more crucial to the success of an online teacher because, in the online learning environment, all communication is through a distance medium, such as the LMS, and in-person follow-up is not available as it is in a conventional learning environment or a blended learning environment (Pulham et al., 2018; Wicks, 2010). Developmentally, students may not be able to communicate well in a technology-mediated environment which could lead to problems with socialization and interactions (Barbour, 2015).

Additional Conclusions

Teachers' perceptions as expressed in their interview responses indicate there is a need for the school division to establish clear expectations and standards for students who choose to participate in the fully online learning environment.

The majority of teachers, 67% (n=10), mentioned the need for the school division to provide clearly established expectations and requirements of students and parents as a factor that would contribute to an effective online learning environment. A teacher stated that the school division should establish expectations for students and parents related to "setting up the routine and …know exactly how to use the programs that we're offering" and the school division should "make the parents more aware of what exactly is going to be expected" before beginning instruction in the online learning environment. Another teacher responded, "We

have to have very specific requirements. If you're going to be virtual, then these are the things, you have to meet these guidelines, because if you don't, your child is not learning."

These perceptions regarding the need for the school division to clearly establish expectations and requirements of students and/or parents regarding participation in the fully online learning environment are supported by conclusions from previous research. Public school students who participate in online learning must be properly prepared for this particular learning environment (Barbour & Harrison, 2016; Picciano & Seaman, 2019). Students who do not possess the necessary prerequisite skills will be at a disadvantage as they attempt to access their education. Challenges related to navigating an unfamiliar format, self-direction, and time management can present significant barriers to a student's ability to master the course content in an online learning environment (Kwon et al., 2019).

Additionally, teachers expressed concern with the lack of rigor of the content and concepts students mastered in the online learning environment, as compared to their experience as instructions in previous years in the traditional, in-person learning environment. Teachers, 40% (n=6), reflected they do not believe students learned academic content to the detail or depth in the online learning environment as compared to previous years in the in-person learning environment. A teacher said, "They were exposed to everything. I'm not sure the learning was as complete. I'm not sure that they owned it the way they would with regular instruction. I feel like they got exposed to everything they needed to be exposed to. I feel like you lose that in the communication and the electronic communication of it. I don't feel like any of the instruction last year got in-depth." Another teacher said, "I don't think that they get as much out of an online learning environment as they do with a live teacher and live peers. I won't ever think that. I don't know that they necessarily get the richness of the content from that. They get the basics of the content." Teachers' perceptions as expressed in their interview responses indicate the fully online learning environment that was offered did not provide the same academic benefit that in-person learning offered students.

Teachers' reflections regarding the lack of rigor within the online learning environment should be evaluated, considered, and acted upon to improve future online learning opportunities for K-12 public school students. The future of education will need to address equity issues, new models for daily schedules and instructional calendars, costs of the necessary technology to build and sustain infrastructure, and pedagogy for online learning environments (Kaden, 2020). Better

design and implementation of policies and programs are achieved when educators have an opportunity to reflect on their practices and programs (Tienken, 2020).

Implications for Practice

Findings and conclusions from this study offer multiple considerations for future planning and implementation of K-12 public school instruction in the fully online learning environment. Instructors need adequate and advanced preparation and professional development that is intentionally focused on the fully online learning environment. Parents and students need to have an understanding of the expectations of active engagement in the fully online learning environment. Consistent and clear communication about expectations of learners is a predominant factor in ensuring increased student achievement in the K-12 public school fully online learning environment.

If a K-12 public school division is going to offer students the opportunity to enroll in courses/classes in the fully online learning environment, the division should ensure the teacher providing instruction in this format is well prepared. School divisions should prepare professional development that is specifically designed to address the online learning environment's unique circumstances. Teachers should be trained to adjust their pedagogy and establish routines for communication with students and parents. The training of teachers should focus on incorporating instructional interactions with students in the online learning environment in a variety of methods such as email, messages within the LMS, and video conferencing. Additionally, the fully online learning environment requires the use of technology and resources that teachers need to be proficient in using prior to offering instruction to students.

Professional development for educators for online learning should focus on developing teachers' skills for motivating individual students, encouraging student interaction, developing alternatives to dependency on social cues, differentiating instruction based on specific learning styles, and creating or adjusting interactive lessons (Wicks, 2010). Teachers' comments indicated much of their professional development in 2020-2021 was focused on the LMS the school division selected to use in the online learning environment. While resources were widely available, teachers sought them out on their own or in collaboration with colleagues when they realized they needed more information to strengthen their skills as instructors in the online learning environment. A teacher shared, "A lot of this was independently learned." Another

stated, “I had to learn that through the online professional development. ... we really didn't get any formal professional development on any of it.” A similar statement was shared by another teacher, “I had to learn a lot as I went. I had to train myself.”

Teachers who have limited or no experience as instructors in the fully online learning environment need support to understand how it differs from teaching students in-person in the traditional classroom setting. School divisions should provide professional development that is specific to this topic. These professionals will benefit from a clear indication of how the competency applied in the online or blended learning environment is different from the competency as it was acquired through traditional teacher education or professional development (Pulham et al., 2018).

Teachers referenced resources that they taught themselves to use such as instructional video platforms, applications and extensions within Google such as Google Meets and Google Voice. Teachers’ responses indicated they sought out these resources when they realized they needed them. This was reactive, informal professional development rather than proactive, intentional formal professional development. The school division should present professional development well in advance of the start of fully online courses/classes so teachers have time to plan instruction that takes these factors into consideration and incorporates relevant resources. The circumstances of 2020-2021 that required teachers to seek information professional development as they taught and interacted with students should not be repeated.

More specifically, teachers should be prepared to establish clear and regular routines for communication with students and parents. School divisions should offer professional development specifically on this topic so teachers are aware of the focus and attention to communication that is required in the fully online learning environment. Wicks (2010) indicated quality online instruction involves significant teacher-student communication. In an online learning environment, teachers guide students to develop the ability to use a wide variety of communication such as email, online discussion, sharing of documents, and journaling (Wicks, 2010).

Teachers indicated a great deal of difficulty with effectively engaging students in regular communication within the fully online learning environment. One teacher shared, “There were students who never contacted me or would not respond to anything I did all semester.” This frustration often extended to efforts to communicate with parents/guardians also. A teacher said,

"It could be frustrating and, honestly, the kids whose parents I could just never get ahold of tended to be the kids that failed the class."

Teachers need to establish norms for engagement with subject matter, their peers, and instructors in the online learning environment that are different from those in the in-person setting (Borup et al., 2014; Loeb, 2020). These should include requirements for students to routinely ask questions, respond, and interact (Loeb, 2020). Intentionally designed professional development is needed to inform teachers of the need to establish regular patterns of communication outside of instructions for assignment and equip them to effectively engage both students and parents/guardians. School divisions should offer professional development that supports teachers with developing proficiency with utilizing the multiple resources available to facilitate communication with students and parents/guardians. This will assist with avoiding the challenges and frustrations expressed by teachers in their reflection of their experiences in 2020-2021.

The fully online learning environment requires students and parents/guardians to make a commitment to prioritize online learning and to actively participate in online instruction if they choose fully online courses/classes in the future. Students need to be prepared to be more independent and self-motivated to engage in their online academic programs and parents should be prepared to closely monitor because teachers are not physically present to encourage and prompt in a traditional manner. In reflection of their experiences, teachers expressed concern that students and families were not invested in their educational experiences in the fully online learning environment. A teacher responded, "I think some of the parents expected that they would not have to do anything." Another teacher explained their perspective about a particular student who failed a fully online math course: "It's not the math that was the struggle. It was the virtual scenario for him. He just could not organize himself and wrap his brain around that type of environment."

School divisions that offer a fully online learning environment should ensure students and families are fully aware of the expectations associated with the particular course/class. While the online learning environment seems to encourage increased learner engagement in some sub-groups or populations of students, there are others for whom the online learning environment presents significant challenges to active participation and involvement (DeWitt, 2020; Loeb, 2020). Successful implementation of K-12 online learning was dependent on all stakeholders

being properly educated on the topic and receiving access to the appropriate technology (Barbour & Harrison, 2016).

When asked to share their ideas about what could improve students' academic success in future fully online courses/classes, teachers often referenced the need for students and families to be well informed of the details of the online learning environment before deciding to enroll. Multiple teachers referenced the need for verification that students have consistent access to wifi and hardware. "They've got to have a device. They've got to have the internet," said one. Others referenced additional criteria for enrollment in the fully online learning environment. A teacher said students need to" know exactly where they're starting and the steps they need to take in order to get where they need to go and how to set up organization to schedule their day."

One teacher suggested, "requiring parents and students both to do some type of required Zoom meeting with teachers and administration to inform them about what is needed for this to be successful for them and to establish expectations." Another offered, "We have to have very specific requirements. If you're going to be virtual, then you have to meet these guidelines, because if you don't, your child is not learning." Other teachers referenced establishing minimum requirements for communicating with teachers. Establishing benchmarks for active participation and measures of progress to allow students to remain in the fully online learning environment and requiring students to return to the traditional, in-person classroom if they do not meet the expectations was suggested by teachers who were interviewed.

The school division should take responsibility for establishing expectations of student and parent/guardian engagement for fully online courses/classes the division chooses to offer. The pandemic-related circumstances of 2020-2021 required many school divisions to offer fully online courses/classes to any student who elected this option on the basis of health/safety concerns. In the future, school divisions should establish criteria that must be met for students to enroll and remain enrolled in fully online courses/classes. These criteria should focus on elements of proper engagement such as daily or weekly communication with teachers, demonstration of consistent progress and mastery of course/class content, and submission of course/class assignments on the schedule determined by the instructor. Once such criteria are established, the school division should ensure students and families are directly informed of the criteria and committed to meeting the expectations of the fully online course/class.

Suggestions for Future Studies

Recommendations for future research focus on expanding the study to other populations of K-12 public school teachers. Participants in this study were from the same school division, so future research should consider exploration of the perceptions of teachers in other school divisions in reflection of their experiences in 2020-2021. Other school divisions may have approached the fully online learning environment differently. This circumstance may impact teachers' perceptions and responses. Teachers in this study volunteered to provide instruction in the fully online learning environment. A study that includes teachers who were assigned to teach or not given a choice about teaching in the fully online learning environment may result in different findings. Such a study would also provide the opportunity to compare and contrast teacher perceptions across populations.

Another recommended future study would involve K-12 public school teachers' perceptions of experiences in the fully online learning environment prior to the 2020-2021 school year or 2021-2022 and beyond. Such a study would allow for comparisons and contrasts between teachers' perceptions of experiences in the fully online learning environment across multiple years. Results of such a study compared to results of this study may provide information to be considered in regards to the potential impact of the pandemic-related circumstances of 2020-2021 on teachers' perceptions of their experiences. There are many potential hypotheses regarding the impact of the pandemic on experiences in 2020-2021. Studies that address teachers' perceptions of their experiences in the fully online learning environment pre-pandemic or post-pandemic could provide a great deal of relevant information.

Personal Reflections

In addition to the findings and conclusions discussed above, some points of interest emerged in my examination of teachers' responses to interview questions that I feel are worthy of consideration. I feel strongly that the pandemic-related circumstances of the 2020-2021 school year cannot be emphasized enough. First and foremost, the COVID-19 mitigation strategies are what lead to the school division offering fully online courses/classes in 2020-2021. Plans to offer fully online courses/classes were made in response to CDC recommendations in the summer of 2020 just before school was scheduled to start. This study focused on a population of teachers who volunteered to teach in the fully online learning environment. Almost half of the teachers,

47% (n=7), indicated they volunteered to teach in the fully online environment because of COVID-19 related health and safety concerns for themselves or a household member. This half of the sample population did not exactly align with the 40% (n=6) who indicated they volunteered to teach in the fully online environment because they felt familiar with at least one online LMS because of previous recent experiences with the LMS as an instructor or a college student. Nor did the almost half, 47% (n=7), who volunteered because of health concerns align with the 40%, (n=6), who indicated they volunteered to teach in the fully online environment because they felt confident using technology in their classrooms prior to the 2020-2021 school year. As I reflect on the 15 separate conversations I had with teachers, I believe that regardless of the reason any of these teachers volunteered to teach in the fully online learning environment, they gave their absolute best effort in a very novel instructional setting despite the lack of time they had to adequately prepare for their new role.

Teachers' responses were consistently concerned with the impact of the fully online learning environment on their students' academic achievement. The sincere concern they articulated for their students' growth was unmistakable. All the teachers shared concern for the long-term impact of the lost instruction experienced by the students in their classes who did not engage in the online learning environment and did not reciprocate teachers' efforts to communicate consistently. This concern was clearly heightened when the parents/guardians of these unengaged students were also unresponsive to the teacher's efforts to communicate with the intention of asking for parents'/guardians' support with engaging their child.

While all teachers were able to reference situations or circumstances that made the online learning environment unfit for certain students, a few were able to specifically identify populations of students for whom the fully online learning environment was a good fit. One teacher explained, "There were some students who were just absolute high flyers. I had kids who finished the class three weeks early, sometimes four weeks early because they just sat down and they just got stuff done." Another teacher added, "The higher-achieving students just blossomed with virtual learning because of their independence."

Another teacher shared that he had students in his fully online class who he had previously taught in-person. In the traditional classroom setting, one student was painfully shy and never verbally participated. In the fully online class, the same student actively engaged in the group discussions that were posted on the LMS. In the fully online environment, this student

offered outstanding ideas and contributions via text, messages, chats, and other posts that did not require verbal interaction in front of peers. This particular student's participation and engagement increased substantially in the fully online learning environment.

Other teachers mentioned students with anxiety who seemed to perform better and engage more in the fully online learning environment. While these experiences were shared by only a few of the 15 teachers who I interviewed, I believe it is noteworthy. They are also supported by some previous research mentioned in Chapter 3. Looking to the future of K-12 public education, I believe the fully online learning environment has a role in public education. As its role is better defined in the future, proper professional development for teachers and well-informed commitments from students who are equipped and motivated to more independently engage in their learning are key elements that I believe need to be at the forefront of plans for the implementation of fully online K-12 public school courses/classes.

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APPENDIX A

INTERVIEW QUESTIONS

Section 1:

Why did you volunteer for or request to teach in the online learning environment for the 2020-2021 school year?

What skills or knowledge did you possess that made you feel comfortable volunteering to teach fully online classes or courses?

Section 2:

Tell me about the professional development or training you received for your role as a teacher in the online learning environment.

What resources did you utilize?
Where did you find resources?
What training or professional development was offered to you by the school division?
What training or professional development did you seek out for yourself?
Were sufficient resources available?
How did your professional development efforts impact your students' academic achievement in 2020-2021?
If your instruction had been in a synchronous format, do you think any of your answers to these questions about professional development and training would have been different? If so, please explain.

Section 3:

Describe the pedagogy or instructional methods you developed for online learning in 2020-2021 that you believe created the most positive impact on your students' academic achievement. These methods may include approaches to content delivery, use of technology-related tools/resources, schedules of communication with and among students, peer collaboration, student choice, and differentiation for student-specific needs/preferences.

Were these methods you previously used in your instruction?
If so, how did you have to adapt them specifically for the online learning environment?
If your instruction had been in a synchronous format, do you think any of your answers to these questions about pedagogy or instructional methods would have been different? If so, please explain.

Section 4:

Describe the impact of the online learning environment on the engagement of students in your class(es) or course(s)? Learner engagement may include students' active participation in assignments, completion of assignments as expected, timely communication and responses to your instruction, and the frequency with which they interacted within the Learning Management System (LMS).

Are there elements of the online learning environment that positively influenced students' level of engagement?
Are there elements of the online learning environment that negatively influenced students' level of engagement?
How were you, as the teacher, able to influence students' level of engagement in the online learning environment?
How did their engagement in online learning impact your students' academic achievement in 2020-2021?
If your instruction had been in a synchronous format, do you think any of your answers to these questions about learner engagement would have been different? If so, please explain.

Section 5:

Do you feel your students had equitable access to the online learning environment in 2020-2021? This may include access to hardware/devices, access to consistent Wi-Fi, access to adult support, and access to an appropriate space to work.

If not, why? Please describe specific examples.
If yes, please tell me more about why you feel equity was possible for your particular group of students.
How did issues related to equity in online learning impact your students' academic achievement in 2020-2021?
If your instruction had been in a synchronous format, do you think any of your answers to these questions about equitable access to the online learning environment would have been different? If so, please explain.

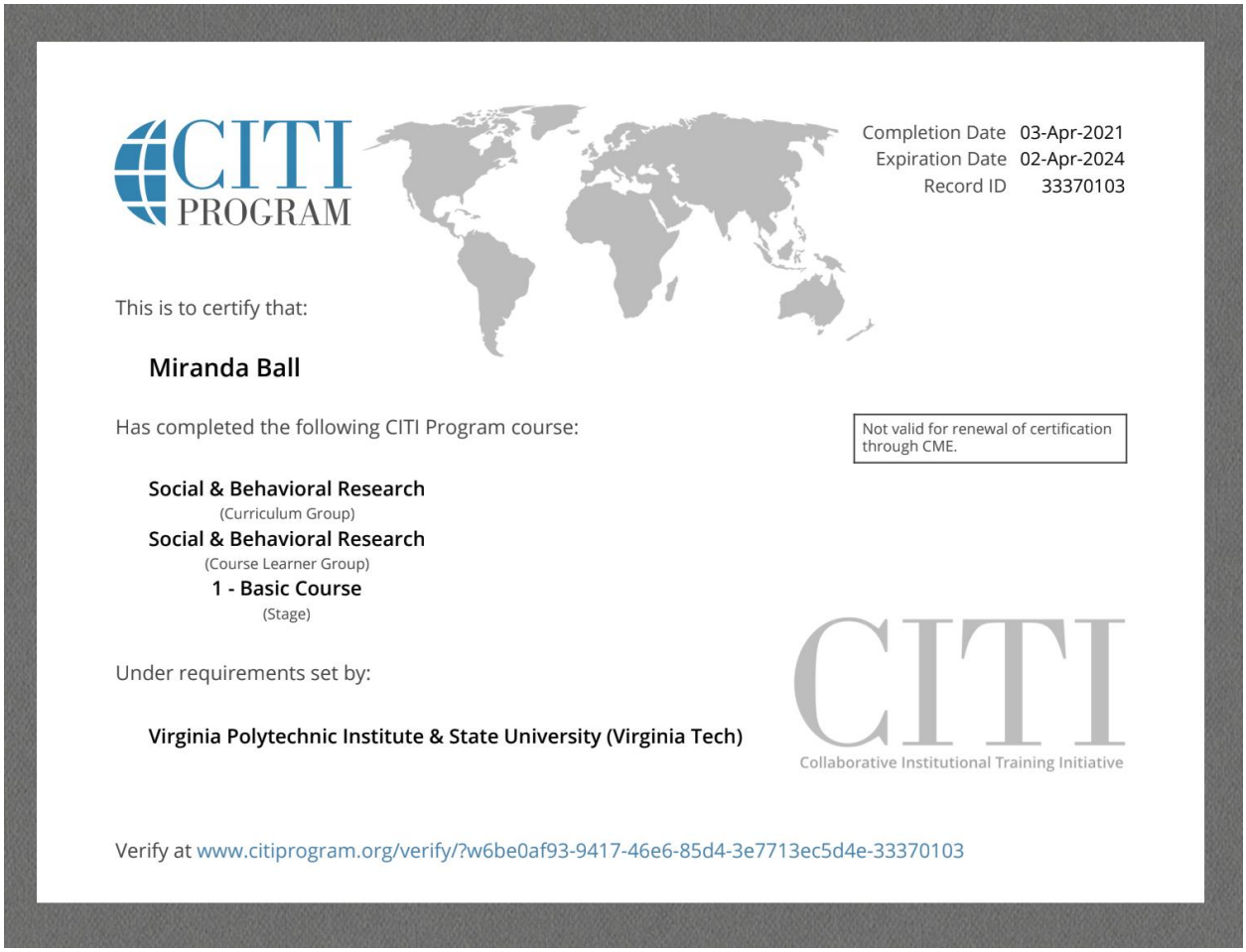
Section 6:

In reflection of your experience with teaching in the online learning environment during the 2020-2021 school year, what do you believe contributes to effective online learning for students?

In reflection of your experience with teaching in the online learning environment during the 2020-2021 school year, what do you believe is needed to strengthen students' opportunities or success in the online learning environment?

APPENDIX B

CITI PROGRAM IRB CERTIFICATE OF COMPLETION: SOCIAL & BEHAVIORAL RESEARCH



CITI PROGRAM

Completion Date 03-Apr-2021
Expiration Date 02-Apr-2024
Record ID 33370103

This is to certify that:

Miranda Ball

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Social & Behavioral Research
(Curriculum Group)
Social & Behavioral Research
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Virginia Polytechnic Institute & State University (Virginia Tech)

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w6be0af93-9417-46e6-85d4-3e7713ec5d4e-33370103

APPENDIX C

INTERVIEW QUESTION VALIDITY TABLE

Interview Item	Main Theme	Author/Year
Tell me about the professional development or training you received for your role as a teacher in the online learning environment. What resources did you utilize? Where did you find resources? What training or professional development was offered to you by the school division? What training or professional development did you seek out for yourself? Were sufficient resources available? How did your professional development efforts impact your students' academic achievement in 2020-2021?	**Professional Development for Online Learning**	Barbour, 2015 Barbour & Harrison, 2016 Borup et al., 2014 Borup, 2016 Farmer & West, 2019 Kaden, 2020 Loeb, 2020 McQuirter, 2020 Picciano & Seaman, 2019 Pulham et al., 2018 Reason et al., 2017 Scott-Webber, 2021 Tierney et al., 2011 Wicks, 2010
Interview Item	**Main Theme**	**Author/Year**
Describe the instructional methods you developed for online learning in 2020-2021 that you believe created the most positive impact on your students' academic achievement. These methods may include approaches to content delivery, use of technology-related tools/resources, schedules of communication with and among students, peer collaboration, student choice, and differentiation for student-specific needs/preferences. Were these methods you previously used in your instruction? If so, how did you have to adapt them specifically for the online learning environment?	**Pedagogy for Online Learning**	Barbour, 2015 Barbour & Harrison, 2016 Borup et al., 2014 Borup, 2016 Farmer & West, 2019 Kaden, 2020 Loeb, 2020 McQuirter, 2020 Picciano & Seaman, 2019 Pulham et al., 2018 Reason et al., 2017 Tierney et al., 2011 Wicks, 2010

Interview Item	**Main Theme**	**Author/Year**
Describe the impact of the online learning environment on the engagement of students in your class(es) or course(s)? Learner engagement may include students' active participation in assignments, completion of assignments as expected, timely communication and responses to your instruction, and the frequency with which they interacted within the Learning Management System (LMS). Are there elements of the online learning environment that positively influenced students' level of engagement? Are there elements of the online learning environment that negatively influenced students' level of engagement? How were you, as the teacher, able to influence students' level of engagement in the online learning environment? How did their engagement in online learning impact your students' academic achievement in 2020-2021?	**Learner Engagement**	Barbour, 2015 Barbour & Harrison, 2016 Borup et al., 2014 Borup, 2016 DeWitt, 2020 Kwon, 2019 Loeb, 2020 Picciano & Seaman, 2019 Reason et al., 2017 Scott-Webber, 2021 Tierney et al., 2011 Wicks, 2010
Interview Item	**Main Theme**	**Author/Year**
Do you feel your students had equitable access to the online learning environment in 2020-2021? This may include access to hardware/devices, access to consistent Wi-Fi, access to adult support, and access to an appropriate space to work. If not, why? Please describe specific examples. If yes, please tell me more about why you feel equity was possible for your particular group of students. How did issues related to equity in online learning impact your students' academic achievement in 2020-2021?	**Equity**	Barbour, 2015 Barbour & Harrison, 2016 Beagle et al., 2011 Brinkmann et al., 2021 DeWitt, 2020 Gross et al., 2020 Kaden, 2020 Kwon, 2019 Loeb, 2020 McQuirter, 202 Picciano & Seaman, 2019 PSFNC, 2021 Rice & Carter, Jr., 2015 Scott-Webber, 2021 Tierney et al., 2011 Wicks, 2010

APPENDIX D

PERMISSION TO CONDUCT RESEARCH

AUGUSTA COUNTY SCHOOL BOARD

Dr. Eric W. Bond
Superintendent
Dr. Douglas W. Shifflett, Jr.
Deputy Superintendent

P.O. Box 960
18 Government Center Lane
Verona, VA 24482

(540) 245-5100
(540) 949-6134
FAX # (540) 245-5115

July 26, 2021

Mrs. Miranda M. Ball,

Your request for permission to contact the population of K-12 teachers in Augusta County Public Schools who volunteered to teach at least one course/class that involved a fully online learning environment during the 2020-2021 school year is approved. Interviews will can be conducted in-person at the location of the participant's choice or via video conferencing.

I have reviewed the interview questions and they are approved as well. Good luck with your research.

Doug Shifflett
Augusta County Public Schools
PO Box 960
18 Government Center Lane
Verona, VA 24482

Sincerely,

Douglas W. Shifflett, Jr.

APPENDIX E

REQUEST FOR AN INTERVIEW SURVEY AND EMAIL

Request for An Interview

Thank you for your time and responses to the 3-5 questions below. Sincerely, Miranda Ball

* Required

1. Please indicate your name. *

2. Please confirm that you volunteered or requested to teach at least one K-12 fully online course/class during the 2020-2021 school year. *

Mark only one oval.

- ◯ Yes, I requested or volunteered to teach at least one fully online course/class in 2020-2021.
- ◯ No, I did not request or volunteer. My principal assigned me to teach at least one fully online course/class in 2020-2021.

3. Please list the fully online course(s)/class(es) you taught in 2020-2021.

4. Are you willing to schedule a one-on-one interview to discuss your perceptions and reflections of 2020-2021? *

Mark only one oval.

- ◯ Yes, I am willing to participate in an approximately 60 minute interview that will be scheduled at my convenience and at location of my choice or via Zoom video conference.
- ◯ I would like you to contact me to tell me more about this study before I decide.
- ◯ No, I do not wish to participate.

5. If you are willing to participate in an interview, please indicate if you would like to meet in person or via Zoom. If you would like to meet in person, where would you like to meet?

_____

6. If you are willing to participate in an interview, please indicate a date and time in September or October 2021 that you prefer.

_____

7. If you indicated you would like to be contacted to learn about this study before making a decision about an interview, please indicate how you would like to be contacted.

_____

VIRGINIA TECH

Miranda Ball <miranda2@vt.edu>

Please share your experiences with online learning environments in reflection of the 2020-2021 school year

1 message

Miranda Ball <miranda2@vt.edu> Sun, Aug 1, 2021 at 10:49 AM

[redacted]

Hello! I am reaching out to you as a teacher in Augusta County Public Schools who taught at least one fully online course/class in 2020-2021. I would like to request about an hour of your time for an interview as part of my doctoral research. I am a doctoral candidate in Virginia Tech's Educational Leadership and Policy Studies graduate program.

The purpose of my study is to document interview responses that reflect the perceptions of K-12 public school teachers who provided instruction in fully online learning environments during the 2020-2021 school year. During a one-on-one interview, teachers will be asked to identify factors they believe impacted academic outcomes for students in the online learning environment during the 2020-2021 school year. Participants will be asked to reflect specifically on issues related to their training and professional development, pedagogy, student engagement, and equity. Participants will also be asked to identify factors they believe strengthened or weakened their instruction in the online learning environment.

My study will address the following research questions which guided the review of available literature and research and guided the development of interview questions.

1)What factors in the fully online learning environment do teachers perceive as having a positive impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?

2) What factors in the fully online learning environment do teachers perceive as having a negative impact on the academic achievement of K-12 public school students based on their experiences as instructors in 2020-2021?

I have worked with principals to identify K-12 teachers in Augusta County Public Schools who volunteered to teach at least one course/class that involved a fully online learning environment during the 2020-2021 school year. If you are willing to speak with me for an interview, it will be conducted in-person at the location of your choice or via Zoom video conferencing. We will schedule a date and time in September or October that is most convenient for you.

Will you please complete this 3-5 question survey to let me know if you are willing to participate? Request for an Interview Survey I appreciate your time and willingness to consider scheduling an interview to share your thoughts and perceptions in reflection of the important work you did during the 2020-2021 school year.

Miranda M. Ball
Doctoral Student, Educational Leadership & Policy Studies
Roanoke Campus