

K-12 ONLINE LITERACY AND READING INSTRUCTION: A DESCRIPTIVE CONTENT
ANALYSIS FROM 2000-2021

A Dissertation

by

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This dissertation meets the standards for scope and quality of
Texas A&M University-Corpus Christi and is hereby approved.

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ABSTRACT

Online literacy learning is still a relatively new field, however, with the advent of the COVID-19 pandemic in 2020, online learning became the primary mode of instruction for millions of students in public, charter, and private schools. This descriptive content analysis seeks to identify trends within the field of online literacy instruction from 2000 to 2021, contextual occurrences and some of the similarities and differences in the literature intended for academic audiences and the literature intended for practitioners. The articles for this content analysis were gathered from the Education Information Resource Center (ERIC) database and the Teacher Resource Center (TRC) database. 59 articles were identified as pertaining to the sample and were analyzed. Results found that within the 59 articles, those intended for academics outweighed those intended for practitioners and that the highest concentration of articles came from the end of the proposed timespan. Some differences between the articles intended for academics and practitioners were the ways the various articles addressed and were coded for student autonomy, transactional distance, and literacy instructional focus areas. The results of the content analysis revealed that there is lack of theoretical consistency within the research being produced for both academics and practitioners and there is a distinct lack of the transactional distance and systems theories, both of which underpin and are vital to the success of online literacy learning.

DEDICATION

This dissertation is dedicated in memory of my mother, Dr. Denise Hill-Alvarez, Ed.D. I could not have done this without your love pushing me on, even if you are not here to see this completed. Thank you for showing me what it means to be a true educator.

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CHAPTER I: INTRODUCTION

Since the 1990s, online, distance learning has been a growing sector of United States public education. The first few incursions into online learning were done on an experimental basis and were created for specific learning situations (Barbour, 2012). However, in the interim three decades, virtual schools and online learning has grown to become one of the most transformational trends in K-12 and higher education in the United States (Toppin & Toppin, 2016). And there is strong evidence that indicates that K-12 online learning is continuing to grow at an accelerated rate; in a comprehensive review of the literature conducted by Arnsen et al. (2019) 76% of the 156 articles were published in the last ten years and 44% of the articles had been published within the last five years.

However, for the most part, online education has been prompted by student choice and teacher choice. It has not been the default setting for most students in the K-12 area. Online, distance education, historically, has most often been associated with satellite learning opportunities for those students who were high achievers in their schools and needed further learning opportunities, or for those students who needed additional help catching up or graduating using independent, remedial, study courses (Moore, 2012).

Those who were educators and administrators in the field of online learning were there because they sought out online instruction and education. Due to the global pandemic of COVID-19 (2020-2022) and the subsequent restrictions put in place to try and alleviate the spread of the virus and “flatten the curve”, online learning and education was suddenly pushed to the forefront of public education in the United States with many educators now teaching online with very little, if any, prior exposure or training in online education and curriculum (Masonbrink & Hurley, 2020).

In December of 2019, dozens of citizens in Wuhan, a metropolitan area in China's Hubei province, were diagnosed with severe pneumonia stemming from an unknown cause. By January of 2020 the outbreak was identified by the World Health Organization (WHO) as a novel coronavirus. On January 20th, the WHO confirmed the first cases outside of China in Thailand, Japan, and South Korea. The next day, the United States confirmed its first case of COVID-19. On January 30th, the WHO declared the outbreak a global health emergency as more than 9,000 cases were confirmed outside of China's borders. By March 6th, the number of global cases hit 100,000 and on March 11th the WHO declared COVID-19 a pandemic. By March 13th, President Trump declared a state of emergency for the United States. For the rest of that academic year, many schools did not reopen for in-person classes and transferred to online or distance education learning paradigms. On March 15th, 29 states closed schools, the rest soon followed suit and globally an estimated 1.5 billion learners of all ages were affected by school closures (Bozkurt & Sharma, 2020, Murraci et al., 2020). Most of these schools never reopened for face-to-face instruction and instead shifted to online based distance learning for the next year. The nationwide shuttering of elementary and secondary schools meant that nearly 60 million students were now learning from home and primarily through online means and millions of educators were now teaching remotely, regardless of how they felt about online or distance learning (Masonbrink & Hurley, 2020). Globally, the affected number of students equaled around 90% of all enrolled students (Bozkurt & Sharma, 2020).

Statement of the Problem

Current students in the K-12 public school system are considered “digital natives”. Digital natives are typically defined as students who have been surrounded by computers, cell phones, video games, email, text messaging and social media (Prensky, 2001). These students have been born into the digital age. They do not know a world disconnected from the internet. This connectedness has impacted how they communicate, learn, and socialize. For these students, the “digital” world is no less real than the offline world and about three-fourths of children will have used a computer by the age of five (Prensky, 2001). However, most of these students’ parents and teachers are what are known as “digital immigrants”.

Digital immigrants are those who grew up and lived in a world that was disconnected from the internet (Prensky, 2001). They were born to a world that was not inherently connected, or in the case of older Millennials, that was just beginning to digitize. Teachers and parents have adapted the skills and processes they learned to a new world of communicating, learning and being. However, they carry an “accent” with them that distinguished themselves from digital natives; for example, they might print emails to keep a physical copy (Prensky, 2001). Digital native students have fundamentally different expectations of access and interactions with technology than do their “digital immigrant” parents and teachers (Abrego & Pankake, 2010). This “accent” and the disconnected expectations of what technology can and should be used for between students and teachers causes problems in how the educators teach and how students learn that have only been intensified by the sudden and required shift to online learning.

In one study focusing on United States’ students conducted by Dorn et al. (2020), three statistical models, one that detailed a return to normal operation by Fall of 2020, one that detailed a continuation of partial school closures and emergency e-learning, and one that detailed an

escalation of the COVID-19 pandemic, all showed that there would be significant risk of loss of learning. In the second model that became the actual scenario (schools would have partial closures and online learning), the model estimated that students who remained enrolled could lose three to four months of learning if they receive average remote instruction (Dorn et al., 2020a). Another study conducted in England by the National Foundation for Educational Research, found that 98% of public-school teachers in England reported that their students had fallen behind because of COVID-19 (Sharp et al., 2020). Given information that has looked at all levels of students, how has virtual online learning affected the teaching of and literacy acquisition in K-12?

Purpose of the Study

The purpose of this study is to describe the extent to which literacy in online literacy instruction, specifically at the K-12 level, has evolved over the past two decades. This study also looks at the textual units that appear in the research regarding online instruction for EC-6

Research Questions

1. What are the trends that have developed and evolved in the research on online literacy instruction from 2000-2021?
2. What are some of the contextual occurrences that might account for increases in online literacy learning?
3. What are some of the similarities and differences in the research geared towards practitioners and the research geared for academics and teacher educators?

Significance of the Study

The amount of research into online education has been growing at an exponential rate during the past ten years (Toppin & Toppin, 2016). However, much of that research has been focused on higher education, and to a lesser extent, secondary education. The rapid and forced transition from face-to-face instruction to remote, electronic learning created many challenges for instruction to continue effectively. Current literature points to emergency e-learning being associated with poor online teaching infrastructure, inexperience of educators in teaching in a remote, online way, a gap in available information and resources for students, and a growing complexity in the home environment where working from home and schooling from home compete for resources (Carillo & Flores, 2020).

There is an apparent dearth in the literature regarding literacy and reading online education and there is a need for a comprehensive and solid view of a pedagogy of online education and a pedagogy of emergency e-learning (Carillo & Flores, 2020). This study seeks to identify ways in which the literature designed for academic, teacher preparation educators and institutions and the literature designed for practitioners in the classroom has grown and evolved over the two decades since the turn of the century. Online literacy learning is a unique focus in a field that seeks to find commonality both within the domains of online, distance education with its theoretical background and literacy instruction with its theoretical background. This is especially important given that the largest influence in determining the effectiveness of instruction is teacher quality (Nichols et al., 2005).

Definition of Terms

Academic audience – This refers to the intended audience of the articles analyzed in the content analysis. Articles intended for academics are going to have a strong research presence, and while

some might be more practical in nature, they will largely be defined by theoretical and experimental designs into online literacy learning. These articles are geared towards academics and researchers, including those who are in teacher education, curriculum and instruction, literacy, and learning design fields. As academics' main concerns are typically teaching and research (Gopinath & Hoffman, 1995), articles intended for an academic audience will generally seek to expand the existing research and theory in some way.

Distance education: the learning that normally takes place in a different place from teaching and that will require special specific techniques, pedagogies, technologies, and organizational changes (Moore & Kearsely, 2005, Reyes, 2013)

E-learning/online learning: E-learning and online learning will be used interchangeably in this dissertation. E-learning as a concept unites two main areas, learning and technology. This concept includes learning strategies, methods and content diffusion and connection. E-learning can be defined through a framework that is composed of three main components (people, technologies, and services) that interconnect with learning technologies, instructional strategies, and pedagogical constructs (Aparicio et al., 2016).

Learner autonomy – Learner autonomy is the concept of how autonomous in their learning a student is. There are three domains within learner autonomy: goal setting, execution of learning course, and evaluation of learning outcomes (Moore, 2012). The more autonomous a student is, the less dialogue is needed from the instructor and the higher the structure of the course will be.

Practitioner audience – This refers to the intended audience of articles in the content analysis that focuses on the day-to-day practice of educators within online literacy instruction. These articles are not research geared. Instead, the focus is on practical delivery for instructors and administrators within the online literacy learning communities.

Transactional distance – Transactional distance theory is the theory that helps to define the psychological and pedagogical distance between students and instructors in a distance education environment. First proposed by Moore (1972) in his work with correspondent education, it has since been adopted by other researchers and applied to online instruction (Moore, 2012, Paul et al., 2015, Reyes, 2013, Zhang, 2003).

Assumptions, Limitations, and Delimitations

A limitation of this study is the limited nature of the generalizability of the results of this study. Due to the small number of articles included within this sample ($n = 59$), and due to the nature of a descriptive content analysis (Krippendorff, 2019) any findings and discussions will be limited to the message that was analyzed within this study.

One delimitation of the study is time. Due to the specific nature of the twenty-year time span chosen to investigate online literacy instruction, there might be articles published prior to or subsequently to, this study that will not be addressed. However, one assumption based upon the literature review is that due to online learnings relatively new status of online learning there may not be as much literature in the years prior to 2000 as there are after.

Another delimitation to the study is that only two databases were selected to pull articles from, ERIC and TRC. While both databases are expansive in the number of peer-reviewed journals that are included within the databases, they are not exhaustive and due to the nebulous nature of online, literacy learning, it is possible that there are articles or journals that are not included within either ERIC and TRC and thus would be excluded.

Conclusion

In summary this research study seeks using descriptive content analysis, to determine what the literature does say about online literacy instruction and to illuminate some ways in

which future research can continue to establish and solidify pedagogical theories and practices for teaching literacy in a distance, online environment.

This study is important because the massive shift to online instruction that was caused in the wake at the 2020 outbreak of the COVID-19 pandemic. As society begins to return to/or create a new normal it is likely that online instruction either in a primary or supplementary form will become a more regular part of public education.

CHAPTER II: LITERATURE REVIEW

Theoretical Foundation

This research study operates under the dual-nested theoretical frameworks of systems theory and transactional distance. According to Saba (2012) distance education operates on a theoretical systems perspective and is further enhanced through the transactional distance between student and the online learning instruction.

Systems Theory

The traditional scientific method based on Cartesian ways of viewing reality sought to break down every single problem into as many separate elements as possible so that each element could be viewed, investigated, and researched as independently as possible. This was done in the hopes that in revealing the mechanics and mystery of the minutia, the solution to the problem would present itself (Saba, 2012). However, in fields that are concerned with human behavior, such as education, merely reporting and investigating the isolated parts is not enough to gain a better understanding (Saba, 2012). In fact, the relationships between the different components of a problem are at least as important, if not more so, than understanding each of those parts individually, especially when looking at a problem like human behavior or education or online learning (Saba, 2012).

Systems theory sought to complement the traditional, positivist, scientific paradigm with a kind of thinking that is better suited to the behavioral realms. It began as an attempt to explain social and biological phenomena but grew from those fields to influence the thinking in a myriad of other disciplines (Skyttner, 2005). In the positivist paradigm, scientific research seeks to break things down into their component parts to find the way in which things operate. Systems theory on the other hand posits that this minute breaking down and away from other concepts is flawed

and it is better to view concepts as part of an interconnected whole and that to attempt to view components as separate weakens the analysis (Saba, 2012).

In 1981, Russel Ackoff (as cited in Skyttner, 2005) states that a system is comprised of two or more components that satisfy three conditions: 1) the behavior of each component has an effect on the behavior of the whole; 2) the behavior of the components and their effects on the system as a whole are interdependent; 3) despite the formation of subgroups, all have an effect on the behavior of the system, but none have an independent effect upon the whole.

For the purposes of online education, systems theory relates to the seven systems that comprise any online, distance education interaction (Saba, 2012):

1. Hardware systems – hardware systems refer to the equipment that is necessary to create and distribute instructional materials and to establish and maintain communication between instructor and student and between students.
2. Software systems – software systems refer to the wide array of computer programs that are required for instructional communication as well as synchronous and asynchronous communication among instructors and learners.
3. Telecommunication systems – telecommunication systems include wired and wireless systems that make online learning at a distance possible.
4. Instructional systems – instructional systems are the courses, learning objects, and supportive elements that include the instructional design for each content area, subject, and knowledge domain taught and learned. Instructional systems sphere of influence is where various faculty and staff, such as teachers and administrators, operate.

5. Educational systems – this system represents the collection of courses and ideas that form a discipline. These are usually offered by an academic department or the training division of a government agency. However, this system can also include programs offered for decentralized education opportunities provided by museums, theme parks, businesses, and textbook publishers.
6. Societal systems – this system consists of the government agencies or private organizations that create the legal and financial basis for distance education to function. Laws governing accreditation, telecommunication, and copyright greatly influence this system level as does the allocation of private and public funds provided to distance education.
7. Global systems – global systems are comprised of the network of international institutions (both private and governmental) that make distance education viable on a global scale. (Saba, 2012).

Within distance education, systems theory states that each component within a distance education program should be operated in such a way that it is fully integrated with the development and operation of other components within that distance learning program (Moore & Kearsley, 2006). To maintain the quality of the system, there needs to be continual assessment of all pieces of the system (Moore & Kearsley, 2006)

Transactional Distance

Transactional distance theory was the “first American theory developed as an all-encompassing theory to define the field of distance education in terms of pedagogy” (Reyes, 2013 p. 43) and was first proposed by Moore in 1973 (Moore, 1973 and Saba, 2012).

Prior to transactional distance theory, scholarly research in education was grounded in the assumption that instruction was solely that which took place during the school day and in the classroom setting. It was to establish an identify for those forms of learning and instruction that did not take place in a traditional setting that would lead to distance education and eventually the theory of transactional distance (Moore, 2012). Transactional distance theory would be seminal in that it brought about a paradigm shift in the viewing of distance in distance, correspondent education (Paul et al., 2015). Rather than considering distance and learner to be one of primary geography, or physical separation, Moore described that distance as a psychological separation that is influenced by three pedagogical areas: the first main two, dialogue and structure, are further supported and influenced by autonomy (Moore, 2012 Reyes, 2013)

Transactional distance theory posits that there are two critical variables that are in a relationship with learner autonomy: structure and dialogue (Gokool-Ramdoo, 2008). Structure can be seen as the flexibility or the rigidity of a course's learning objectives, teaching strategies, and evaluative methods and can be used to describe the course's ability to adapt to each student's needs and preferences (Moore, 2012). Content structure requires a level of communication and dialogue between instructor and student, and conversely the amount of dialogue in a course can be affected by the structure of the course (Reyes, 2013). Dialogue is interpersonal in nature and happens only after a course has been designed and the structure has been set (Moore, 2012). For example, the degree of structure and dialogue can vary for many different reasons, including student abilities, technology available to the learning environment, subject matter, and grade level. Learner autonomy as a concept will be discussed at length later in this chapter, but a brief explanation of learner autonomy is how much freedom and autonomy a student has within their learning environment and experience (Black, 2012). The more autonomous a student becomes,

the less structure is needed within the course and the more dialogic options open between student and instructor and students with other students (Black, 2012, Moore, 2003, Saba, 2012). More autonomous students require less dialogue between teacher and student whereas those students who are less autonomous will need higher levels of dialogue (Moore, 2012). The more dialogue increases, the transactional distance decreases and the more structure increases, transactional distance increases as well. Transactional distance as a theory helps to pedagogically explain the nature and purpose of differing programs and courses that are utilized within distance, online learning frameworks and how teachers and students operate and behave in their interactions both with one another and with the courses themselves (Gokool-Ramdoo, 2008).

Transactional distance was originally intended to describe the relationship between dialogue and structure, or as dialogue increases, structure decreases which results in a low transactional distance. The inverse of that relationship is whenever structure increases dialogue decreases and transactional distance increases. A further study conducted by (Zhang, 2003) broke transactional distance into four distinct domains: student to student, student to content, student to teacher, and student to technology. Measuring transactional distance is contested in the literature (Gorsky & Capsi, 2005) therefore the degree of transactional distance was not measured in this study, although the domains were analyzed and accounted for.

Transactional distance is characterized by psychological and communicative spaces that are then mediated by various technologies. This distance is inversely related to structure (student to content; student to technology) and dialogue (student to student; student to teacher) (Gokool-Ramdoo, 2008). Student autonomy is directly tied in with transactional distance; that is, as a student becomes more autonomous, less structure is required in the learning environment. Less

structure within a learning environment can give rise to more dialogic opportunities for students within the learning environment (Gokool-Ramdoo, 2008).

Transactional distance should also be considered when looking at different levels of education for students. For example, adult learners are far more likely to be fully autonomous than early elementary students (Moore, 2012). Due to their life experiences, literacy abilities, and ability to function autonomously, courses that deal with adult learners, such as college students or even upper-level high school students, will require less dialogue between teacher and student and even between students. However, lower-level elementary students are going to be far less autonomous and in the case of a kindergarten classroom, for example, high structure and low dialogue could set those students up for failure (Moore, 2012).

Transactional distance, unlike physical distance, is continually in flux as a technologies and societies change (Paul et al., 2015). As technologies continue to change and grow into more interactive forms of education, including virtual reality, and as society continues to change and become more accepting of online and distance learning methods and ways of collaborating and existing, the measurements and domains that are utilized to measure and assess transactional distance will also need to change and adjust (Paul et al., 2015).

Learner Autonomy

As was discussed in the previous section on transactional distance, learner autonomy is an important component to transactional distance. Learner autonomy as a concept arose out of Humanistic psychology and posited that students have, with varying degrees, the ability to plan their own educational and learning outcome goals, act upon those goals and find the various resources for their study, and to evaluate their own successes within their educational goals (Lewis, 2013, Moore, 2012).

While dialogue and structure are the primary measurements of transactional distance, the autonomous behaviors of the student are what determine the extent of the structure and the dialogue (Gokool-Romdoo, 2008, Moore, 2012, Paul et al., 2015). As students become more autonomous, the dialogue with their instructor and peers will no longer be as important a concept. However, more autonomous students will require more structure to be successful within their learning outcomes and environment which will lead to a higher transactional distance (Moore, 2012). However, less autonomous students will require higher levels of dialogue which means that there will be less structure within the course and so a lower transactional distance.

In 1972, Moore began to classify learner autonomy according to those three domains: goal setting, execution of learning goals and outcomes, and evaluation. This gave rise to eight distinct variations of learner autonomy. At one end of the spectrum was the fully autonomous student, or AAA: autonomy in goal setting, execution, and evaluation, with each letter indicating either “A” autonomy or “N” no autonomy. This student would be fully autonomous in their navigation through the course and learning objectives, as such dialogic distance between student and teacher would be very small, but the structure of the course would need to be highly established (Moore, 2012). At the other end of the spectrum would be NNN, or no autonomy in setting goals, execution of learning objectives and courses, and evaluation of learning. At this level the student has no autonomy and the dialogue between student and teacher is going to need to be very high if the student is to be successful (Moore, 2012). In between these two ends are six further domains of learner autonomy: AAN (autonomy in goal setting and execution, but no goal setting in evaluation); ANA (autonomy in goal setting and evaluation, but no autonomy in execution); ANN (autonomy only in goal setting), this mode of student autonomy is considered uncommon; NAA (autonomy in execution and evaluation but not in goal setting); NNA

(autonomy only in evaluation) considered the most rare instance of learner autonomy; and finally NAN (autonomy only in execution) considered the most common instance of learner autonomy (Moore, 2012).

Students who are older are going to be more autonomous than those students who are younger. It would be expected that a course that includes adult learners, such as graduate and undergraduate students, would be more highly autonomous than those students who are much younger and lack autonomy in their face-to-face learning environments (Derrick, et al., 2010, Moore, 2012).

Distance and Online Education

The history of distance education at the K-12 level in the United States is a long one. The first correspondence course available to K-12 students was introduced by the University of Chicago in 1891 and was conducted by postal mail. From there, radio and video began to be used in correspondence courses before the advent of the internet (Kennedy & Archambault, 2012). Moore and Kearsley (2005) further delineated the history of distance education into three generations, with the first generation sharing two distinct phases. The first generation was that of correspondence or independent study. These were courses that were undertaken by mail and were largely done using essays and other assignments completed by the student. The second generation of distance education began with the appearance of “Open Universities” (Moore & Kearsley, 2005 p. 19) in the 1970s. These open universities applied a total systems approach to distance learning and relied heavily on correspondence, as well as limited use of broadcast and recorded media. These open universities and their broadcast/teleconferencing approach led to the 3rd and current generation of distance learning; that of the networks and multimedia, or online, learning (Moore & Kearsley, 2005).

However, as an area of research, distance education did not initially enjoy much publicity. Correspondence courses had been a facet of education in the United States since the 1800s, however, it was not viewed as its own separate discipline and it was assumed that what was good for the education of students in person would be good for students learning from a distance and so distance education researchers networked with one another through word of mouth, interaction at conferences in related fields and, ironically enough, through correspondence (Black 2012).

Among the first to push for research into distance education were William H Lighty and John S. Noffsinger. Noffsinger eventually would record the first systematic description of American correspondence study in 1926 (Black, 2012). In 1988, the first American Symposium on Research in Distance Education, which brought together fifty American distance education leaders with the goal being the setting of a national research education (Black, 2012). The 1962 Conference on New Media was funded by the U.S. Department of Education and brought together specialists from a wide range of fields including, audio-visual media, programmed instruction, field service bureaus, motion picture, radio and television production and correspondence study (Black, 2012).

An important concept to distance education at this time was that of the independent study. The concept came in two domains; the first domain was that in calling their courses independent study, correspondent educators implied that the student was independent from the instructor in both time and place. The second domain being that which regarded the student's independence, or their ability to make their own decisions in regard to their learning (Moore & Keasley, 2005). This focus on independence set American distance education apart from those kinds of distance learning that were taking place in many foreign areas, where most learning that

takes place at a distance is done with cohort and the pacing through the course learning materials is quite strict (Moore & Keasley, 2005). This concept of student independence within their learning would later give rise to the concept of student autonomy, an important component of online, distance learning as was discussed earlier in this chapter.

Perhaps the first foray into online K-12 education in the United States began with the private Laurel Springs School in 1991, which was followed by the first supplemental virtual school, the Utah Electronic High School, in 1994 (Barbour, 2012). Since the 1990s, virtual schools have risen to become one of the most transformational trends in K-12 education, as well as in higher education (Toppin & Toppin, 2016). In 2005, the US Department of Education issued a study into online distance education in K-12 schools in the United States. This study discovered that 36% of public-school districts and 9% of public schools had students who enrolled in some form of distance education classes during the 2002-2003 fiscal school year (Vasquez & Slocum, 2012). Since this study, enrollment has only increased. In 2006, Michigan became the first state that mandated that each high school student should have a virtual learning experience prior to high school graduation (DiPietro et al., 2010). Other states such as New Mexico, Alabama, and Idaho soon followed suit (Kennedy & Archambault, 2012). During the 2009-2010 school year, enrollment in a full time online or virtual school was at 200,000 students at the K-12 level. By 2012-2013 school year, that number had dramatically increased by 64.7% to 310,000 enrolled students (Toppin & Toppin, 2016).

Today's students are no strangers to the internet and technology in general. These students are "digital natives", they have been born into the digital age, while many of their parents and teachers are "digital immigrants" who have simply adapted their skills and process to a new world of communicating, learning and being. The digital native students have

fundamentally different expectations of access and interactions with technology than their digital immigrant teachers and parents (Abrego & Pankake, 2010). Research conducted on children aged 6-11 found that these children do not view and operate as if their online and offline lives are separated or oppositional but instead a deeply related; one could not be understood without the other. Digital natives' online identities, relationships and spaces are no less real than those encountered offline and about three-fourths of children use a computer by the age of five and a majority use the internet by the age of nine (Abrego & Pankake 2010). However, research has shown that the transition to web-based or online learning can prove problematic for students who are more accustomed to traditional face-to-face learning (Wang and Wu, 2008).

Although online and face-to-face teachers both require similar skill sets, an online educator must also manage and engage students in a virtual environment leading them to be an instructional designer and facilitator as well as teacher (Archambault & Larson, 2015). Among areas to be considered in online education are the schedule, the technology itself, teacher instructional beliefs, behaviors and technological skills, and the curriculum (Abrego & Pankake, 2010).

In their review of the literature on online and blended education in K-12 programs, Pulham and Graham (2018) identified seven global themes in competency domains for both online and blended instruction: pedagogy, management, assessment, technology, instructional design, dispositions, and improvement. The top ranked organizing code in their literature review was the concept of a flexible and personalized pedagogy when instructing in an online or blended environment (Pulham & Graham, 2018).

One issue that has been of concern regarding distance, online education is whether if learners at the K-12 level have similar academic outcomes to those students who are traditionally

educated in the face-to-face learning environment. Research has shown through strong effect sizes that there are benefits to the use of computer assisted instruction and high quality designed technological environments can boost K-12 student learning and achievement, however, most articles and studies in the field show no significant difference between in-person and distance, online learning modalities (Moore, 2012, Russel, 2001)

Moore (2012) identified six areas in which the future of K-12 online, distance education will need to be further discussed and researched. One question that Moore (2012) posited was how government funding for technology has changed the outlook and field of online, distance education? There are several federal grants and funding opportunities that have assisted school districts in expanding and improving their technological infrastructure to better handle online, distance learning. One such funding opportunity that has specifically focused on technological infrastructure for schools is E-Rate which has provided over two billion dollars annually from small changers on cell phone bills. Other federal and state funding has provided teacher training and technology access to many schools.

Some other questions asked by Moore (2012) into the future of K-12 distance education are how have a lack of common standards and metrics made it difficult to evaluate the success, and failures of distance education? Whether the focus of researchers, practitioners, administrators, and governmental bodies should be to focus on expanding educational access to more students and areas or should the focus be on improving the results of the current educational opportunities?

Additionally, can online and blended learning address equity concerns? Speaking historically, Moore (2012) points out that schools have typically used satellite courses (bringing in distance education) for high achieving students and independent study for low-achieving

students. His concern here is that a bimodal distribution of students in online learning can lead to a high-tech version of tracking rather than a way to help underperforming students catch up and graduate (Moore, 2012).

Another question he asks, and that this research hopes to answer in some way, is whether full-time and elementary level online, distance, educational programs are good for students. Research has suggested that online programs are not for everyone, and while some have shown that high school independent study programs have helped some students graduate, they also have shown high levels of drop-out (Moore, 2012). Further, as was discussed earlier in this chapter, students who are at the elementary level typically will require much higher levels of dialogue than other students as they lack the autonomy to be successful in some online learning environments.

Finally, Moore (2012) asks if “online and blended learning programs are a good idea for schools” (p. 569). However, research has shown (Moore, 2012, Paul et al. 2015), that distance and online education has shown to help schools meet individual student needs and that blended programs can build upon existing programs and that blended, rather than fully online or fully in-person, might be the future of K-12 education (Moore, 2012)

Online Teacher Skills and Preparation

The literature on online teaching in K-12 is not as expansive as the number of K-12 online programs might suggest. Much of the literature into online education is focused at the higher, postsecondary, education level (Toppin & Toppin, 2016). To date there are several reviews of the literature in regard to online learning as a whole, but only five comprehensive reviews that have been published in the field of K-12 online learning (Arnesen et al., 2019; Barbour, 2018; Barbour & Reeves, 2009; Cavanaugh et al., 2009; Hasler Waters, et al., 2014;

Rice, 2006). The dominant themes in these literature reviews are that most of the research into K-12 online education has dealt with comparisons between students of online instructional programs with their peers in more traditional face-to-face, brick and mortar instructional environments. However, two other areas of interest for the remaining literature focused, first, on component of teaching and learning online and, secondly, on online learning policy and how it relates to full time online K-12 learning (Hu et al., 2019).

In the most recent review of the literature, Arnesen et al. (2019), found 400 individual authors focused on the scholarship of K-12 online education. However only ten people accounted for half of the scholarship in the field, indicating that K-12 online scholarship is a small research community with a core of dedicated scholars. Still, their review found that the community and field is growing. Of the articles that were analyzed, the largest number came from 2016; further proof of the explosive growth of the field is that 44% of the articles were published in the five years between 2009 and 2014 and 76% of the articles were published in the ten years from 2009 to 2019. They also found that the literature has begun to have a strong focus on theoretical research with it comprising 40% of the total articles reviewed, but they found evidence that attention to inferential and interpretive articles is growing (Arnesen et al., 2019).

After Arnesen et al. (2019), investigated the major themes and articles in a comprehensive review of the literature, they conducted a review of the uncited and low-cited articles that were uncovered in their earlier review of the literature (Arnesen et al., 2020). In this review, Arnesen et al. (2020) found that the most consistent pattern in the majority of these articles was the investigation reported a specific case that focused on a single program or context.

In an earlier review of the literature than Arnesen et al., Toppin and Toppin (2016) found that even though there are numerous handbooks that address the act of teaching online, there was a lack of research into successful teaching in the K-12 area. Much of the existing research is either rooted in traditional face-to-face content areas or is in the postsecondary field where there is an abundance of research into effective online teaching, perhaps because of the particularly avid way in which online education has taken hold at the university and college level.

A study conducted by Archambault and Larson (2015) found fifteen factors that influenced teachers' decision to teach online; however, after coding they were able to characterize the two dominant motivations or influences as "economics" or "innovation". In this same study, the researchers also found ten attributes of effective online K-12 teachers: strong communication skills; organized and prepared; knowledgeable and experienced; highly flexible; motivated; patient and caring; creative and adaptable; strong technology skills; accessible and punctual; and able to connect with students virtually (Archambault & Larson, 2015).

Archambault and Larson (2015) then coded these attributes and found two overlapping categories; a new set of communication skills different from those utilized in face-to-face classrooms and a new set of organizational skills, also different from those required to teach face-to-face. This aligns with what Hawkins et al. (2013) discovered in that while the characteristics of good face-to-face teaching are similar to online education there are new and unique skills that are required for the teacher to thrive in an online instructional environment.

In a study of Michigan virtual schoolteachers, DiPietro et al., (2010) found that online teachers needed to have the freedom to modify the instructional practices and pedagogical techniques that had been used in face-to-face setting into the online environment, again setting up the teacher as an interaction facilitator and instructional designer alongside their teacher role.

This study also found that direct transference of good pedagogical and instructional practices in the face-to-face setting into an online setting was not always applicable to good teaching and that clearer definitions needed to be established regarding what exemplary online instruction was and looked like. However, one direction the study did find was that classroom management in online education was a key component to quality online instruction (DiPietro et al., 2010).

Kennedy and Archambault (2012) also found that while the overall enrollment of K-12 online learning is growing exponentially in the United States, only 1.3% of the respondents into their study into online teacher preparation programs said that they felt the teacher preparedness needs into online education were being met. In the research there is an expressed need for teacher preparation and in most cases online learning is only referenced in the sense that teachers use multimedia and digital resources in their teaching (Kennedy & Archambault, 2012). Perhaps it is because of this lack of teacher preparedness into online teacher education that Toppin and Toppin (2016) found in their review of the literature that full-time online students are struggling to match the achievement levels of their peers in brick-and-mortar schools. If teacher education programs are responsible for preparing the next generation of teachers, it is important that programs begin preparing educators for an ever-growing and ever-expanding field of K-12 online learning (Kennedy & Archambault, 2012).

Roles of Teacher in an Online Environment

Davis et al. (2007) established three roles for the online teacher: teacher, designer, and site facilitator. Teaching remains much the same as it does in face-to-face instruction with the focus on presenting activities, managing pacing, interacting with students and undertaking assessments, grading materials, etc. As a designer, the online educator designs the institutional materials and collaborates with a team of teachers and administrators to construct the online

courses. As a "site" facilitator, the online teacher acts as a local mentor and advocates for the students (Davis et al., 2007, Hawkins et al., 2012).

In a later work, Ferdig et al. (2009) identified eight potential roles for online educators: teacher, course facilitator, instructional designer, local key contact, mentor, technology coordinator and guidance counselor. The teacher role is responsible for teaching students in the online context. As a course facilitator the online teacher provides support for the student within the virtual school program. As an instructional designer the online teacher creates the course using effective learning and design strategies that are centered on online instructor. The role of local key contact is to assist students in registering and accessing the virtual courses, while providing academic tutoring and assistance to the students as a mentor. Online teachers also take on the role of technology coordinator by facilitating tech support for students, teachers, and even other educators. As a guidance counselor, the online teacher acts as an academic adviser to students. And finally, online teachers also take on the role of administrator by providing instructional leadership (Ferdig, 2009 & Hawkins et al., 2012).

DiPietro et al. (2010) found that teachers in an online instructional environment often had to assume a greater managerial and technical role than their face-to-face counterparts, often because they had to work to prevent students from falling through the cracks, whereas brick-and-mortar schools often have robust systems and dedicated staff to deal with similar issues. Perhaps one of the biggest issues plaguing online teachers is the heavy feel of disconnection they experienced, not just with their students, but with their colleagues (Hawkins et al., 2012).

TPACK Framework

To have a conceptual framework with which to investigate technological influences and uses in the classroom. Mishra and Koehler (2006) built upon the Pedagogical Content

Knowledge (PCK) framework but introducing a technological aspect. The Technological, Pedagogy and Content Knowledge (TPACK) is a framework where the relationship between a teacher's knowledge of content, pedagogy and technology and brought together to have effective teaching (Park & Hargis, 2018).

Technological Knowledge (TK) is related to general technology and computer skills, Technological Content Knowledge (TCK) refers to knowledge of the reciprocal relationship between technology and content and Technological Pedagogical Knowledge (TPK) refers to an understanding of how technology and both grant affordances and constraints to specific pedagogical practices (Park & Hargis, 2018). When these areas meet is where effective teaching that utilizes technology is generated.

Effective Reading Instruction

The largest influence in determining the effectiveness of any reading instruction program on the reading ability of students is that of teacher quality (Nichols et al., 2005). There are five areas of importance in reading instruction: phonemic awareness, phonics, fluency, vocabulary, and comprehension (Vasquez & Slocum, 2012). The National Reading Panel in 1997 mandated that reading skills should be taught explicitly and systematically in kindergarten through 4th grade. Systematic instruction is defined here as a plan of instruction that includes a carefully selected set of lessons that are organized into a logical sequence and explicit instruction refers to a systematic method of teaching that places great emphasis on proceeding in small steps, checking for student understanding, and ensuring active participation by all students (Vasquez & Slocum, 2012).

Effective reading teachers make multiple daily decisions in planning and delivering their reading instruction. They adapt their procedures and methods to previously identified student

learning outcomes and student capabilities, often with students of varying capabilities in one class. The effective reading teacher also incorporates theory with practice and is reflective in their practice (Nichols et al., 2005).

In teaching young, early literacy students, explicit instruction is most beneficial because these students need greater guidance and assistance in using the multitude of strategies that are available to them. Indeed, early readers will often struggle with effectively monitoring their own reading due to a lack of awareness of the appropriate strategy that is needed to best monitor and evaluate their own reading comprehension (Nichols et al., 2005).

Digital Reading Instruction

Reading comprehension struggles to keep up with the technological advances in digital media and texts. The usefulness of digital reading environments in advancing student reading comprehension has not been definitively answered. Some studies, (Dalton et al., 2011 Moran et al., 2008) have found that technology and digital reading environments can have a positive effect on student's reading comprehension. And some studies have found that struggling readers benefited from interactive hypermedia lessons (Bosco, 1986, Fletcher, 1989; Hofstetter, 1994; Holliday et al., 1976; Samuels et al., 1974; Sewell & Moore, 1980, as cited in Ortlieb et al., 2014). Enhanced learning can occur when the information is encoded through multiple senses, which could account for why studies have shown that digital reading environments have been effective towards student reading.

Digital texts tend to be infused with pictures and interactive figures and hyperlinks to help facilitate learning (Ortlieb et al., 2014). These digital reading environments assist students in building vocabulary knowledge, achieve and increase reading fluency, improve comprehension, and strengthen their home-school connections (Ortlieb et al., 2014).

A further study conducted by Ortlieb et al. (2014), found that the explicit, digital instruction of comprehension strategies (such as prediction, think aloud, text structure, visual representations of text, summarization, and questioning) helped to lead students toward increases in comprehension levels. In this study, the researchers utilized fourth grade students from three elementary schools in a Midwest metropolitan area with each school having one class selected for the study for a total of 58 students. Scores in reading comprehension were collected and analyzed pre- and post- study. Classes were assigned one of three groups: print based intervention (control); myON digital reading environment; and hybrid intervention (Ortlieb et al., 2014). The study found that digital reading environments, such as the one used in the study, can assist students in their reading comprehension (Ortlieb et al., 2014).

Even though this study was conducted in a face-to-face learning environment, its findings are still relevant to online literacy learning given that most of the literacy instruction and reading that will be taking place in online learning environments will be digital in nature.

CHAPTER III: METHODOLOGY

This study aims to understand literacy in online education, as well as what research shows in trends that have changed since the turn of the century for literacy in online education. This study looks to analyze and compare two research journal databases in the field of literacy and online education, Education Resources Information Center (ERIC) and Teacher Resource Center (TRC) to identify potential themes and ideas in literacy instruction in an online environment.

Purpose of the Study

The purpose of this study is to describe the extent to which literacy instruction in online education has evolved, as well as determine what research shows in trends that have changed and emerged during the past two decades.

Content Analysis

Content analysis is an empirically grounded method that is exploratory in process and predictive in intent (Krippendorff, 2019). Neuendorf (2017) also describes content analysis as a systematic, objective, quantitative analysis of message characteristics that can be coded by human coders or computer aided text analysis.

Content analysts examine data, whether printed matter, images, or sounds, to understand what the messages mean to people, what they enable or prevent and what the purpose of the information conveyed by the messages is (Krippendorff, 2019). Quantitative content analysis is a research technique that follows the rules of science and is perhaps most closely related to the techniques and methodologies used in survey research, only quantitative content analysts use messages rather than humans as its units of data (Neuendorf, 2017).

There are two main forms of quantitative content analysis: one which uses human coders to analyze the messages and Computer Assisted Text Analysis (or CATA) which uses computer processing power to analyze the data and messages (Neuendorf, 2017). For the purposes of this research study, human coders were utilized. The first coder was the primary researcher for this study. The second coder was another Ph.D. holder outside of the field of literacy, so as to approach the coding with as little field knowledge as possible, other than the training undertaken in the methodology section. This helped to focus the coder and prevent them from bringing their own previous conceptions of the field to the coding (Neuendorf, 2017). This second coder also had a quantitative and content analysis background and has conducted content analysis research within their own field of study.

Within quantitative content analysis, there is descriptive content analysis and predictive content analysis. Descriptive content analysis seeks to describe the messages in an archival fashion and analysts are careful to limit their conclusions about the content being studied. Predictive content analysis' primary goal is to predict some outcome or effect of the messages under examination. Through the measurement of key characteristics of the message, the research aims to predict receiver responses to the messages (Neuendorf, 2017). Because the research questions of this study relate to the growth and changes in the literature regarding online literacy education and does not seek to predict or infer audience reaction to the analyzed messages, this study will be a primarily descriptive content analysis.

Krippendorff (2019) established the following framework that is necessary to conduct a content analysis: an available body of text; research question(s); context within which the text will be analyzed and to make sense of the analysis; an analytical construct; inferences aimed at answering the research question(s); and evidence to validate the analysis and conclusions drawn.

Content analysis is further comprised of six interrelated components (Krippendorff 2019)

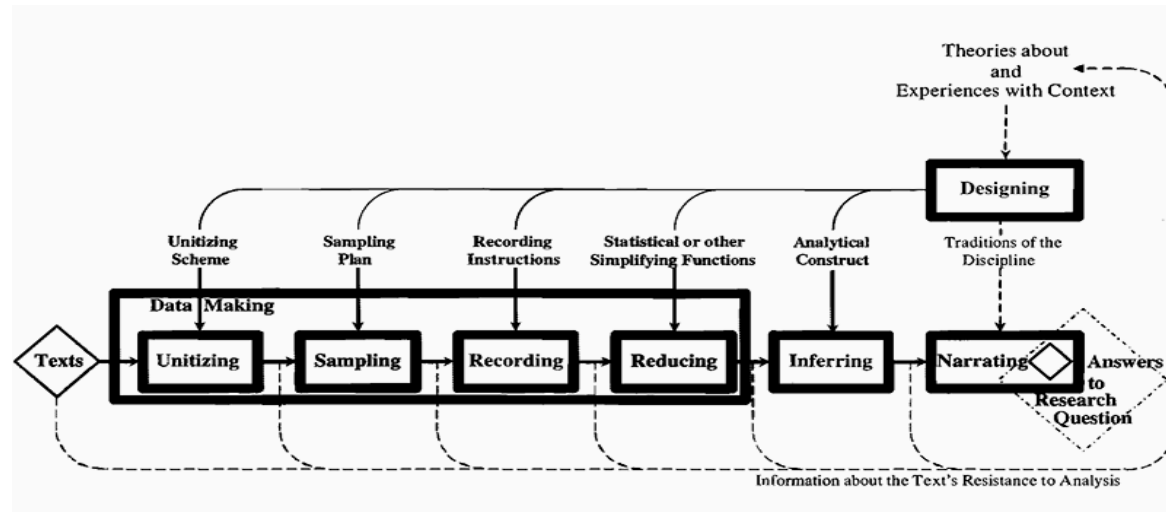
(see Figure 3.1):

1. Unitizing – relied upon definitions of relevant units within the text and systematically distinguishing those that are of interest and pertain to the topic and research questions
2. Sampling – due to the number of units and text present in any given content analysis it is important to limit the units to those that are statistically or conceptually representative of all conceivable units
3. Recording/coding- transforming unedited texts into analyzable representations
4. Reducing – reproducing the diversity of texts by listing types and frequencies for efficient representation
5. Inferring – moving beyond the text by drawing abductive inferences about observed phenomena and justifying these inferences.
6. Narrating – explaining the results of the content analysis in a comprehensible way that allows other researchers to further explore the topic.

One note to content analysis framework is that the design may include iterative repetition of processes until a desired quality is achieved (Krippendorff, 2019).

Figure 3.1

Content Analysis Research Design



Note. Reprinted from *Content Analysis: An Introduction to Its Methodology* (4th ed.) (p.90), by K. Krippendorff, 2019, Sage Publications. Copyright 2019 by Sage Publications, Inc.

This research will utilize a semantical content analysis through designation and sign-vehicle analysis. Krippendorff (2019) defines designation analysis as analysis that focuses on the count, or frequency, with which people, groups, things, or ideas are discussed. Whereas a sign-vehicle analysis provides the count of which textual units are present within the text by counting the number of times a specific word or phrase appears within a text (Krippendorff, 2019).

Research Questions

The research questions for the study are as follows:

- 1) What are the trends that have developed and evolved in the research on distance, online literacy instruction from 2000-2021?
- 2) What are some contextual occurrences that might account for increases in online learning?

- 3) What are some of the similarities and differences in the research geared towards practitioners and the research geared for academics and teacher educators?

Data Corpus

For the purposes of this research study, the data corpus population was all texts identified as relating to reading and literacy instruction and distance or online education that were returned from a search of two research databases: Education Resources Information Center (ERIC) and Teacher Resource Center (TRC).

The reason for the selection of two databases rather than specific journals relating to the field, such as *Distance Education*, is that while online learning and distance education has begun to solidify behind certain publications intended for this field, much of the research being done on reading and reading skills in online or distance education is done in journals that are outside the scope of field specific journals.

ERIC is an Internet based bibliographic and full-text database of education research and information established in 1964 by the United States Department of Education as a central resource for education researchers. Its database contains articles from 1966 to present time.

The TRC is an index of over 260 titles from the most popular teacher and administrator trade journals, periodicals, and books. It provides information on key education topics and is designed for use by K-12 teachers, administrators, and librarians.

This study focused on articles that have been published in these databases from 2000-2021. There are certainly articles that have been published prior to 2000 in the field of online/distance education as it relates to reading and literacy instruction, however, it was decided by the researcher to focus only on those articles published since the turn of the century.

Procedures

Pilot Study

A pilot study was conducted prior to the implementation of the research study to ensure that the data collection methods are viable and to assist in the development of the primary research study's recording/coding, codebook, and textual units. An *a priori* list of textual units and conceptual units was developed based on the researcher's literature review and knowledge of the topic to be utilized in the pilot study.

This pilot study utilized a random sample drawn from the population of articles identified through the search parameters. The sample was analyzed to determine the appropriateness of the coding categories utilized in the codebook as well as the frequency of specific textual units. The results of the analysis stage of the pilot study were used to develop a final comprehensive codebook that was utilized in the final research study (see Appendix A).

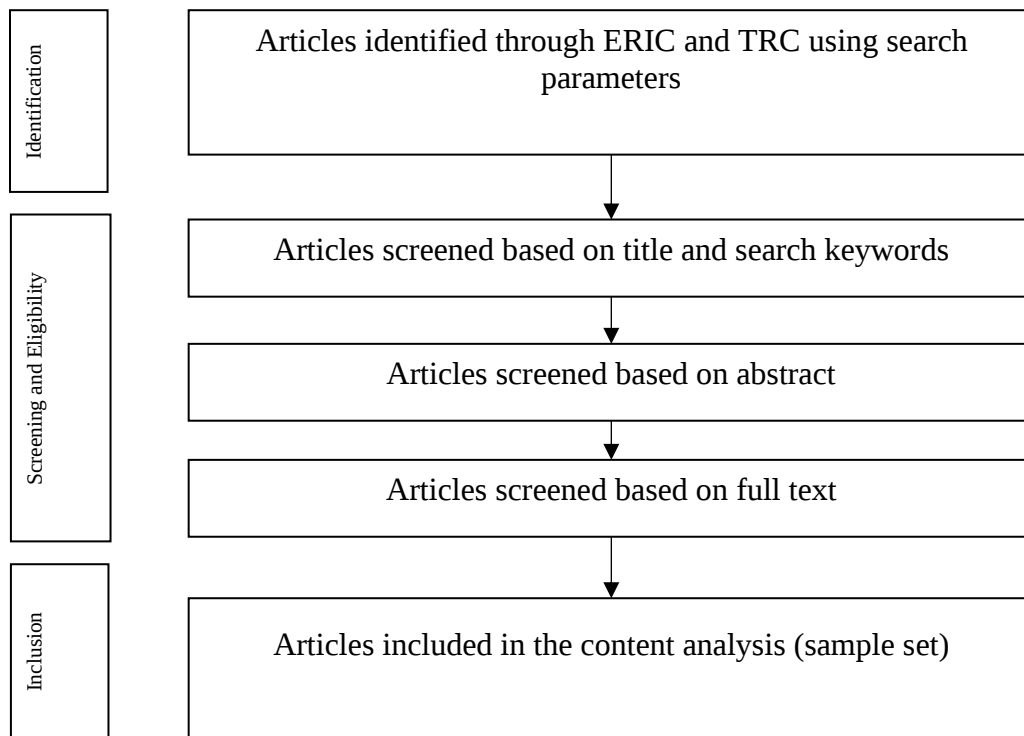
To determine this, descriptive statistics were run to determine the frequency of coding categories represented in the pilot study.

Final Study

This research systematically reviewed literature from the ERIC and TRC research databases utilizing an *a priori* defined research protocol (see Figure 3.2) that was derived from the dual theoretical framework of systems theory and transactional distance theory. This protocol was utilized to develop a method for screening articles, application of inclusion criteria, and delineation of the final study sample. *A priori* protocols are formed or conceived before research to aid a researcher's systematic review. The resulting final studies will then be coded using quantitative content analysis.

Figure 3.2

A Priori Defined Protocol - Identification, Screening, and Inclusion Procedures



Identification and Initial Screen of Studies

Articles from ERIC were obtained by utilizing the general search terms of “Distance education or online education or remote learning” AND “Reading or Reading skills”. The reason for looking at distance education, online education, and remote learning as the initial part of the search terms is that online education grew out of the field of distance education (Black, 2012).

Application of Eligibility Criteria

Determining which texts were utilized in the final content analysis was done in multiple, iterative steps. The first step entailed entering the identified search terms into the ERIC and TRC databases. Search results were evaluated based upon article title, as well as search keywords identified by the article. The second round of application of eligibility criteria was a screening of

the previously identified article's abstracts. Many articles were excluded from this round due to abstracts not aligning with the purposes of this content analysis. Some of the more common reasons were that the articles focused on higher education or professional development that was not tied to online, literacy learning in some way. The third, and final, round of screening was a full text review of the remaining articles. Articles excluded from this round of screening mostly dealt with reading in online programs, or digital reading, but not online, literacy learning. A key difference is that many of the articles excluded in this round were reading programs that the student conducted online, but they were included within an in-person learning environment. While such articles are worthy of investigation, they were outside of the scope of the content analysis and so were excluded from the final analysis of articles. After this third round of screening, whichever articles remained were the ones that were included in the content analysis. The total number of articles identified after the three rounds of screening was 59.

Data Analysis

The content data analysis was conducted using descriptive statistical analysis. Multivariable crosstabulations were utilized to determine associations between variables.

Establishing Reliability and Validity

Validity and reliability are integral to the methodology of a content analysis (Neuendorf, 2017). Without reliability and validity measurements, any given analysis would not meet the requirements of generalizability and, most importantly, replicability (Krippendorff, 2019 Neuendorf, 2017).

Validity refers to the extent with which a measuring procedure accurately measures the researcher's intended concept, rather than unintended concepts (Neuendorf, 2017). Internal validity refers to an agreement between conceptual definition and operational definitions of the

concepts being researched, whereas external validity refers to the analysis' potential replicability, or the ability for other researchers to use the content analysis procedures (codebooks, dictionaries, protocols for message handling, etc) and representativeness of the analyzed sample to conduct future content analysis of the same of similar messages (Neuendorf, 2017).

Internal validity was established through “face validity”, or the extent to which a measure, “on the face of things” (Neuendorf, 2017 pg. 125), seems to represent the desired concept. While simple sounding, these face validity checks are very informative and take a *what you see is what you get* approach. Criterion validity will not be applied as there is no current recognized criteria in the field instead an external expert in the field of literacy will serve as a source of validating evidence for use in the study, through a review of the measures. Semantic validity was established by an external expert. This external expert holds a Ph.D. in the field of literacy as well as extensive practical knowledge and has research experience in the field. Krippendorff (2020) defines semantic validity as the extent to which the categories established by the researcher in a content analysis correspond and agree with the meanings of the texts within the chosen context of the research.

External validity was established through considering the representativeness of the sampled texts, the ecological, or true to life, validity of the content analysis measurement process, and through the full reportage of all content analysis procedures and protocols.

Reliability can be defined as the extent to which measuring procedures would yield consistent results upon subsequent analysis (Neuendorf, 2017). To establish reliability, the researcher selected a random sample of five texts from the articles that were included in the final analysis to be reanalyzed 14 days after the conclusion of the first analysis. Krippendorff's α was used to test reliability and stability and was recorded for each variable. Krippendorff's α attempts

to not only measure the level of observed agreement between coders, as other methods of reliability within content analysis have done (Krippendorff, 2019), but also to account for the amount of chance that might have caused agreement between coders (Antoine et al., 2014).

According to Krippendorff (2019), Krippendorff's α has its own standards for reporting; variables with reliabilities above $\alpha = .800$ will be stable and reliable whereas variables with reliabilities between $\alpha = .667$ and $\alpha = .800$ will be used only for drawing tentative conclusions.

Table 3.1

Krippendorff's α for Journal Articles

Variables	$K\alpha$ 1-5	$K\alpha$ 1-3	$K\alpha$ 4-5
Audience	1	1	1
Methodology	1	1	1
Grade Level	.538	.287	1
Content Area	.470	.285	1
Autonomy	.689	.545	1
Literacy	1	1	1
Focus			
TDistance	.615	.485	1
Systems	.485	.285	.400
Framework	.000	.090	.000

The weakest areas in the first round of coding, according to Kappa's minimum reliability index were Grade Level, Content Area, Autonomy, Systems and Framework. Transactional distance was at the middling level of usable but not generalizable.

After the initial round of coding of the first two articles took place, discussions between coders were utilized to help determine where the breakdown in agreement took place.

The Grade Level variable was adjusted to account for more just K-5, 6-12 or All. Included were a Not Applicable (N/A) code and a Professional Development code. Content Area was further defined to a *primary* content area of focus in the article. Transactional Distance indicated that the definition of the code was not fully appropriate and did not include examples of what constituted each of the four areas of Transactional Distance. Instructional Systems and Theoretical Framework also suffered from a lack of clarity in definition of the code.

The second round of coding revealed higher instances of reliability through Krippendorff's α in all variables except for Instructional Systems and Theoretical Framework. Through further discussion through coders, Instructional Systems was further defined to include further and specific examples of what could be expected for each systematic level of the article. Theoretical Framework, however, was still too broad of a category that required deep knowledge of the field. To that end, the variable was simplified to have only three codes of "explicit", "implicit", or none.

Limitations and Delimitations

A limitation to this study is the relative lack of generalizability of the results. Due to the nature of descriptive content analysis, most generalizations drawn from the findings need to be contained to simply the message, or literature, that was analyzed within the content analysis (Krippendorff, 2019). Additionally, generalization will be limited due to the smaller number of articles identified as the sample within this analysis.

One delimitation regarding this study is time and scope. Due to the selected years of 2000-2021, there might be articles left out of this analysis.

Another delimitation regarding this study is the fact that the sample for the content analysis will only draw from two research databases, ERIC and TRC. This eliminated potential articles that might not have been included in the ERIC and TRC databases. Even though those databases were selected for having the most extensive collections and journals, the highly nebulous and cross-disciplinary nature of the field means some articles could be left out of the body that the sample was drawn from.

Summary

This study is a descriptive quantitative content analysis. The sample for the study was drawn from the ERIC and TRC research databases. Validity and reliability were determined through semantic and face validity checks and through the use of Krippendorff's α coefficient for each variable.

CHAPTER IV: FINDINGS

This chapter will detail the results of the data analysis conducted on the main study that tested for validity, frequency of coding categories and textual units, and to determine any underlying trends that might exist within the data. Descriptive statistics, such as frequency counts, means, and range were used to answer the research questions posited at the beginning of this study. Statistical analysis was run using IBM's SPSS version 27. Frequency counts and cross-tabulations were used to identify potential trends within the coded articles.

Reliability

To test for reliability, the five articles utilized in the pilot study were re-coded after 14 days to determine any changes in coding practices. One article from the data pool ($n = 59$) was selected for every ten articles for a six-article sample. A further article was chosen at random to bring the total number of articles to seven. This, combined with the re-coding of the articles utilized within the pilot study, brought the total number of sampled articles to 12 or roughly 20% of the total data pool. Another coder was used to code these specific articles. This coder holds a Ph.D. in a field outside of literacy to approach the coding with as little outside knowledge as possible, other than the training undertaken in the methodology section. They also have a quantitative and content analysis background and have conducted content analysis research within their own field.

Krippendorff's α ($K\alpha$) was used to determine reliability and validity of the coding categories (see table 4.1). As was discussed in chapter three, Krippendorff's α seeks to determine reliability of the analysis not just through the statistical measurement of observed agreement between coders, but also seeks to factor in random variance in agreement between coders (Krippendorff, 2019). Krippendorff's α also seeks to identify when coders agree but this agreement took place due to random chance rather than actual agreement (Krippendorff, 2019).

Table 4.1

Krippendorff's α

Variables	$K\alpha$	Probability of failure to achieve an alpha of at least alpha min .800
Intended Audience	1.00	0%
Methodology	.865	26.2%
Grade Level	1.00	0%
Content Area	1.00	0%
Learner Autonomy	.855	26.5%
Literacy Focus	.893	26.5%
Transactional	.801	32.3%
Distance		
System Present	.811	33%
Theoretical	.879	25.7%
Framework		

According to Krippendorff (2019), a $K\alpha$ of 1.0 indicated perfect reliability between coders, a reliability greater than .800 is a strong correlation of reliability and the results can be used to generalize, a $K\alpha$ between .67 and .8, is a weaker correlation and thus researchers should be hesitant to generalize from these findings and anything less than .67 is weak to no correlation and at this point the researcher should return to their methods and codebooks to determine where the breakdown in correlation is located.

However, for the purpose of this study, all variables showed strong reliability according to $K\alpha$. Further, SPSS was utilized to bootstrap, or statistically extrapolate the findings of $K\alpha$, to a sample of 10,000 and find the percentage chance that the variable would not reach an alpha of at least .800 (Hayes & Krippendorff, 2007).

As Table 4.1 shows, Krippendorff's α found perfect reliability in the variables of intended audience, grade level, and content area. Methodology reported a $K\alpha$ of .865, theoretical framework reported a $K\alpha$ of .879, literacy instructional focus reported a $K\alpha$ of .893, learner autonomy reported a $K\alpha$ of .855, transactional distance reported a $K\alpha$ of .801, and systems present reported a $K\alpha$ of .811. See Appendix D for further information of the statistical tests performed on each variable.

Research Question 1 – What are some of the trends that have developed and evolved in the research on distance, online literacy instruction from 2000-2021?

To address research question one, each article in this study was coded using several variables that might account for trends in online literacy learning, based on existing research. Items such as transactional distance; intended audience; systems present; and content area were used in coding these articles.

In the sample of articles analyzed, articles intended for academic audiences (76.3%) vastly outnumber the articles intended for practitioners (23.7%) and one trend (see Table 4.2 and Figure 4.1) that has developed over the course of the 21 years that this content analysis took place is that while articles intended for academia have been prevalent throughout the timespan of the analysis (the earliest article being identified in 2004), articles intended for practitioners did not begin to become prevalent until 2014, with only one article being present in 2010. The largest number of articles intended for practitioners was in 2021 with an *n* of 7. However, 2021 also had the largest number of articles intended for academia with an *n* of 10.

Along with audience, the articles were also coded with the grade band specified within the article. Kindergarten through fifth grade comprised 30.5% of the articles, 33.9% with the secondary or 6-12 level, 27.1% with both elementary and secondary, 1.7% with teacher or professional development, and 6.8% dealt with all levels of education.

Figure 4.1

Articles by Intended Audience

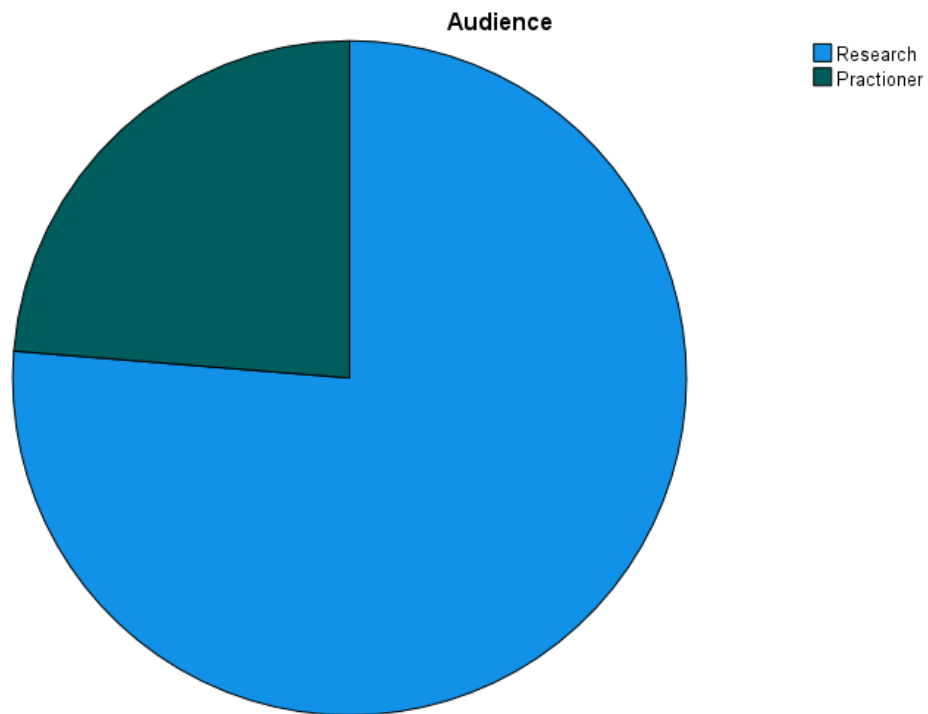


Table 4.2

Intended Audience by Year of Publication

		Audience		
		Research	Practitioner	Total
Year of Publication	2004	1	0	1
	2005	1	0	1
	2007	2	0	2
	2009	2	0	2
	2010	2	1	3
	2011	2	0	2
	2012	4	0	4
	2014	1	2	3
	2015	3	0	3
	2016	4	2	6
	2017	4	1	5
	2018	4	0	4
	2019	3	0	3
	2020	2	1	3
	2021	10	7	17
Total		45	14	59

As Table 4.3 shows, methodologically, 22% of the articles did not have any specified methodology. Of the articles specifying a methodology, 40.7% were quantitative and 32.2% were qualitative, a further 5.1% utilized a mixed methodology of both quantitative and qualitative methods.

Table 4.3

Methodology of Articles

	N	%
None	13	22.0%
Quantitative	24	40.7%
Qualitative	19	32.2%
Mixed	3	5.1%

Only 11.9% of the articles had an explicit theoretical framework, with 35.6% of articles having no theoretical framework and over half of the articles had an implicit theoretical framework. Implicit theoretical frameworks were coded as such when it was obvious that the research had theoretical underpinnings but did not explicitly address these underpinnings in the article. For example, in the article “Reimagining Writing Instruction during Pandemic Times: A First Grade Teacher’s Journey into Creating a Digital Writing Workshop”, by Lowenstien et al., (2021), the article mentions “new definitions for literacy emerged, including new and multiple literacies” (p. 14), but does not explicitly mention the theoretical definitions utilized by New Literacy Theory.

Most of the articles (71.2%) were coded as having a Reading content area focus. Those articles than had no clear content area focus made up 8.5% of the articles while the remaining articles focused on English Language Learners (6.8%), Social Studies (5.1%), Math (5.1%), and Science (3.4%).

Learner autonomy is an important metric in distance and online education. Learner autonomy refers to the extent to which the student has autonomy in various aspects of their educational experiences: goal setting, execution, and evaluation (Moore 1972, 2012). In creating codes for this, each domain of learner autonomy (goal setting, execution, and evaluation), was assigned a letter or either N or A. So, for full learner autonomy, or a student being autonomous in goal setting, execution, and evaluation, the code would be AAA. At the opposite end of the spectrum, where a student has no autonomy in goal setting, execution, and evaluation, the code would be NNN.

Regarding the coded category of Learner Autonomy (see Table 4.4), over half of the articles (55.9%) that were included in this study, did not address the autonomy of the learners. Of those that did address learner autonomy in some way, 32.2% were coded as no autonomy in goal setting, execution, or evaluation (NNN). The second most coded category (8.5%) was NAN, or student autonomy in execution but not goal setting or evaluation. Finally, AAN (autonomy in both goal and execution) and NNA (autonomy in evaluation only) both were represented in only one article each (or 1.7% of the sample).

Table 4.4

Learner Autonomy

	N	%
Not Addressed	33	55.9%
AAN	1	1.7%
NAN	5	8.5%
NNA	1	1.7%
NNN	19	32.2%

Along with learner autonomy, transactional distance (Table 4.5) is another key concept for online education that was analyzed for in the articles. Transactional distance as a concept is the theoretical distance between the learner and four domains: teacher, content, technology, and other learners (Moore, 2012, Paul et al., 2015). In coding this concept, the most frequent occurrence of transactional distance domains in the articles were “student to student and student to teacher” as present in 32.2% of the articles. The second most coded concept for transactional distance was “All”, or when student to teacher, student to content, student to technology, and student to student were all present within the article, at 23.7%. “Student to teacher, student to content, and student to technology” was identified in 11.9% of articles, whereas 10.2% were coded as just “student to content.” A further 3.4% were identified as “student to content, student to student, and student to technology,” 1.7% were identified as “student to teacher and student to content” and 1.7% were identified as “student to teacher, student to student, and student to technology.” However, 15.3% of articles did not identify transactional distance in any way.

Table 4.5

Transactional Distance

	N	%
N/A	9	15.3%
Student to content	6	10.2%
Student to teacher and student to content	1	1.7%
Student to content and student to technology	19	32.2%
Student to teacher, student to content, and student to technology	7	11.9%
Student to content, student to student, student to technology	2	3.4%
Student to teacher, student to student, student to technology	1	1.7%
All	14	23.7%

Another area that was analyzed for in the articles was the presence, or lack thereof, of the seven systems that comprise online learning. These seven systems are: hardware, software, telecommunications, instructional, educational, societal, and global. Theoretically, all systems should be present if online learning is going to be successful (Saba,2012), the identification and analysis of these systems found that not all systems were explicitly present in all of the articles. The most coded system were instructional systems at 93.2% of articles explicitly discussing instructional systems in some way. The least common system explicitly present within the articles was the global system which was present in only 13.6%, or 8 articles. Hardware systems were present in roughly half of the articles or 52.5%, software systems were present in 61% of articles, Telecommunications systems were present in 57.6% of the articles, Educational Systems were present in 54.2% of the articles, and Societal Systems were present in 33.9% of the articles.

Research Question 2 – What are some of the contextual occurrences that might account for increases in online literacy learning?

As can be seen in Table 4.6, publication of articles relating to online literacy learning remained relatively sporadic throughout the date range of this content analysis. However, one of the largest contextual occurrences for online literacy learning articles seems to be the resulting lockdowns and closures of schools related to COVID-19 in 2020. 2020 itself only had three articles that were included in the final sample of articles coded, while 2021 had nearly 29% of the total articles.

Table 4.6

Year of Publication

	N	%
2004	1	1.7%
2005	1	1.7%
2007	2	3.4%
2009	2	3.4%
2010	3	5.1%
2011	2	3.4%
2012	4	6.8%
2014	3	5.1%
2015	3	5.1%
2016	6	10.2%
2017	5	8.5%
2018	4	6.8%

2019	3	5.1%
2020	3	5.1%
2021	17	28.8%

Research Question 3 – What are some of the similarities and differences in the research geared toward practitioners and the research geared toward academics?

To answer this question, cross-tabulations of the variables were run using the intended audience of the article as a dependent variable. Each intended audience variable was cross-tabulated with methodology, learner autonomy, transactional distance, systems present, content area, and literacy instructional focus.

Articles for research had much more methodological variation than articles for practitioners (see Table 4.7). In fact, of the 14 practitioner articles, only three had any methodology and the three practitioner articles were all qualitative.

Table 4.7

Audience and Methodology

		Methodology				
		None	Quantitative	Qualitative	Mixed	Total
Audience	Research	2	24	16	3	45
	Practitioner	11	0	3	0	14
Total		13	24	19	3	59

Research articles were evenly spread out among grade levels, with 12 at the primary level, 18 at the secondary level and 12 at the K-12 level, whereas the practitioner articles had a

higher number of articles (n=6) that focused on the primary grade levels. Only two practitioner articles were focused on the 6-12 secondary level of education and only four addressed all levels of education from K-12.

Table 4.8

Audience and Grade Band

		Grade Band					
		Professional					
		Elementary	Secondary	K-12	Development	All	Total
Audience	Research	12	18	12	1	2	45
	Practitioner	6	2	4	0	2	14
Total		18	20	16	1	4	59

Reading was the most frequently occurring content area for both research (n = 31) and practitioner (n = 11) articles. Articles intended for academic audiences had multiple content areas present. English Language Learning was present in four of the academic articles, along with two science and two social studies focused articles.

Practitioner articles on the other hand, remained focused on Reading as a content area, with only two articles being identified as having no specific content area focus and being generalized for all content areas and one article specifically focusing on social studies.

The academic articles had a wider variety of content areas present than did the practitioner articles (see Table 4.9).

Table 4.9

Content Area by Intended Audience

		Content Area						
		Social					Total	
		Reading	Science	Studies	ELL	Math		All
Research		31	2	2	4	3	3	45
Practitioner		11	0	1	0	0	2	14
Total		42	2	3	4	3	5	59

One of the biggest differences in articles intended for academics and teacher educators versus those articles intended for practitioners is how the concept of learner autonomy was presented in these articles. As can be seen in Table 4.10 articles intended for the practitioner did not include much information regarding Learner Autonomy. Only one article was identified as having Learner Autonomy present as a concept and that Learner Autonomy was NAN (autonomy in execution only) and the other 13 articles were coded as not addressing Learner Autonomy in some way. Meanwhile, articles intended for academics were much more robust across categories within Learner Autonomy. Nearly half of the articles intended for academics was still N/A and the highest incidence of Learner Autonomy identified were cases where the student had no Learner Autonomy in goal setting, execution, or evaluation (NNN). However, there were also four instances of autonomy in execution (NAN), and one instance autonomy in goal setting and execution, but no autonomy in evaluation of (AAN) and one instance of no autonomy in goal setting and execution, but autonomy in evaluation (NNA).

Table 4.10

Learner Autonomy by Intended Audience

		Learner Autonomy					
		N/A	AAN	NAN	NNA	NNN	Total
Audience	Research	20	1	4	1	19	45
	Practitioner	13	0	1	0	0	14
Total		33	1	5	1	19	59

A final area that was important to the question of some of the differences between articles intended for academics and teacher educators and those articles intended for practitioners was the area of transactional distance (see Table 4.11). As was already addressed earlier in this chapter and in chapter two, transactional distance is a very important concept in distance and online instruction in that it determines how much structure and freedom the student has in regard to four categories: the content, the teacher, other students, and the technology utilized in the distance education (Paul et al., 2015).

In articles intended for practitioners, 78.6% of articles coded as having transactional distance present in some form and in articles intended for academics 86.7% were coded as having some form of transactional distance. For practitioner articles, the most common coded transactional distance was “All” or when student to content, student to teacher, student to student, and student to technology, were all present within the article. The next highest coded instance was “student to content and student to technology” with three articles and finally “student to content” with just one article.

Articles intended for academics and with instances of transactional distance were more common, but there were also far more articles intended for academics. The highest instance was

“student to content and student to technology” with 16 articles. The next highest domains were “All” with seven and “student to teacher, student to content, and student to technology” with seven. “Student to content” had five articles identified and “student to content, student to student, and student to technology” had two instances each. Finally, “student to teacher and student to content” and “student to teacher, student to student, and student to technology” both had one instance each.

“Student to technology” in academic audiences accounted for 73.3% of articles and accounted for 71.4% in practitioner articles. Student to content was present in 84.4% academic audiences, while “student to content” was present in 78.6% of articles intended for practitioners. “Student to teacher” was present in 35.6% of academic intended articles and 50% of practitioner articles. Finally, “student to student” was present in 22.2% of articles for academics and present in 50% of the articles intended for practitioners.

As for some of the domains of transactional distance individually, “student to content” was most common, being present in 84.4% of the articles intended for academic audiences, versus 78.6% in those articles intended for practitioners. “Student to technology” was the second most coded instance in articles intended for academic audiences at 73.3% and 71.4% for practitioner focused articles. “Student to teacher” was present in just 35.6% of articles intended for academics and in 50% of articles intended for practitioners. While “student to student” represented the lowest number of academic articles at just 22.2% of the articles analyzed, 50% of the articles intended for practitioners were identified as addressing this construct.

Table 4.11

Transactional Distance and Intended Audience

	Audience	Total
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		Research	Practitioner	
Transactional Distance	N/A	6	3	9
	Student to content	5	1	6
	Student to teacher and student to content	1	0	1
	Student to content and student to technology	16	3	19
	Student to teacher, student to content, and student to technology	7	0	7
	Student to content, student to student, student to technology	2	0	2
	Student to teacher, student to student, student to technology	1	0	1
	All	7	7	14
Total		45	14	59

The systems that were explicitly identified within the articles helped highlight some of the differences and similarities between articles intended for academics and researchers and articles for practitioners. As was discussed earlier in this chapter and in Chapter II of this study,

there are seven systems that comprise any distance, online instruction, and education (Saba, 2012); hardware, software, telecommunications, instructional, educational, societal, and global.

Table 4.12

Systems Present by Intended Audience

		Audience	
		Academic	Practitioner
Systems Present (As a percentage)	Hardware	55.6 %	42.9%
	Software	62.2%	57.1%
	Telecommunications	62.2%	42.9%
	Instructional	91.1%	100%
	Educational	57.8%	42.9%
	Societal	40%	14.3%
	Global	17.8%	0%

Hardware systems were present in 55.6% of academic articles and in 42.9% of articles identified as those intended for practitioners. Software systems were present in 62.2% of academic articles and 57.1% of practitioner articles. Telecommunications was also present in 62.2% of academic articles and 42.9% of articles intended for practitioners. Instructional systems, far and away the most present code in all articles, was present in 91.1% of articles for academics and 100% of articles for practitioners. Educational systems were present in 57.8% of research articles and 42.9% of practitioner articles. Societal systems were present in 40% of

articles intended for academics and 14.3% of articles intended for practitioners. And finally, Global Systems were the least accounted for system for both academic and practitioner articles at just 17.8% of academic articles and not appearing at all in any of the practitioner articles.

A final comparison between articles intended for academics and articles intended for practitioners was in literacy instructional focus. As stated earlier in the chapter, each article was identified as having a specific focus on the major literacy instructional areas: phonics, phonemic awareness, fluency, vocabulary, and writing. A crosstabulation was run to determine some of the similarities and differences regarding these areas for academic and practitioner focused journal articles.

Table 4.13

Literacy Instructional Focus and Intended Audience

		Audience		
		Research	Practitioner	Total
Literacy Instructional Focus	N/A	5	0	5
	Comprehension	25	6	31
	Vocabulary	2	1	3
	Fluency	1	0	1
	Phonemic Awareness	1	0	1
	Writing	6	1	7
	Reading comprehension and vocabulary	0	3	3
	Reading comprehension and writing	0	1	1

Fluency and Vocabulary	1	0	1
Comprehension, Vocabulary, and Fluency	1	2	3
Comprehension, Vocabulary, Fluency, Phonics	1	0	1
Reading Comprehension, Vocabulary, Writing	1	0	1
Reading Comprehension, vocabulary, phonics, writing	1	0	1
Total	45	14	59

As can be seen in Table 4.14, the most identified literacy instructional focus based on both research and practitioner was comprehension with 55.6% of articles for academics focusing solely on comprehension, however, once those domains that included more than one instructional focus are included, comprehension appears in 64.4% of articles intended for academics. On the practitioner side of things, articles that focused solely on comprehension comprised 42.9% of articles and 85.7% of the articles when comprehension with other instructional focus areas are added.

Another point of difference between the two is that only five, or roughly 11%, of the articles intended for academic audiences did not address any specific literacy instructional area,

whereas all the articles intended for practitioners addressed a literacy instructional focus area in some way.

Summary

This chapter addressed the results of the descriptive content analysis of the journal articles utilized in this study. Data were coded and quantitatively analyzed utilizing SPSS version 27. Reliability of coding categories were established using Krippendorff's Alpha to determine at what level the results of coding categories could be generalized. Descriptive statistics were used to answer Research Questions One, Two, and Three.

Results in question one indicated that articles intended for academics outweighed those for practitioners at 76.3% versus 23.7%. Question two showed that 2021 had the largest number of articles for any one year with 29% of the article being published. Question three utilized cross tabulations to show many differences and similarities between articles intended for academics and articles intended for practitioners. Some differences were the ways in which the various articles addressed and were coded for student autonomy, transactional distance, and literacy instructional focus areas.

CHAPTER V: DISCUSSION AND CONCLUSION

The purpose of this descriptive, quantitative content analysis was to describe the extent to which online literacy instruction, specifically at the K-12 level, has grown and changed over the past two decades. This chapter includes a summary of the findings of chapter four and a discussion of the major findings of the content analysis as it relates to peer reviewed journal articles from 2000-2021, as well as implications for both theory and practice within the field. This chapter will conclude with a discussion of some of the limitations of this study, as well as needed future directions

Chapter five contains discussion and future research possibilities to help answer the three research questions that guided this study: 1) What are some of the trends that have developed and evolved in the research for online literacy instruction from 2000-2021; 2) What are some of the contextual occurrences that might account for increases in online literacy learning; and 3) What are some of the similarities and differences in the research geared towards practitioners and the research geared for academics and teacher educators?

Online instruction pulls from many different fields and theories of education, just as in-person instruction does. However, theories of transactional distance and systems theory (Moore, 2012, Saba, 2012) are unique to the field of online instruction and need to be considered when conducting research and practice in online instruction. The study used these theoretical frameworks to develop a priori codes within the content analysis. Also coded were the grade band each article targeted, year of publication, content area addressed, theoretical framework addressed in each article, methodology utilized, level of learner autonomy, as well as the literacy instructional focus area(s).

Summary of Findings

The fifty-nine articles analyzed as part of this descriptive content analysis into online literacy instruction revealed a field that is with many theoretical inconsistencies and missed steps on what truly constitutes online, literacy learning.

As discussed in chapter two, online, literacy learning derives its theoretical foundations not as much from in-person learning as it does from distance, correspondence learning (Moore, 2012). The key foundations of distance learning are transactional distance and systems theory (Moore, 2012, Saba, 2012). These two theoretical frameworks provide the basis for distance learning, of which online, literacy learning is a part.

The two databases from which the articles were pulled, ERIC and TRC, provided a wide range of articles for the content analysis. The number of articles was not particularly high, with a total n of 59, this is not entirely surprising as the field of online, literacy learning is itself a conjunction of two separate fields: online learning and literacy learning. Literacy learning is a well-defined field that enjoys many years of research and theoretical foundations with many offshoots into other disciplines and subfields, distance, online learning is still a new and relatively small field. However, despite the relatively small joining of these two fields into something new, online literacy instruction is an important field.

Online instruction grew in interest when schools shuttered due to the 2020 COVID-19 pandemic. What had once been a niche form of instructional delivery mainly utilized by those who did not fit into the traditional paradigm of face-to-face instruction, suddenly became the primary mode of instruction for millions of children enrolled in public, charter, and private schools. COVID-19 has been one of the major contextual occurrences that seemed to help drive

the literature in the field of online, literacy learning with over a third of all articles sampled within this content analysis coming from the 2020-2021 years.

The pandemic era did not lend itself well to online learning in general and fared worse in literacy instruction (Carillo & Flores, 2020, Dorn et al., 2020a, Dorn et al., 2020b). One reason may be that instruction during the COVID-19 pandemic was not true online learning. It was instead a form of educational survival as teachers and students found themselves thrust into a new mode of teaching and learning for which they were ill prepared.

This descriptive content analysis found that the field of online, literacy instruction was just as splintered as the results of the COVID-19 pandemic teaching showed. Online, distance learning has several domains that are not apparent when viewed through the theoretical lens of in-person pedagogy and instruction. Online literacy instruction is not just in-person instruction conducted through a computer screen. Instructors within online instruction not only need to consider their lesson for the day. They also need to consider the technological abilities of their students, their own technological abilities, and their ability to resolve technological problems when they arise. Additionally, the technological infrastructure of the town and district in which they live and work, the environment in which their students work and the levels of autonomous work that their students can perform must all be considered.

Key to the pedagogy of online, literacy instruction are the concepts of transactional distance and systems theory (Moore, 2012, Saba, 2012). This content analysis found that neither articles intended for academics nor articles intended for practitioners had positioned themselves within these theoretical frameworks that are necessary for online, literacy instruction to be successful. In fact, few of the articles explicitly positioned themselves within theoretical frameworks at all. This might be expected within practitioner articles which are more concerned

with the day-to-day practices of instruction, for so many academic articles to be lacking proper theoretical frameworks to properly understand online, literacy learning is concerning.

Without a strong, consistent, theoretical framework within the articles, the pedagogy of many of the articles analyzed within this content analysis lacks the key concepts of transactional distance and system theory. When those concepts are not being addressed, the type of learning is no longer online instruction, and as can be seen in the results of COVID-19's forced online learning, this kind of literacy learning does not lend itself well to student success (Dorn et al., 2020b).

As was discussed in chapter two of this study, transactional distance is a construct of the relationship between three main variables: dialogue, structure, and student autonomy. Dialogue and structure were analyzed as a dual construct and could be identified and analyzed in most of the articles present, student autonomy, which was analyzed independently, was present far less often and was not an important consideration in many of the articles analyzed within this study.

This has grave implications for the field of online, literacy learning since it is student autonomy that determines the degree to which the other two variables, dialogue, and structure, are present within the learning environment. Much like the hypotenuse of a triangle, student autonomy determines the length and degree of the other two sides of the triangle, in this case dialogue and structure. However, the articles analyzed in this study were only able to identify student autonomy within less than half of the articles and student autonomy other than no autonomy at all was only identified in less than twelve percent of the articles.

Again, this seems to be another instance of in-person learning practices and pedagogies being transposed onto online, literacy learning. Dialogue and structure are present in all forms of instruction (Moore, 2012), whether in-person or online. In an in-person classroom dialogue

between the teacher and the student and between the students is nearly constant, and structure is provided both physically by the layout of the room, and mentally through the pacing of the lesson and the usage of books and pens and papers and technologies to assist the student in their learning endeavors. However, student autonomy becomes less of a pressing issue when conducting in-person learning as the instructor is directly accessible for questions, or to encourage the student if they become distracted or unmotivated. In other words, because dialogue is so high and near instantaneous in an in-person classroom, the construct of student autonomy becomes far less important, as does that of the structure of the learning environment.

In a distance, online learning scenarios however, the instructor is not always directly present, and depending on whether the course is synchronous or asynchronous, the students access to the instructor might be very limited. Thus, a student's autonomous behaviors to access resources, resolve conflicts, identify proper pacing to meet learning goals, and self-evaluation of goal meeting all become vitally important as does the structure in which the student is working (Moore, 2012).

When compared with one another, the disconnect between theory and practice becomes even more apparent. Articles intended for academics, those who work in academia and are primarily concerned with research and teacher preparation, did have a stronger theoretical basis than did the articles intended for practitioners, these theoretical underpinnings were still weak when considered in the light of online, literacy learning. Mentions of the theories that drive online learning were sparse as were mentions of the historical underpinnings online instruction has within the distance education field.

Also, it became apparent through the content analysis that articles intended for academics were focusing largely on one section of K-12 and the articles intended for practitioners were

focusing on another section of K-12 entirely. As it is hoped that theory would drive practice, it is concerning that most of the articles intended for academics and theory generation focused on the secondary level whereas many of the articles intended for practitioners focused on the elementary level. There was some overlap between the two audiences, but it seems that those who are responsible for the generation of new theories and applications of theory are focusing on one end of the age spectrum, while those who are responsible for the implementation of those theories and best practices are focusing on the other end of the spectrum.

This becomes further concerning when attention is again turned towards the construct of student autonomy and how it was present within the different articles intended for each audience. As was discussed earlier within this dissertation, student autonomy is highly influenced by the grade level of the student within the learning environment. Students with high levels of autonomy can determine how to find and allocate different resources to assist them in obtaining their learning goals, having the proper levels of time management to implement those goals, and self-evaluate themselves on whether they are obtaining those goals. Elementary aged students are not going to be able to handle as much autonomy as students in middle school or high school. Although autonomy can be taught, elementary aged students will still require more assistance from the instructor and thus much higher levels of dialogue. As the dialogue would be higher in these learning experiences, the need for structure would be lower and thus there would be less transactional distance between student and teacher.

Articles intended for practitioners focused heavily on elementary aged students. These same articles fell behind articles intended for academics in identifying and discussing the levels of student autonomy. Furthermore, structural, transactional distance domains, or those dealing with students' interactions with content and with technology, were more heavily identified

within both articles intended for academics and articles intended for practitioners. As discussed earlier, when structure is higher within the online literacy learning environment there is going to be more student autonomy within the learning environment. As many of the articles intended for both practitioners and academic focused on structure as the main domain of transactional distance, this would indicate that the students' autonomous behaviors would be quite high. However, this is a problem since proper amounts of student autonomy is based on each student individually and is highly subjective. An environment with high levels of student autonomy might be beneficial for one student who does not need the dialogue but will be detrimental to another.

Elementary aged students require dialogue with their instructors and with one another, especially in literacy learning. As has been documented in much research (Nichols et al., 2005, Vasquez & Slocum, 2012), the “learning to read” years are pivotal to the future success of students in school once they transition to “reading to learn” and reading within a variety of different content areas. Articles that focus on elementary aged students that are influenced by good distance, online and literacy theory would be expected to have higher focuses on the dialogic domains of transactional distance and lower levels of student autonomy, however, that was not what this content analysis found. Instead, this content analysis found that when it came to structural domains and student autonomy, the articles for academics, which largely focused on older students, and articles for practitioners, which largely focused on younger students, were similar in their handling of these constructs. Articles intended for both audiences had much higher instances of “student to content” and “student to technology” transactional distance domains, or those related to the structure of the learning environment.

Another area of concern, especially regarding the elementary level articles, is that there was very little focus on phonics and phonemic awareness across all articles. The highest recorded instance of literacy instructional focus was comprehension, as might be expected with upper elementary, middle, and high school students, there are other areas that are considered vital to high quality literacy instruction. Especially at the lower level, “learning to read” phase of a student’s instruction in literacy. Paramount among those areas for younger students who are “learning to read” are phonics and phonemic awareness. These two areas provide the foundation upon which all other literacy instruction is based (Nichols et al., 2005). They were only present in two academic articles and were not present in any practitioner articles. Again, articles for academics and articles for practitioners seem to be focusing on areas that do not match up with good theory and practice within online literacy learning for different ages and ability levels.

From a systems theory perspective, both articles intended for academics and articles intended for practitioners take a myopic view of the systems that are present within online literacy learning. There is a heavy focus on the instructional systems within an online learning environment, as would be expected. In fact, none of the articles for practitioners neglected this system and over 90% of the articles for academics discussed it in some way. And as the instructional system is the system in which direct learning and instruction takes place, it should be focused on heavily.

However, systems theory holds that all components of the system are important, and all components of the system interact with one another interdependently (Saba, 2012). And the more complicated a system is, the more it is reliant upon and influenced by its various components. For example, in an in-person literacy classroom, if the hardware system (the computers and projectors in the room) suddenly begin to fail, the teacher can transition to lower technology

options, such as a white board or pen and paper. However, in a distance, online literacy learning environment that hardware system becomes vital to the learning process and if it begins to fail, there is no recovery. The hardware and software are just as important in a distance, online literacy learning environment as is the building in which an in-person class takes place. If there are issues within the telecommunications system within an online learning environment it is equivalent to there being a problem with the electricity at an in-person school.

Even higher-level systems such as educational, societal, and global systems can have severe impacts upon online literacy learning. For example, the educational system is the collection of courses and ideas that form a discipline and is usually determined by an academic department or the training division of a government agency (Saba, 2012). The very system that articles intended for academics arose out of is the educational system, and it is only present within roughly half of the articles. Societal and global systems largely account for the funding and expansion of various technologies and telecommunications infrastructure that help make online literacy learning a possibility. Those systems were not often considered or discussed in over half of the literature works analyzed in this study. And according to research by Dorn et al. (2020b), this is having an impact on those communities who most benefit from the continued expansion of technologies and communications. That is, lower socio-economic and communities of color are the ones being most negatively impacted by the loss of learning being brought about due to the mandatory nature of online learning due to COVID-19 in the previous two years.

Online literacy learning has the potential to transform literacy learning in education. The ability to maintain scope and sequence of instruction in the case of a large-scale emergency such as the COVID-19 pandemic, or even smaller, regionalized, and localized emergencies such as hurricanes, forest fires, or just plain bad weather days, is something that can provide educators

and policymakers with other avenues other than simply closing down school. Further, as it always has, online literacy learning can provide additional educational resources and opportunities to those students who, for whatever reason are not getting their educational needs fulfilled in a traditional face-to-face learning environment.

However, as it stands, the splintered nature of online literacy learning makes it difficult to find a way forward. As current events are illuminating (Dorn et al, 2020b), simply transposing good practices for face-to-face learning onto online learning environments is not a recipe for success. Online literacy learning will need to find its place within both the literature and theory of distance, online learning and literacy learning as a subfield of both. The rest of this chapter will be a discussion on some of the implications for theory and practice brought about through this content analysis, as well as future directions for further research into this blossoming field.

Implications of Findings

As a descriptive content analysis, this study sought to determine what some of the trends and patterns are, and have been, when it comes to online literacy learning. This section of chapter five will detail some of the implications for theory and practice that have arisen from the content analysis.

For Theory

Theory for online learning is one that is rife with misunderstandings and a confusion under which field it falls. Online learning is widely held to be an extension of distance education by those scholars who write in the field (Barbour, 2012, Black 2012, Toppin and Toppin, 2016, Abrego & Pankake, 2010). Yet because of the highly nebulous nature of the field, it often is subsumed within other fields, including the fields of curriculum, instruction, and literacy

learning, that can dilute the theoretical underpinnings of the research and context being conducted.

The lack of theoretical consistency within the literature has implications for the field since a lack of theoretical consistency can cause dilution of, or misconceptions on the research being conducted within that field.

According to Moore (2012), transactional distance is a measure of the dialogue in an online learning environment and the structure in an online learning environment with the amount of student autonomous behaviors. As structure increases, dialogue decreases, and the transactional distance is lengthened, and students become more autonomous. The results of this content analysis would seem to show that much of the transactional distance is focused on structure which would mean that the levels of transactional distances within the research are quite high and that levels of dialogic domains are low. However, as the research covers both lower and upper grades within K-12 education, the current research that is generating theory within online literacy learning is primarily favoring upper grades.

A disconnect between the literature intended for academic audiences and practitioner audiences ties directly into another concept that which has key implications for the theory of online literacy learning which is student autonomy. Student autonomy as a concept is the level of autonomy that a student can be expected to have while working their way through an instructional program. As was discussed earlier in the study, there are three main categories to codifying student autonomy: goal setting, execution, and evaluation. However, as student autonomy increases, it can be expected that there are higher levels of structure within the course work and thus a high transactional distance. For example, when a course is fully asynchronous

with little dialogue between the student and instructor, or between the student and other students, one would expect to be high amounts of student autonomy.

Further it would be expected that as the grade levels of the students rise, their levels of autonomy would also rise. However, this content analysis found that there were low amounts of student autonomy when it was addressed at all. Theoretically, this should translate to low transactional distance where there are high levels of dialogue between the student and the teacher and perhaps the student to other students. This disparity indicates that there are some issues within the theory, or lack of theoretical framework, that is driving much of the research into online, literacy learning.

Another implication for systems theory that underpins online literacy learning is that there were very few instances of higher-level systems being explicitly addressed and discussed in the journal articles that were included within the study. As was discussed earlier in this chapter, the most coded systems for the articles were those that dealt directly with the instruction at the campus level.

The academic based articles had higher instances than the practitioner articles did of coding of systems like societal and global, those percentages were still less than half. A key tenet of systems theory is that every part of the system has an interdependent effect upon the system and that without one section of that system, the whole system will begin to break down. There is a decided lack of investigation and acknowledgement of these parts of the system that seem furthest from the classroom, yet still have impacts upon the instruction that is taking place within that classroom.

There are many theories (Black, 2012, Moore, 2012, Saba, 2012) that drive effective online instruction and many theories that drive effective literacy learning (Nichols et al., 2005).

However, in the cross section where these two fields overlap there seems to be a lack of theoretical consistency.

For Practice

This descriptive content analysis sought to delineate some of the differences and similarities between articles intended for academic, heavy on theoretical underpinnings, and articles intended for practitioners, with a heavy focus on practical application of theory, there are several implications for practice that have arisen.

One such implication is a general failure to address learner autonomy that was identified within the practitioner articles. Learner autonomy was only addressed once in the fourteen articles identified as being addressed to practitioners. This lack of addressing learner autonomy has large implications for the practice of online, literacy learning. The autonomy of the student is one of paramount importance in online learning and is tied directly into the transactional distance between the student and their learning environment. The higher the student autonomy, the higher the structure of the learning environment, the less dialogue taking place between student and instructor, and the higher the transactional distance.

If articles being published for practitioners are not touching on that autonomy and instead are treating students in an online learning environment as they are treated in an in-person learning environment there are going to be great implications for the quality of the learning that the student will be able to obtain. It is also going to have implications for the design of the literacy learning environment in which those students are learning.

In addition to the lack of learner autonomy within practitioner articles, there needs to be greater investigation into the differences in learner autonomy according to grade level. The practitioner articles focused more heavily on the kindergarten through fifth grade levels of online

literacy instruction, there should be focus on the upper grades (sixth through twelfth grade) as well. Additionally, there needs to be more research done specifically addressing the differing amounts of student autonomy at those levels.

As was discussed in chapter two and earlier in this chapter, student autonomy should match the needs and interests of the students being served by the educational framework (Moore, 2012). Therefore, at the lower grades there should be investigations into the levels of student autonomy and if students are being given too much autonomy at that level. Similarly, students at the upper levels of education, middle and high school, should be given more autonomy as they become more autonomous learners.

Another implication for practice, is that there needs to be a greater focus on the other systems that make up online learning. As was discussed earlier in this chapter, the systems within online literacy learning are very interdependent upon one another. An issue in one system, such as telecommunication, can have devastating impacts upon the instructional system. Every article intended for practitioners focused on instructional systems, no other system was present in more than 50% of the practitioner articles. The implication for this is that perhaps more so than in-person learning, online learning, and subsequently online literacy learning, are highly dependent upon other systems, especially those that dictate the hardware, telecommunications, and software utilized to conduct online learning. As was touched upon in chapter one and chapter two, online instructors are required to wear several different hats, including how to navigate often complex information technologies. To deny the impact these systems have will have implications for online literacy research and the instruction that follows that research.

Limitations of Study

One limitation of this study was time, both in the time frame identified within the study and in the time to conduct the research. The two decades identified aligned with previous literature and comprehensive reviews of the literature as the most prolific period of publication relating to online education (Toppin and Toppin, 2016, Abrego & Pankake, 2010), there could have been further literature published regarding online, literacy learning that was missed because of the date range focus of 2020-2021. Also, given that there is often a delay in literature published, there could be more literature published within the current year (2022) that has been missed by the researcher.

Another limitation is in the selection of just two databases from which to extract articles. ERIC and TRC were selected as the most expansive singular databases into research and practitioner-based articles, there are journals that are not included within those databases. Further, because of the highly nebulous nature of online education and the research done on it, there could have been several articles published that were not included within the research databases. Also excluded from the final sample were all literature that was not from peer-reviewed journals, such as reports, conference proceedings, yearbooks, trade books, and other publications on research and practice into online literacy learning.

Future Direction

Perhaps the singular most important area into which future research should be conducted is regarding the theoretical underpinnings of online literacy learning. The field, as it stands according to this descriptive content analysis, suffers from a lack of theoretical consistency. This is perhaps attributable to the fact that literacy instruction has often operated separate from distance, online education, and the lack of theoretical consistency present within the content

analysis arises from the forcing together of these two fields without attention to the history of both fields.

Another area for future research is the correlation between transactional distance and learner autonomy. This content analysis found that there were high levels of structural domains within the transactional distance, but a lack of discussion made it difficult to determine which levels of student autonomy were also present. The two concepts theoretically are related (Moore, 2012, Black, 2012), this content analysis revealed that perhaps the connection does not always play out in research and in practice. However, this is not meant to dispute the previous findings of researchers in the field such as Moore (2012) and Black (2012), but rather highlights the lack of theoretical consistency within online literacy as a field.

More research needs to be done in student autonomy at the differing levels of education. Primary education students will need more dialogue with the instructor to be successful in their learning (Moore, 2012), and thus will have less instances of student autonomy within their online literacy learning experiences. However, because of a lack of focus on student autonomy in much of the primary level articles, there is a current gap in how student autonomy in online literacy instruction plays out at this level. Further research by educators and policy makers on how to make better use of structure, students can be taught how to become more autonomous. As structure increases so can the autonomous behaviors of the student.

Another area of future direction in research is student autonomy in students who need additional assistance in their education. As was discussed in chapter 2, Moore (2012) questioned whether online, distance instruction would be serving students who were falling behind using independent study? There are benefits to these forms of online, literacy instruction, more

research needs to be done on whether the highly autonomous nature of independent online learning is best suited for those students who are already struggling academically.

This content analysis identified many articles that focused on reading comprehension in online, literacy learning there needs to be more research into the other areas of effective literacy instruction. Perhaps the most important area in which future research needs to be conducted is in the early elementary aged years where “learning to read” plays a bigger role than “reading to learn”. In these years, literacy instruction focuses on high impact areas of phonics and phonemic awareness (Vasquez & Slocum, 2012).

What is more, these early literacy experiences in school are vital to a student's continued success with reading and their values of reading (Vasquez & Slocum, 2012). This research into early elementary literacy will also need to include components on student autonomy, as students at this young age will likely have very low levels of student autonomy and so will need higher levels of teacher-student levels of dialogue.

Further research needs to be conducted into the various systems components of online education and their effect upon online, literacy learning. As was discussed in chapter two, systems theory holds that all components of a system interact with one another interdependently and influence the system. One weak spot that this content analysis identified is in the discussion and inclusion of the macro-level systems that could affect online, literacy learning. Specifically, at the societal and global levels of the system. Research into this area could look at societal and global efforts to create more beneficial infrastructure related to online literacy learning.

There was only one major, contextual occurrence that coincided with the rise in scholarship, namely COVID-19, there are perhaps other smaller contextual occurrences that have been uncovered in the research attached to this study.

Finally, research should look to the ways that online literacy instruction can better serve students, educators, policy makers, and society in the face of another widespread emergency shuttering of schools like COVID-19. It would be foolish to ignore the mistakes and success realized to this global emergency.

Summary

This descriptive content analysis provides a view of the blossoming field of online literacy learning through the analysis of 59 articles obtained through a thorough search of two educational research databases: ERIC and TRC. The trends that developed and evolved in articles intended for academics and practitioners were examined as well as some of the contextual occurrences of these articles. Articles intended for academics and practitioners were examined for trends in content and contextual occurrences. The results of the content analysis revealed that there is lack of theoretical consistency within the research being produced for both academics and practitioners. Further, there is a distinct lack of the transactional distance and systems theories, both of which underpin and are vital to the success of online literacy learning. The research also revealed that student autonomy as a construct needs to be more defined and researched within the literature, as it is one the pivotal variables in determining the transactional distance a student has with online literacy learning experience. There is also a lack of research on literacy instructional focus areas other than comprehension that needs to be further investigated to provide a well-rounded approach to online literacy learning that can serve all students regardless of ability. The findings within this descriptive content analysis are important for educators, researchers, policymakers, and educational stakeholders. As a new field, online literacy learning currently needs a stronger foundation in the theoretical understandings of both online learning and literacy learning and needs to develop better practices based upon those

theories to help improve the online literacy instruction that students are receiving. As it stands, online literacy learning is being dominated by the older, and more deeply researched, fields of literacy and instruction, and is neglecting the online instruction component. If online literacy learning is to be successful it will need to define itself through researchers and practitioners working to be craft a theory that suits both fields. The research will need to become unified behind similar theoretical frameworks that can then be used to determine and disseminated best practices in online literacy instruction to practitioners.

REFERENCES

- Abrego, J. and Pankake, A. (2010). PK-12 virtual schools: the challenges and roles of school leaders. *Educational Considerations*. 37.2, 7-13.
- Antoine, J. Y., Villaneau, J., & Lefevre, A. (2014). Weighted Krippendorff's alpha is a more reliable metrics for multi-coders ordinal annotations: experimental studies on emotion, opinion and coreference annotation. In EACL 2014.
- Aparicio, M., Bacao, F. and Oliveira, T. (2016). An e-learning theoretical framework. *Journal of Educational Technology and Society*. 19:1, 292-307.
- Archambault, L., & Larson, J. (2015). Pioneering the digital age of instruction: Learning from and about K-12 online teachers. *Journal of Online Learning Research*, 1(1), 49-83.
- Arnesen, K. T., Hveem, J., Short, C. R., West, R., & Barbour, M. K. (2019). K-12 online learning journal articles: Trends from two decades of scholarship. *Distance Education*, 40(1), 32–53.
- Arnesen, L. Walters, S., Borup, J., and Barbour, M.K. (2020). Irrelevant, overlooked, or lost? Trends in 20 years of uncited and low-cited k-12 online learning articles. *Online Learning Journal* 24:2, 187 - 206.
- Barbour, M. (2012). Review of overcoming the governance challenge in K-12 online learning. National Education Policy Center, Wayne State University.
- Barbour, M. (2018). A history of K–12 distance, online, and blended learning worldwide. In K. Kennedy & R. Ferdig (Eds.), *Handbook of research on K–12 online and blended learning* (2nd ed., pp. 21–40). Pittsburgh, PA: ETC Press.
- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers and Education*, 52(2), 402–416.

- Black, L.M. (2012) A history of scholarship. In M.G. Moore (Ed.) *Handbook of Distance Education* (3rd Ed., pp. 3-20). Taylor and Francis.
- Bosco, J. (1986). An analysis of evaluations of interactive video. *Educational technology*, 26(5), 7-17.
- Bozkurt, A. and Sharma, A. (2020). Emergency remote teaching in a time of global crisis due to Coronavrius pandemic. *Asian Journal of Distance Education*. 15:1, i-vii.
- Cavanaugh, C., Barbour, M. K., & Clark, T. (2009). Research and practice in K-12 online learning: A review of open access literature. *International Review of Research in Open and Distance Learning*, 10(1).
- Carrillo C. & Flores, M.A. (2020). COVID-19 and teacher education: a literature review of online teaching and learning practices. *European Journal of Teacher Education*.
- Creswell, J.W. and Creswell, J.D. (2018). *Research design: qualitative, quantitative, and mixed methods approaches*. 5th Ed. Sage.
- Davis, N., Roblyer, M. D., Charania, A., Ferdig, R., Harms, C., Compton, L. K. L.(2007). Illustrating the “virtual” in virtual schooling: Challenges and strategies for creating real tools to prepare virtual teachers. *Internet and Higher Education*, 10(1), 27-39.
- Dalton, B., Proctor, C. P., Uccelli, P., Mo, E., & Snow, C. E. (2011). Designing for diversity: The role of reading strategies and interactive vocabulary in a digital reading environment for fifth-grade monolingual English and bilingual students. *Journal of Literacy Research*, 43(1), 68-100.
- Derrick, M. G., Ponton, M. K., & Carr, P. B. (2005). A preliminary analysis of learner autonomy in online and face-to-face settings. *International Journal of Self-directed Learning*, 2(1), 62-71.

- DiPietro, M., Ferdig, R., Black, E., & Presto, M. (2010). Best practices in teaching K-12 online: lessons learned from Michigan virtual school teachers. *Journal of Interactive Online Learning*, 9(3), 10–35.
- Dorn, E., Hancock, B. Sarakatsannis, J. and Viruleg, E. (2020). COVID-19 and student learning in the United States: the hurt could last a lifetime. McKinsey & Company.
- Dorn, E., Hancock, B. Sarakatsannis, J. and Viruleg, E. (2020 - December). COVID-19 and learning loss—disparities grow and students need help. McKinsey & Company.
- Ferdig, R. E., Cavanaugh, C., DiPietro, M., Black, E. W., & Dawson, K. (2009). Virtual schooling standards and best practices for teacher education. *Journal of Technology and Teacher Education*, 17(4), 479-503.
- Fletcher, D. (1989). The effectiveness and cost of interactive videodisc instruction. *Machine-Mediated Learning*, 3, 361–385.
- Gokool-Ramdoo, S. (2008). Beyond the theoretical impasse: Extending the applications of transactional distance theory. *International Review of Research in Open and Distributed Learning*, 9(3), 1-17.
- Gopinath, C., & Hoffman, R. C. (1995). The relevance of strategy research: Practitioner and academic viewpoints. *Journal of Management Studies*, 32(5).
- Gorsky, P., & Caspi, A. (2005). A critical analysis of transactional distance theory. *Quarterly review of distance education*, 6(1).
- Hasler Waters, L., Barbour, M. K., & Menchaca, M. P. (2014). The nature of online charter schools: Evolution and emerging concerns. *Journal of Educational Technology & Society*, 17(4), 379-389.

- Hawkins, A., Graham, C. R., Sudweeks, R. R., & Barbour, M. K. (2013). Academic performance, course completion rates, and student perception of the quality and frequency of interaction in a virtual high school. *Distance Education*, 34(1), 64-83.
- Hayes, A. F., & Krippendorff, K. (2007). Answering the call for a standard reliability measure for coding data. *Communication Methods and Measures*, 1, 77-89.
- Hofstetter, F. T. (1994). Is multimedia the next literacy. *Educators' Tech Exchange*, 2(3), 6-13.
- Holliday, W. G. (1977). Differential cognitive and affective responses to flow diagrams in science. *Journal of Research in Science Teaching*, 14(2), 129-138.
- Hu, M., Arnesen, K., Barbour, M.K., Leary, H. (2019). A newcomer's lens: a look at k-12 online and blended learning in the journal of online learning research. *Journal of Online Learning Research* 5:2, 123-144.
- Kennedy, K., & Archambault, L. (2012). Offering pre-service teachers field experiences in K- 12 online learning: a national survey of teacher education programs. *Journal of Teacher Education*, 63(3), 185–200.
- Kessels, J. P., & Korthagen, F. A. (1996). The relationship between theory and practice: Back to the classics. *Educational Researcher*, 25(3), 17-22.
- Krippendorff, K. (2019). *Content analysis: An introduction to its methodology* (4th ed.). Thousand Oaks, CA: Sage.
- Masonbrink, A.R. and Hurley, E. (2020) Advocating for children during the COVID-19 school closures. *Pediatrics: Official Journal of the American Academy of Pediatrics*. 146, 1-4.
- Mishra, P., & Koehler, M.J, (2006) Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. In *Teachers College Record*, 108 (6), 1017–1054.

- Moran, J., Ferdig, R. E., Pearson, P. D., Wardrop, J., & Blomeyer, R. L. (2008). Technology and reading performance in the middle-school grades: A metaanalysis with recommendations for policy and practice. *Journal of Literacy Research*, 40(1), 6–58.
- Murraci, R., Chow, D., and Murphy, J. (2020). *Coronavirus timeline: tracking the critical moments of COVID-19*. <https://www.nbcnews.com/health/health-news/coronavirus-timeline-tracking-critical-moments-covid-19-n1154341>.
- Neuendorf, K. A. (2017). *The content analysis guidebook*. Sage.
- Lewis, T. (2013). Between the social and the selfish: Learner autonomy in online environments. *Innovation in Language Learning and Teaching*, 7(3), 198-212.
- Moore, M. G. (1972). Learner autonomy: The second dimension of independent learning. *Convergence*, 5(2), 76–88.
- Moore, M.G. (2012) The theory of transactional distance. In M.G. Moore (Ed.) *Handbook of Distance Education* (3rd Ed., pp. 66-85). Taylor and Francis.
- Moore, M. G., & Kearsley, G. (2005). *Distance education: A systems view*. Belmont, CA: Thomson Wadsworth.
- Nichols, W.D., Zellner, L.J., Rupley, W.H., Willson, V.K., Kim, Y., Mergen, S., and Young, C.A. (2005). What affects instructional choice? Profiles of K-2 teachers' use of reading institutional strategies and methods. *Journal of Literacy Research*. 37.4, 437-458.
- Ortlieb, E., Sargent, S., and Moreland, M. (2014). Evaluating the efficacy of using a digital reading environment to improve reading comprehension within a reading clinic. *Reading Psychology*. 35, 397-421.

- Park, E.K. and Hargis, J. (2018). New perspective on TPACK framework in the context of early childhood education: the "A" stands for affective. *International Journal for the Scholarship of Teaching and Learning*. 12:2, Article 17.
- Paul, R. C., Swart, W., Zhang, A. M., & MacLeod, K. R. (2015). Revisiting Zhang's scale of transactional distance: Refinement and validation using structural equation modeling. *Distance Education*, 36(3), 364-382.
- Prensky, M. (2001). Digital natives, digital immigrants - part 1.
- Pulham, E. and Graham, C.R. (2018) Comparing k-12 online and blended teaching competencies: a literature review. *Distance Education*. 39:3, 411-432.
- Rice, K. L. (2006). A comprehensive look at distance education in the K-12 context. *Journal of Research on Technology in Education*, 38(4), 425-448.
- Reyes, J. A. (2013). Transactional distance theory: is it here to stay?. *Distance Learning*, 10(3), 43.
- Russell, T. L. (2001). The no significant difference phenomenon. Montgomery, AL: IDECC.
- Saba, F. (2012). Building the future: a theoretical perspective. In M.G. Moore (Ed.) *Handbook of Distance Education* (3rd Ed., pp. 49-65). Taylor and Francis.
- Samuels, S. J., Biesbrock, E., & Terry, P. R. (1974). The Effect of Pictures on Children's Attitudes Toward Presented Stories¹. *The Journal of Educational Research*, 67(6), 243-246.
- Sewell, E. H., & Moore, R. L. (1980). Cartoon embellishments in informative presentations. *ECTJ*, 28(1), 39-46.

- Sharp, C., Nelson, J., Lucas, M., Julius, J., McCrone, T. and Sims, D. (2020). Schools' responses to Covid-19: The challenges facing schools and pupils in September 2020. Slough: NFER.
- Skyttner, L. (2005). General systems theory: problems, perspectives, practice. World scientific.
- Toppin, I.N. and Toppin, S.M. (2016). Virtual schools: the changing landscape of K-12 education in the U.S. *Educational and Informational Technologies*. 21, 1571-1581.
- Vasquez, E. and Slocum, T.A. (2012). Evaluation of synchronous online tutoring for students at risk of reading failure. *Exceptional Children*. 78:2, 221-235.
- Wang and Wu (2008). The role of feedback and self-efficacy on web-based learning: the social cognitive perspective. *Computers and Education*. 53, 1589-1598.
- Zhang, A. M. (2003). *Transactional distance in web-based college learning environments: Toward measurement and theory construction*. Virginia Commonwealth University.

APPENDIX A

CODEBOOK

Study Characteristics

- Name of Journal:
- Research or
Practitioner Journal:
- Year of Publication:
- Title of Study:
- Theoretical or
Practical:
- Theoretical
Framework (if one is
present):
- Methodology (if
present):
- Grade band of focus:
 - Elementary:
 - Secondary:
 - Elementary and
Secondary:

- Teacher Development/Pre-Service:
- Not specified:

Coding Categories

Systems Present:

- Hardware Systems
- Software Systems
- Telecommunications
- Instructional Systems
- Educational Systems
- Social Systems
- Global Systems

Transactional Distance (Paul et al., 2022)

- Distance between Student and Teacher
- Distance between Student and Content
- Distance Between Student and Student
- Distance between Student and Technology

Learner Autonomy

- AAA – Fully autonomous in goals, evaluation and execution.
- ANA – Autonomous in setting goals and evaluations

- AAN – Autonomy is setting goals and execution
- NAN – Autonomy only in execution (most common structure present)
- NNA – Autonomy only in evaluation (most rare)
- NAA – Autonomy in execution and evaluation
- NNN – No autonomy

Literacy Instructional Focus

- Phonemic Awareness
- Phonics
- Fluency
- Comprehension
- Vocabulary

Content Area Focus:

- Math
- Reading
- Science
- Social Studies
- Other

RESEARCH MATRIX

Journal:	
Title:	

Author(s):	
Year published:	
Topic:	
Type of Publication (Academic or Practical)	
Research design:	
Literacy based teaching strategies:	
Grade level:	
Systems Present:	
Learner Autonomy in Study	

AAA – Students are fully autonomous	
ANA – Students are autonomous in setting goals and evaluation	
AAN – Autonomy only in setting goals	
NAN – Autonomy only in execution	
NNA – Autonomy only in evaluation	

NAA – Autonomy in Execution and Evaluation	
NNN-Students have no autonomy	

APPENDIX B

BIBLIOGRAPHY OF ARTICLES IN THE CONTENT ANALYSIS

- Akhtar, N., & Khan, M. A. (2019). Factors Affecting Reading Interests of Distance Learners. *Pakistan Journal of Distance and Online Learning*, 5(1).
- Alves, K. D., & Romig, J. E. (2021). Virtual Reading Lessons for Upper Elementary Students with Learning Disabilities. *Intervention in School and Clinic*, 57(2).
- Barkand, J., & Kush, J. (2009). GEARS a 3D virtual learning environment and virtual social and educational world used in online secondary schools. *Electronic Journal of e-learning*, 7(3).
- Bayar, A., & Karaduman, H. A. (2021). Views of High School Students on the Effectiveness of "English" Course by Means of a Distance Education. *Shanlax International Journal of Education*, 9(4).
- Beauchamp, G., Joyce-Gibbons, A., Mc Naughton, J., Young, N., & Crick, T. (2019). Exploring synchronous, remote collaborative interaction between learners using multi-touch tables and video conferencing in UK primary schools. *British Journal of Educational Technology*, 50(6).
- Blanchard, J., Mclain, L. & Bartshe, P. (2004). The web and reading instruction. *Computer in Schools*. 21(3-4).
- Brunskill, P., & Strong, J. Z. (2021). Scaffolding adolescents' critical thinking and disciplinary literacy skills in an in-person and virtual humanities class. *Middle School Journal*, 52(4).
- Burgess, M., & Caverly, D. C. (2010). Techtalk: An Online Framework for Developmental Literacy. *Journal of Developmental Education*, 34(1).

- Carpenter, D., Kafer, K., Reeser, K., & Shafer, S. (2015). Evaluating the performance of online K-12 schools. *International Journal on E-Learning*, 14(4).
- Chan, E., & Unsworth, L. (2011). Image–language interaction in online reading environments: challenges for students’ reading comprehension. *The Australian Educational Researcher*, 38(2).
- Chen, X., & Greenwood, K. (2021). Supporting Young Students’ Word Study During the COVID-19 Quarantine: ABC Scavenger Hunt. *The Reading Teacher*, 74(6).
- Cheung, A., Mak, B., Abrami, P., Wade, A., & Lysenko, L. (2016). The effectiveness of the ABRACADABRA (ABRA) web-based literacy program on primary school students in Hong Kong. *Journal of Interactive Learning Research*, 27(3).
- Collin, R., & Street, B. V. (2014). Ideology and interaction: Debating determinisms in literacy studies. *Reading Research Quarterly*, 49(3).
- Coiro, J. (2012). The new literacies of online reading comprehension: Future directions. *The Educational Forum*, 76(4).
- Fehr, C. N., Davison, M. L., Graves, M. F., Sales, G. C., Seipel, B., & Sekhran-Sharma, S. (2012). The effects of individualized, online vocabulary instruction on picture vocabulary scores: An efficacy study. *Computer Assisted Language Learning*, 25(1).
- Fisher, D., & Frey, N. (2020). Lessons from pandemic teaching for content area learning. *The Reading Teacher*, 74(3).
- Fisher, D., & Frey, N. (2021). A Distance Learning Instructional Framework for Early Literacy. *The Reading Teacher*, 74(6).
- Flanagan, S., & Morgan, J. J. (2021). Ensuring Access to Online Learning for All Students Through Universal Design for Learning. *TEACHING Exceptional Children*, 53(6).

- Fox, R. F., & Lannin, A. A. (2007). Belly up to the pond: Teaching teachers creative nonfiction in an online class. *Writing Instructor*.
- Frazier, M., & Lewis, A. (2021). " Sick, O Sick!": Zooming with Shakespeare during the Pandemic. *English Journal*, 110(4).
- Furlong, L., Serry, T., Bridgman, K., & Erickson, S. (2021). An evidence-based synthesis of instructional reading and spelling procedures using telepractice: A rapid review in the context of COVID-19. *International Journal of Language & Communication Disorders*, 56(3).
- Gül, D., & Costu, B. (2021, April). To what extent do teachers of gifted students identify inner and intermodal relations in knowledge representation?. *Elementary School Forum*. 8(1).
- Harris-Packer, J. D., & Ségol, G. (2015). An empirical evaluation of distance learning's effectiveness in the K–12 setting. *American Journal of Distance Education*, 29(1).
- Houge, T. T., & Geier, C. (2009). Delivering one-to-one tutoring in literacy via videoconferencing. *Journal of Adolescent & Adult Literacy*, 53(2).
- Kaban, A. L. (2021). EFL Students' Personalized Reading Experiences and Its Influence on Engagement and Online Presences. *Shanlax International Journal of Education*, 9(4).
- Kim, K., Clarianay, R. B., & Kim, Y. (2019). Automatic representation of knowledge structure: Enhancing learning through knowledge structure reflection in an online course. *Educational Technology Research and Development*, 67(1).
- Kirby, D., & Sharpe, D. (2010). High school students in the new learning environment: a profile of distance e-learners. *Turkish Online Journal of Educational Technology*, 9(1).

- Kurucova, Z., Medová, J., & Tírpakova, A. (2018). The effect of different online education modes on the English language learning of media studies students. *Cogent Education*, 5(1).
- Loewenstein, M., Slay, L. E., & Morton, T. (2021). Reimagining writing instruction during pandemic times: A first grade teacher's journey creating a digital writing workshop. *Texas Association for Literacy Education Yearbook*, 8.
- Lu, Y. L., & Gordon, C. (2007). Reading takes you places: A study of a web-based summer reading program. *School Library Media Research*, 10.
- Meyer, B. J., Wijekumar, K., Middlemiss, W., Higley, K., Lei, P. W., Meier, C., & Spielvogel, J. (2010). Web-based tutoring of the structure strategy with or without elaborated feedback or choice for fifth-and seventh-grade readers. *Reading Research Quarterly*, 45(1).
- Naumann, J., & Salmerón, L. (2016). Does navigation always predict performance? Effects of navigation on digital reading are moderated by comprehension skills. *International Review of Research in Open and Distributed Learning*, 17(1).
- Nichols, M. (2020). Reading and studying on the screen: An overview of literature towards good learning design practice. *Journal of Open, Flexible and Distance Learning*, 24(1).
- Omheni, N., Kalboussi, A., Mazhoud, O., & Kacem, A. H. (2017). Recognition of learner's personality traits through digital annotations in distance learning. *International Journal of Distance Education Technologies (IJDET)*, 15(1).
- Pang, L., & Jen, C. C. (2018). Inclusive dyslexia-friendly collaborative online learning environment: Malaysia case study. *Education and Information Technologies*, 23(3).
- Potts, J. A., & Potts, S. (2017). Is your gifted child ready for online learning?. *Gifted Child Today*, 40(4).

- Rao, K., Torres, C., & Smith, S. J. (2021). Digital tools and UDL-based instructional strategies to support students with disabilities online. *Journal of Special Education Technology*, 36(2).
- Rice, M. F., & Deshler, D. D. (2018). Too many words, too little support: Vocabulary instruction in online earth science courses. *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT)*, 13(2).
- Rice, M., & Greer, D. (2014). Helping students with disabilities comprehend text in online coursework. *Teaching Exceptional Children*, 46(5), 93-101.
- Schneider, D., Chambers, A., Mather, N., Bauschatz, R., Bauer, M., & Doan, L. (2016). The effects of an ICT-based reading intervention on students' achievement in grade two. *Reading Psychology*, 37(5), 793-831.
- Sonnenschein, S., Stites, M., & Ross, A. (2021). Home learning environments for young children in the US during COVID-19. *Early Education and Development*, 32(6).
- Severino, L., Petrovich, M., Mercanti-Anthony, S., & Fischer, S. (2021). Using a design thinking approach for an asynchronous learning platform during COVID-19. *IAFOR Journal of Education*, 9(2), 145-162.
- Silva, W. A., Carchedi, L. C., Junior, J. G., de Souza, J. V., Barrere, E., & de Souza, J. F. (2021). A Framework for Large-Scale Automatic Fluency Assessment. *International Journal of Distance Education Technologies (IJDET)*, 19(3).
- Terrazas-Arellanes, F., Strycker, L., Walden, E., & Gallard, A. (2017). Teaching with technology: Applications of collaborative online learning units to improve 21st century skills for all. *Journal of Computers in Mathematics and Science Teaching*, 36(4).

- Tyler, E. J., Hughes, J. C., Beverley, M., & Hastings, R. P. (2015). Improving early reading skills for beginning readers using an online programme as supplementary instruction. *European Journal of Psychology of Education*, 30(3).
- Vasquez III, E., Forbush, D. E., Mason, L. L., Lockwood, A. R., & Gleed, L. (2011). Delivery and evaluation of synchronous online reading tutoring to students at-risk of reading failure. *Rural Special Education Quarterly*, 30(3).
- Vasquez, E., & Serianni, B. A. (2012). Research and practice in distance education for K-12 students with disabilities. *Rural Special Education Quarterly*, 31(4).
- Vasquez III, E., & Slocum, T. A. (2012). Evaluation of synchronous online tutoring for students at risk of reading failure. *Exceptional Children*, 78(2).
- Vasquez III, E., & Straub, C. (2016). Online writing instruction for children with disabilities: A review of the empirical literature. *Reading & Writing Quarterly*, 32(1), 81-100.
- Waddell, S. (2017). Examining the relationship between virtual school size and student achievement. *Quarterly Review of Distance Education*. 18(4).
- Washburn, E. K., Beach, K. D., Gesel, S. A., Billingsley, M., Howard, C., King, B., & Vintinner, J. P. (2021). Zooming into summer: Key takeaways from a virtual summer reading intervention. *The Reading Teacher*, 74(6).
- Wang, X., Mayer, R. E., Zhou, P., & Lin, L. (2020). Benefits of interactive graphic organizers in online learning: Evidence for generative learning theory. *Journal of Educational Psychology*.
- Wijekumar, K. K., Meyer, B. J., & Lei, P. (2017). Web-based text structure strategy instruction improves seventh graders' content area reading comprehension. *Journal of Educational Psychology*, 109(6), 741.

- Woods, K., & Bliss, K. (2016). Facilitating successful online discussions. *Journal of Effective Teaching*, 16(2).
- Woodward, L., & Cho, B. Y. (2020). How Students' Beliefs About Knowledge Matter in Multiple-Source Reading Online: Implications for Classroom Instruction. *Journal of Adolescent & Adult Literacy*, 64(2).
- Wyse, A. E., Stickney, E. M., Butz, D., Beckler, A., & Close, C. N. (2020). The potential impact of COVID-19 on student learning and how schools can respond. *Educational Measurement: Issues and Practice*, 39(3).
- Xu, B. (2018). Constructing English reading and writing learning and teaching mode for senior high hearing-impaired students and teachers on the basis of new media. *English Language Teaching*, 11(10).
- Yang, J. C., Ko, H. W., & Chung, I. L. (2005). Web-based interactive writing environment: Development and evaluation. *Journal of Educational Technology & Society*, 8(2), 214-229.

APPENDIX C

EXAMPLE OF CONTENT ANALYSIS CODING FORM

Home Learning Environments for Young Children in the U.S. During COVID-19	Sommerschein, S.; Stiles, M.; Ross, A.	Early Education and Development	2021 (32.6)	Research (1)	Implicit (2)	Quantitative (1)	K-5 (1)	Reading	N/A	Student to content; student to technology	telecommunications; instructional; societal	Reading Comprehension
Remaking Writing Instruction during Pandemic Times: A First Grade Teacher's Journey Creating A Digital Writing Workshop	Loewenstein, M.; Slay, L.E.; Morton, T.	Texas Association for Literacy Education Yearbook	2021 Research (1)	2021 Research (1)	Implicit (2)	Qualitative (2)	K-5 (1)	Reading	NNN(7)	Student to content; student to teacher; student to technology	software; hardware; telecommunications; instructional	Writing

APPENDIX D

STATISTICAL RESULTS OF KRIPPENDORF'S α

Intended Audience

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observrs	Pairs
Nominal	1.0000	1.0000	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
.9000	.0000
.8000	.0000
.7000	.0000
.6700	.0000
.6000	.0000
.5000	.0000

Number of bootstrap samples:

10000

Methodology

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observrs	Pairs
Nominal	.8655	.5965	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
.9000	.6505
.8000	.2617
.7000	.0720
.6700	.0720
.6000	.0720
.5000	.0140

Number of bootstrap samples:

10000

Theoretical Framework

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observers	Pairs
Nominal	.8796	.6387	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
.9000	.6437
.8000	.2574
.7000	.0729
.6700	.0729
.6000	.0154
.5000	.0018

Number of bootstrap samples:

10000

Grade Band

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observrs	Pairs
Nominal	1.0000	1.0000	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
.9000	.0000
.8000	.0000
.7000	.0000
.6700	.0000
.6000	.0000
.5000	.0000

Content Area

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observrs	Pairs
Nominal	1.0000	1.0000	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
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.9000 .0000

.8000 .0000

.7000 .0000

.6700 .0000

.6000 .0000

.5000 .0000

Number of bootstrap samples:

10000

Learner Autonomy

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observrs	Pairs
Nominal	.8553	.5660	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
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.9000	.6443
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.8000	.2651
-------	-------

.7000	.0720
-------	-------

.6700	.0720
-------	-------

.6000	.0720
-------	-------

.5000	.0151
-------	-------

Number of bootstrap samples:

10000

Transactional Distance

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observrs	Pairs
Nominal	.8017	.5043	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
.9000	.6245
.8000	.3230
.7000	.1249
.6700	.1249
.6000	.0345
.5000	.0084

Number of bootstrap samples:

10000

Systems Present

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observrs	Pairs
Nominal	.8115	.5287	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
.9000	.6255

.8000	.3309
.7000	.1296
.6700	.1296
.6000	.0403
.5000	.0090

Number of bootstrap samples:

10000

Literacy Instructional Focus

Run MATRIX procedure:

Krippendorff's Alpha Reliability Estimate

	Alpha	LL95%CI	UL95%CI	Units	Observers	Pairs
Nominal	.8930	.6791	1.0000	12.0000	2.0000	12.0000

Probability (q) of failure to achieve an alpha of at least alphamin:

alphamin	q
.9000	.6413
.8000	.2650
.7000	.0731
.6700	.0149
.6000	.0149
.5000	.0022

Number of bootstrap samples:

10000