EDUCATORS USING I-READY TO PREPARE STUDENTS FOR ONLINE MATHEMATICS ASSESSMENTS

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ABSTRACT

The shift to online assessments had led educators to revise their instructional practices to prepare students for an online testing setting. This research consists of third grade teachers' responses to usage of i-Ready, an online mathematics tool, and how they are utilizing the features within it. The purpose of this mixed methods survey study is to identify common trends and feelings seen when educators are using i-Ready's resources to enhance students' preparedness for online assessments. Educators teaching third grade within a rural district in a southeastern state completed a survey with quantitative and qualitative questions where descriptive statistics were used to identify common tendencies and open coding. This helped determine common themes and emerging concepts. I selected participants then they participated in a follow-up interview about using i-Ready for mathematics instruction. This research is designed to yield results that might help educators and school district administrators determine effective uses of i-Ready and effective adaptations of instruction when preparing students for online assessments.

Keywords*:* i-Ready*,* digital tools, mathematics, third grade, integration, elementary, online assessments, case study

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CHAPTER 1: INTRODUCTION

The integration of digital tools within mathematics instruction is becoming more prominent. Multiple digital platforms are being integrated into instruction resulting in the change of practice by educators. Online learning tools such as i-Ready math allow teachers to adapt their instruction based on multiple factors. Educators can identify patterns seen with their students that can affect the way they present instruction (Christopoulos et al., 2020). Increased usage of online learning led to more online assessments. When teachers adapted their instruction by integrating more technology, they found that students' success grew, and the technological aspects played a key role throughout instruction (Han et al., 2019). Effective implementation of mathematics digital tools provides multiple opportunities for students to express and demonstrate their understanding of concepts.

With the increase of digital tools seen in the classroom, expectations for educators to implement these correctly and effectively are causing educators to alter the way they present instruction. Increased emphasis on integrating digital tools can provide educators with more opportunities to differentiate and enhance students' learning experiences (Martin et al., 2022). Considering the tool, i-Ready math, educators have access to multiple features such as instructional groupings, practice skills, recommended lessons, teacher toolbox, and prerequisite skills. These features are meant to enhance instructional practices and prepare students for final, summative assessments. Although educators increased their ability to use digital tools, expectations, and requirements to integrate digital tools may not be fulfilled due to various opinions, lack of knowledge, and pressure resulting in varied alterations. The focus on preparing students for online assessments alters points of emphasis regarding students' learning experiences.

Formative and summative assessments are shifting to an online approach. Teachers are facing more pressure regarding final examinations or summative assessments and preparing students for them (Martin et al., 2022). The methods that educators use can be influenced by colleagues, administrators, and district policies (Martin et al., 2016). Educators are given platforms to use within their instruction with the intent to increase students' achievement in the classroom. Upon completion of my first year of teaching in the spring of 2023, I experienced the increased pressure of providing classroom instruction online, due to the latest requirements of online assessments. Opinions circulated in the building regarding how to implement digital tools, effective practices, and what the benefits of online instruction are. Shute and Rahimi (2017) conducted research on the multiple approaches to integrating digital tools within mathematics instruction in elementary and secondary schools, listing **"**problem-based learning, project-based learning, collaborative learning and game-based learning" and how they "demonstrate a shift from a teacher-centered to a more learner-centered approach" (Shute & Rahimi, 2017, p. 4). Exploring methods of how educators provide online instruction using i-Ready math to prepare students for online assessments could establish effective practices regarding appropriate approaches and the benefits of including online platforms within instruction.

Adjusting instructional practices can promote effective learning practices to better meet the needs of students. i-Ready math has features of identifying students needing extra support by placing them in instructional groups and identifying skills and subskills they should be practicing. Educators can enhance learning experiences using i-Ready math and the features included within this tool. The expectations of integrating technology may create barriers, some being in the teachers' control and others out of their control (O'Neal et al., 2017). Adequate preparation for teachers and students regarding this method of teaching sometimes falls short.

The connection between how educators view and implement digital tools in mathematics instruction and how educators use the features within the platform to better meet the needs of their students and how this impacts the success in online assessments calls for more research. There is little research regarding i-Ready math and how educators are using this digital tool to prepare students for online assessments.

By exploring the usages of i-Ready math when preparing third-grade students for online assessments might allow educators, district members, and administrators to identify best practice when trying to increase students' preparedness for online assessments. Increased knowledge of effective practices can alter how educators use i-Ready math to better meet students' needs and increase understanding of the "why" in how we present instruction.

The purpose of this mixed methods research study is to explore how third-grade teachers in K-5, public schools are using i-Ready math while considering expectations/requirements that prepare students for online assessments. The research question for this study is: How are teachers using i-Ready math to prepare third grade students for online math assessments?

CHAPTER 2: LITERATURE REVIEW

Ideas regarding the integration of technology into mathematics instruction continue to evolve as new developments are created. Multiple factors are considered when determining next steps for technology integration. This review will focus on conceptual frameworks, perceptions, and benefits of online assessments aligned with the use of instructional tools in elementary school classrooms. These themes reveal models of teaching, perceptions of using digital tools, implementing digital tools effectively, implementing digital tools in a mathematics setting, and online tools for assessments. Although the literature focuses on considerations and perceptions of technology integrated into mathematics instruction, the focus narrows to a specific digital tool, i-Ready math.

Theoretical Framework

Multiple frameworks are used to enhance instruction in an elementary classroom setting. Implementing models to guide instructional development increases the likelihood of educators meeting standard and district expectations. The Technological Pedagogical Content Knowledge (TPACK) Model is a commonly used model for effective implementation of multiple instructional practices with technological tools (Crompton, 2015).

Using models and guidelines to create effective instruction increases engagement levels, understanding, and critical thinking strategies among students. Many instructional elements are intertwined when focusing on the TPACK Model. Usage of the TPACK Model highlights key components of effective instructional practices by integrating concepts relevant to teachers. TPACK serves as a guide for educators seeking to create effective instruction and is useful to researchers and school administrators when evaluating teaching strategies and implementations (Polly et al., 2021). Musgrove and others (2021) researched the impact of educators using the

TPACK model with a new 1:1 access to computers in an elementary school. From this research, researchers found that using a 1:1 device policy was beneficial and provided additional support for students and educators.

Technological Pedagogical Content Knowledge (TPACK) Model

With advances in technology, digital tools have become more prominent in an educational setting to create impactful learning environments. The TPACK Model consists of multiple concepts integrated. Creating effective instruction for students relies on the teacher's knowledge of these components and the intertwining of these concepts (i.e., technology, pedagogy, content; Mishra & Koehler, 2006). The components integrated together, technological with content knowledge (TCK), pedagogical with content knowledge (PCK), and technological with pedagogical knowledge (TPK), demonstrate the considerations when implementing technology into teaching practice (Crompton, 2015).

Many factors are considered when implementing digital tools into an educational setting. The advancements of technology are ever changing resulting in educators' requirements to adapt the presentation and methods of their instruction. Mishra and Koehler (2006) address the concept of "learning by doing," introducing the shift from traditional teaching to interactive approaches. The use of the TPACK Model can increase educators' likelihood of implementing tools effectively while maintaining impactful educational strategies. Effectively implementing technology into instruction requires educators to be knowledgeable regarding content, pedagogy, and technology (Mishra & Koehler, 2006). Studies have been conducted regarding proper usage of the TPACK model and the common usages of TPACK. Bos (2011) examined the use of TPACK amongst 30 elementary school teachers and how knowledge regarding the multiple components within TPACK impacts their development of instruction and their ability to identify

useful digital tools. Results from this study showed that educators understand the impact of the relationship between teacher and technology and how they both coincide to lay a foundation for integration strategies and student learning when using TPACK as a foundational tool (Bos, 2011).

The Components in TPACK

TPACK is a model that guides educators to understand methods to incorporate technology into their curriculum (Mishra & Koehler, 2006). Today, educators are expected to effectively implement technology and acquire skills that develop their understanding of appropriate technology integration (Mishra & Koehler, 2006). Educators' knowledge on the different components seen within TPACK can aid in developing instruction for students while considering specific concepts that students need to improve on (Musgrove et al., 2021). While implementing the TPACK Model into instructional design, educators should be knowledgeable of the categories within TPACK: pedagogical, technological, and content (Crompton, 2015). TPACK does not look at these components in isolation but connects them to provide relationships between them (Mishra & Koehler, 2006).

As technology continues to advance, dependability and knowledge of these technological developments increases students' understanding of curriculum (Palanisamy & Saravanakumar, 2021). Technology is dependable in an educational setting and provides educators with the opportunity of differentiating instructional needs while adhering to curriculum guidelines (Musgrove et al., 2021). Integrating digital tools into instruction requires educators to obtain technological content knowledge, allowing them to use technology in an explicit way (Bos, 2011).

Perceptions of using Digital Tools

Digital tools within instruction provide the opportunity to enhance instructional practices and presentations to implement effective instruction while adhering to guidelines and policies. When educators are prepared to integrate new tools into their instruction, supplying instruction to students becomes more meaningful which enhances instruction for students (Martin et al., 2022).

Although teachers' perceptions of integrating technology into instruction lean towards more positive qualities, researchers must investigate negative connotations regarding this method. Many factors influence the way learners perceive digital tools in the learning environment. Perceptions of this technology integration can alter the ways that educators integrate and abide by technological expectations throughout instruction.

The Positive Perceptions of Implementing Digital Tools Within Instruction

Educational tools are implemented into instruction with the goal of enhancing students' learning experiences. Digital tools are becoming more prominent in educational settings, and they are inevitably altering the ways educators present and implement their instruction. Effectively implementing digital tools into instruction increases motivation and engagement levels of students when they are completing a task (Laakso et al., 2018). Laakso and others investigated a collaborative tool, ViLLE, showing that students and the visualization presented can increase academic engagement (2018). Although it may be difficult to interpret the role of using technology throughout instruction, many educators found it beneficial to increase engagement levels of students (O'Neal et al., 2017). For example, O'Neal and others (2017) determined that educators found it to be an effective tool for communication in order to discuss and collaborate with one another.

Student attainment of specific standards assessed throughout the year appear in multiple formats. Conducting formative and summative assessments provides educators with information regarding students' learning needs and areas of weakness. Reflective practices allow educators to differentiate instruction for students. For example, Han et al. (2019) examined a study based on elementary teachers and student's perceptions when using technology to enhance instruction in K-12 classroom settings. The authors concluded that teachers' use of technology played a key role in differentiating instruction. Throughout this study, teachers emphasized the importance of meeting the needs of their students and technological platforms performed a key role.

The Negative Perceptions of Implementing Digital Tools Within Instruction

There are barriers when educators integrate technology into their instruction, some being in the teachers' control and others out of their control. Barriers can vary from resource availability to teachers' attitudes towards technology integration (Ertmer, 1999).

Technology Accessibility

Technology accessibility is considered when evaluating specific digital tools. Financial availability of resources is a trait researchers must focus on when determining the effectiveness of a digital tool. Commonly seen throughout research, studies can be skewed when determining qualifications of a digital tool because schools may not have appropriate access to technology (Bos, 2011). While focusing on technology integration, educators should consider usage of technology in school as well as technology accessibility at home. Educators must know the availability of students to technology at home. Students' computer literacy can impact the way educators present their instruction (Han et al., 2019). Lack of technology within school systems not only affects the opportunities for students but it impacts "teachers' beliefs about the role of technology in the classroom as well as their own proficiency with its use" (Inan & Lowther,

2010b, p. 203). Without applicable resources, educators will see digital tools as a hardship rather than a beneficial opportunity.

As educators alter the way they present instruction, it will not always be the same depending on the context and needs of the school. Some resources are not as accessible for one school as they are for the next (Hamilton et al., 2016). Lack of appropriate technology in a classroom setting impacts all aspects of a school system. Many school districts lack adequate equipment and resources to integrate technology effectively into their instruction (O'Neal et al., 2017). Negative perceptions of technology increase the chances of educators not implementing tools correctly and effectively to enhance students' learning experiences.

Perceptions of Using Digital Tools as a Whole

Digital tools integrated into instruction affect educators' perceptions of appropriate uses. Educators are exposed to new resources and methods for teaching, and lack of proper training regarding these tools alter educators' views on the implementation of new resources. Often, educators are exposed to digital tools that have little relevance and cannot seamlessly be implemented into instruction. For example, Feerick et al. (2021) conducted research regarding teachers' understanding of integrated technology into instruction and found that educators teaching in a post-primary level voiced their recommendation of participating in training to better understand specific digital tools.

Professional learning for educators acts as a supplement to enhancing student learning experiences. Teacher Professional Learning (TPL) should consider teachers' needs and thoughts on using digital tools in instruction (Feerick et al., 2021). Participating in training for educators is beneficial due to the enhancement of technology. Although it may be difficult to interpret the role of using technology throughout instruction, many educators found it beneficial to increase

engagement levels of students (O'Neal et al., 2017). An educator's perception on digital tools is a key factor to consider when discovering added resources. Overall, educators find that proper training and tools that meet the needs of students are highly effective. O'Neal et al. (2017) studied the beliefs and roles of elementary school teachers' perceptions of using technology in an educational setting, determining that educators integrate technology for multiple reasons "such as engaging students, promoting higher level thinking, and developing important skills for the future" (p. 194).

Implementing Digital Tools Effectively

The integration of technology into instruction is meant to enhance instructional practices and increase students' engagement levels when material is taught. Including technology comes with many factors to consider due to the enhancements and development of new digital tools. Effectively implementing digital tools into instruction increases the opportunities for students and teachers. Without adequate usage and implementation of technological tools, educators are not reaching the full potential of given resources, affecting instructional practices and information students are meant to be gaining. Educators' knowledge on technology and technology integration must be emphasized to support student's abilities to complete tasks and ensure students' understanding when altering instructional practices (Inserra & Short, 2012).

In accordance with the TPACK Model, to effectively implement technology into instruction, educators must be knowledgeable regarding content, pedagogy, and technology (Mishra & Koehler, 2006). Educators hold the responsibility of integrating these tools and making sure they have been implementing them effectively. With effective use of digital tools, educators are increasing engagement levels and creating a learning environment that is impactful on student's beliefs regarding school.

Educators Enhancing the Ways They Present Instruction

Educators present their instruction to students based on multiple factors seen in many classrooms: teacher knowledge on a specific platform, students' cognitive abilities, and curriculum guidelines they must follow (O'Neal et al., 2017). As technology becomes more prominent in a classroom, educators are altering how they present instruction to students. Enhancing the way educators present instruction by considering models and guidelines allows researchers and educators to evaluate their instructional technology uses by implementing data driven methods (Kucirkova, 2014).

Presentation enhancements correspond with assessment enhancements when educators are altering their instructional practices. Integrating technology into this cycle provides opportunities for educators to focus on student achievement levels by creating more opportunities to evaluate student understanding of a concept before and after learning sessions. Multiple platforms are used when integrating technology into instruction that enhance learning experiences and teaching practices. Platforms can be used to evaluate students' readiness and knowledge of a new concept. Use of a pretest allows educators to alter instruction based on the variance in prior knowledge of students. Incorporating differentiation based on multiple academic levels allows students to accomplish tasks suitable for them (Feerick et al., 2022).

Digital Tools and Feedback Time

Feedback provides students with opportunities to focus on specific strengths and weaknesses regarding curricular standards being taught. With the use of digital tools, educators can incorporate this connection by having the opportunity to "monitor students' progress and, therefore, provide them with immediate feedback and/or assistance as needed" (Christopoulos et al., 2020, p. 60). In an educational setting, immediate feedback is positive and enhances student

learning by evaluating their understanding of concepts quickly and allows educators to interject when students are struggling with the material being taught. This is done by integrating online formative assessments which can improve feedback and feedback time (Christopoulos et al., 2020). Providing immediate feedback to learners allows them to maintain their drive when completing a task by increasing their motivation and providing them with the opportunity to evaluate their own learning (Schaap, 2011). The implementation of immediate feedback using digital tools enhances student understanding by determining areas of improvement quickly and efficiently.

The Process of Integrating Digital Tools

Technology integrated into instruction is meant to act as a tool to enhance learning experiences and provide opportunities for teachers and students. Technology in a classroom setting is not meant to act as a substitute for instruction but should increase student achievement and understanding of concepts. It acts as a tool to enhance content materials. Multiple considerations must take place prior to integrating technology into instruction. Before beginning instructional development, teachers should begin by identifying the content being taught for that unit. Following the skill choice, educators should then focus their attention on what technological platform they use. Educators sometimes reverse the order, and the technology aspect does not mesh with the content (Crompton, 2015). Ensuring that the digital platform aligns with the content being taught and should be highly considered when developing lesson plans. Without proper knowledge of what the platform entails, the content will be overlooked and won't enhance instructional practices due to ineffective alignment. Following models when determining effectiveness of technological tools increases reliability of said specific tool due to theory supporting instructional practices. Following a process to integrate technology into

instruction increases the chances of it being implemented in a correct and effective manner (Lazakidou & Retalis, 2010).

Collaboration amongst educators benefits themselves and the way they are presenting their instruction to students. Collaborating with fellow educators enables teachers to alter their perspectives and create a shared learning environment. Collaboration promotes the idea of developing our understanding to accommodate the foundations of incorporating technology into instruction (Hannafin et al. 1997). Changing perspectives of the way educators present their instruction provides new opportunities and makes data analysis more reliable.

Educators Receiving Appropriate Training

When given a new digital tool to use in the classroom, teachers must be properly equipped to implement this mode of instruction. No matter the experience level, educators benefit from models being demonstrated (Kopcha et al. 2020). Without proper knowledge and training of specific concepts, educators are less likely to implement effective instruction. Providing educators with the resources to extend their knowledge on digital competencies allows them to implement instruction in a manner that is effective (Palanisamy & Saravanakumar, 2021). Many counties require training when new tools are being integrated into the curriculum. However, many training courses do not encompass the integration of the technology, rather they focus on the technology as individual categories. Crompton (2015) states that often, training courses do not create "any connection between the technology and the subject matter" in K-12 elementary classrooms (p. 83). Inadequate training regarding specific digital tools can decrease effectiveness of instructional practices and hinder students' progression when given unfamiliar content. The use of educational technology in a classroom can be implemented correctly when

educators are provided with appropriate training and tools to optimize learning experiences (Palanisamy & Saravanakumar, 2021).

Effects of Implementing Digital Tools Correctly

Including interactive methods of teaching promotes engagement and motivation when completing a task. These interactive strategies can be implemented with the use of digital resources (Palanisamy & Saravanakumar, 2021). Enhancing students' engagement levels leads to greater success when given new technology. With satisfactory implementation, the effects of integrating digital tools benefit the students and educators. Han et al. (2019) established that when educators are creating assessments for students, they consider the individual learning needs of students within the classroom. Guidance and support can be provided to students when using technology by monitoring different aspects of specific platforms. For example, a study indicated that integrating more technology, students' success grew, and the technological aspects played a key role throughout instruction (Han et al., 2019). Including technology in instruction promotes collaborative practices amongst students and teachers. When communicating with their peers, learners can share their own perception of content and "become aware of the procedure and the knowledge they need in order to solve the problems" (De Corte, 2000, p. 25). Increasing collaboration in an instructional setting allows learners to change their perspectives and gain new insights when solving problems. Digital tools integrated into instruction effectively can "transform learning to become more learner-centered by allowing students to become active knowledge creators" (Han et al., 2019, p. 104).

Possible Considerations When Implementing Digital Tools

Many factors coincide with one another when effectively implementing digital tools into instruction. Considering student perceptions, students' performance levels, engagement and

motivation levels, and interests impact the perceptions students have on learning and their ability to gain information regarding new concepts. Making meaningful and relatable content increases student learning experiences resulting in them comprehending the content (Lazakidou & Retalis, 2010). Understanding the technology being incorporated into instruction allows educators to determine effective practices when presenting information to learners (Ross, 2020). Information regarding the various aspects of specific platforms increases the likelihood of learners creating meaning of the content and completing tasks to the best of their ability. The integration of technology should act as an additional tool in instruction, meant to enhance student achievement. Studies show that some technology was not integrated into instruction, but it was used as a center separate from instruction, the technology and instruction aligned but not integrated (O'Neal et al., 2017). From this research, insights were gained that instruction and technology are meant to intertwine and not sit beside each other. Merging instruction and technology gives educators the opportunity to incorporate engaging practices that better meet student's abilities. Educators can then evaluate students' understanding of newly introduced concepts.

Gaining great speed in the education field is the use of artificial intelligence (AI) (Su & Yang, 2023). Su and Yang researched the use of one AI tool, ChatGPT, and explored the use and possibilities within the education field. From their research, they identified four potential benefits when using this digital tool: it creates a more personalized experience for students, teachers can provide more immediate and direct feedback to their students, it can improve specific assessments, and it can provide guidance for educators.

Implementing Digital Tools in a Mathematics Setting

Integrating digital tools into teaching enables the use of multiple methods to present instruction. Traditional views are changing to a digital format, resulting in the alteration of

instructional practices. Traditional methods of teaching are slowly seeping out of pedagogical practices due to the belief there is little personalized learning, and traditional practice lacks progressive modes of learning to better meet the needs of the students (Christopoulos et al., 2013). Including technology throughout instruction enhances students' engagement levels by providing them with opportunities to share their work with their peers and provides students with an interactive learning opportunity (Han et al., 2019). Collaborative practices have been shown to address the variable needs of diverse students to enhance the learning experience for students by changing perspectives and looking at problems in a different light. Alongside collaboration, active learning is a style of teaching that enhances students' critical thinking skills and allows them to create meaning for the content they are learning. The use of technology in instruction enhances students' abilities to think critically by participating in activities that go beyond direct instruction (Polly et al., 2021). Educators incorporating hands on activities and online software throughout mathematics instruction allows students to form a tactile relationship with the content and exposes them to multiple methods of solving problems.

Educational practices are evolving from teacher centered practices to student centered practices, allowing learners to identify their needs and guide their practices (Christopoulos, 2010). As educational practices are changing, educators are expected to alter their ways of delivering instruction. Although this is the expectation, educators may be hesitant to implement these new methods of teaching due to unknown tools. Providing educators with the resources to implement technology can alter the feelings they have surrounding technological uses (Crompton, 2015). Identifying the validity and reliability of these online resources is an essential part of developing integrated lessons. Without these concepts in mind, educators may utilize resources that do not align with their content, are not engaging, and result in confusion.

Promoting Active Learning and Collaborative Practices

Technology presented throughout mathematics instruction increases the likelihood of students thinking creatively and conceptually while collaborating with their peers (Bos, 2011). Effectively implemented digital tools increase students' performance levels as it provides a new method of retaining information. Switching from a traditional teaching style, the advancement of technology led to concepts becoming more engaging in mathematics courses (Pilli & Aksu, 2013). Student-centered instruction is an example of this and puts the students in the forefront and focuses on their knowledge and capabilities. Student-centered approaches include problem-based learning, project-based learning, collaborative learning, and game-based learning (Shute & Rahimi, 2017). Pilli and Aksu (2013) addressed the comparison between the use of digital tools and a traditional role of teaching in primary grades, showing that online tools resulted in higher comprehension levels. Promoting interactions for students increases motivation and allows educators to develop effective assessments (Han et al., 2019).

Allowing students to identify specific methods to solve a problem in mathematics instruction increases students' responsibility in the classroom. Often in elementary mathematics standards there are multiple ways to solve a problem. Emphasizing this concept allows students the opportunity to identify methods that work best for them, and they can explain their process using problem solving skills. Incorporating problem-based learning focuses on specific steps to achieve the desired end goals: teachers demonstrate the practices students will be completing, then students collaborate in groups solving a similar problem, students then move into independent practice to demonstrate their understanding (Lazakidou & Retalis, 2010). This process is commonly known as the “I do, we do, you do” process where educators demonstrate and then provide opportunities for students to demonstrate their understanding of the content.

Encouraging students to be creative allows them to develop their own understanding of the content being taught as well as provides them with the opportunity to think critically when given a task. Digital tools implemented into mathematics instruction allow students to understand content in forms they may not be accustomed to. Digital tools in mathematics instruction have effects on the ways that students perceive instruction. Keeping students' interests in mind allows educators to create individualized learning experiences, which can increase testing performances (Feerick et al. 2022).

Active learning is a form of learning where students can apply their understanding of concepts by investigating and creating meaning of problems by collaborating with their peers. Collaboration promotes active learning throughout instruction, leading to students better understanding the content being taught (Lazakidou & Retalis, 2010). Students who participate in active learning are exposed to new methods of instruction that will help them recall information and promote collaboration, problem solving skills, and creative practices (O'Neal, 2017). Integrating technology into instruction promotes an active learning environment, by including interactive instructional practices and manipulatives appropriate for specific grade levels and content areas (Bos, 2011). Online manipulatives are a common practice seen when integrating technology into mathematics instruction. Incorporating online manipulatives throughout instruction exposes students to multiple methods of solving problems. As technology continues to become more prominent in our everyday lives, children are being exposed to it earlier than ever. Learners are provided with the opportunity to explore new material with a learning tool that intrigues them. Once educators determined the tools they can use, evaluating student's perceptions of the online tool plays a key role in instructional development. Based on students' opinions, educators have the power to continue use of an instructional technology or discard it.

Benefits for Students

Including technological platforms into mathematics instruction can provide students the choice of how they complete an assignment. Incorporating this can allow students to reflect on standards and recall information from previous lessons (Crompton, 2015). Emphasizing the importance of choice in an educational setting gives learners the opportunity to self-pace and narrow their focus on specific subskills they are interested in or need more guidance with. Educators can individualize instruction and provide opportunities for students to complete tasks to the best of their ability (Feerick et al., 2022). Using online tools also enhances teachers' implementation of instruction and increases their understanding of student's needs. Teachers interacting with learners using digital tools has been shown to be an effective strategy due to an increase in student and teacher communication (Han et al., 2019). Increasing interaction and collaboration with students when using technological platforms enhances students learning experience and allows students to feel comfortable in the environment they are working.

Benefits for Teachers

Using technological tools such as a Smart Board allows educators to better accommodate students depending on their learning needs. Students vary when considering how they learn best, some relate to tactile sensations and others may be more visual. Implementing these working conditions, educators using digital tools can accommodate these needs (Palanisamy & Saravanakumar, 2021). The integration of technology into instruction provides educators with opportunities to enhance students' learning and strategies by focusing on specific strengths and areas of improvement for students. The use of instructional technologies throughout mathematics lessons can provide teachers with the opportunity to implement effective instruction by having students think critically when given a task (Bos, 2011).

Multiple online platforms (e.g., IXL, i-Ready, Kahn Academy, Prodigy) can be included within mathematics instruction whether it be a website where students can access assignments, online creators, Smart Boards, discussion boards, and online manipulatives. The monitoring of students' progress can "provide them with immediate feedback and/or assistance as needed" (Christopoulos et al., 2020, p. 60). While having the ability to monitor student's accomplishments online, educators can use the information provided to enhance their instructional practices by reflecting on data and altering instruction accordingly the use of online tools allows educators to see the different approaches students used, response time, and scores. Having these resources allows teachers to accommodate students based on their specific needs (Lokkila et al., 2015).

Many researchers investigated the effectiveness of specific tools and acquired knowledge of the use of digital tools in a classroom setting and identified key factors that should be implemented into digital tools. The Learning Analytics team at the University of Turku created an online tool, ViLLE, that contains online exercises that address multiple subcategories within high school and elementary school mathematics classrooms that can be easily altered depending on the classroom dynamics (Laakso et al., 2018). Christopoulos et al., (2021) states that the implementation of digital tools in elementary mathematics classrooms adds value to two specific categories seen in the classroom:

> "(a) the pragmatic, which regards the efficiency of the tool to facilitate the speed and the accuracy of the computations and (b) the epistemic, which concerns the knowledge that learners acquire and the ways they develop deep understanding and subject mastery" (p. 63).

Online Tools for Assessments

Summative and formative assessments continue to transition from paper to online. With this transition educators are integrating technology into everyday instruction to increase preparation amongst students. Online assessments contain many forms of questions: drag and drop, fill in the blank, type in responses, and multiple choice. Immediate feedback provide by online tools is a commonly used feature to assist teachers in determining next steps for students based on their abilities (Shute & Rahimi, 2017). For example, i-Ready is commonly used as a diagnostic tool to measure students' growth throughout a school year (Pangrazio et al., 2022). Educators who have the availability of all features within i-Ready are provided with instructional grouping, and next steps for students regarding specific standards and subcategories within each standard that can build upon other skills (Pangrazio et al., 2022). To better assist educators in this preparation of online assessments, multiple features are included within online tools to ease this transition.

Monitoring Students Online

As assessments continue to change with more integration of online materials, more concepts can be monitored when students are completing course work online (Shute & Rahimi, 2017). Features are included in online tools to assist educators in evaluating their students' progressions, strengths, and weaknesses. Educators explicit use of digital tools allows them to adapt instruction by reviewing online completions from students. Analysis of student performance provides educators with the next steps on where to direct their instruction (Shute & Rahimi, 2017). The use of computer-based assessments for learning is altering the presentation styles of instruction. From the CBAs (computer-based assessments for learning) educators are increasing their ability to provide feedback and address concerns regarding student progress

(Shute & Rahimi, 2017). Implementing these features from online tools allows educators to prepare students for online assessments.

Martin et al., researched a platform, *Assessing Mathematics Concepts Anywhere (AMCA),* in K-12 classrooms that is designed to monitor students' progress and determine specific needs for students (2016). Before integrating this tool, educators in the study stated they were unsure of how to implement feedback from formative assessments to better meet their students' needs. After using AMCA, teachers could identify common misconceptions in the number sense and were provided with ideas to integrate for those students to extend their thinking (Martin et al., 2016).

Standardized Testing Online

Technological enhancements led to an increase in online assessments. Many school districts are providing final summative assessments (ex: End of Grade testing) online. CBAs can alter the way that standardized tests are perceived and presented (Shute & Rahimi, 2022). In recent years, online assessments have become more prominent, leading to educators altering their instructional methods to prepare students for these online assessments. Teachers are facing more pressure regarding final examinations or summative assessments and preparing students for them (Martin et al., 2022).

Formative Assessments in the Classroom

Formative assessments allow educators to monitor their students' progression of concepts. Teachers can place these assessments throughout instruction and monitor students' progression of skills and subskills. Based on these assessments, instruction can be presented to students to increase their understanding of content (Martin et al., 2016). The method in which

educators' complete formative assessments can be influenced by colleagues, administrators, and district policies (Martin et al., 2016).

Martin et al., (2022) concluded within their research that teachers found the use of formative assessments to "increase opportunities and learning for students" (p. 421). Multiple online tools can be found and used to integrate within instruction and usage can be based on the needs of students in the classroom (Pilli & Aksu, 2012). Pilli and Aksu (2013) conducted research using one online tool, *Frizbi Mathematics 4*. Through this research, a control and experimental group were using this online tool. From this study, both groups had an increase in scores in all tested components. However, the students who were participating using Computer Assisted Instruction scored higher than the students who were not (Pilli & Aksu, 2013). The experimental group received immediate and specific feedback resulting in them having a higher understanding of fractions.

Educators Using Online Assessments

Prior to educators including digital tools within instruction, it was important for them to understand the dynamics and attitudes regarding online tools held by students (Pilli & Aksu, 2013). Including this step allows educators to identify comfortability with technology and students' willingness to appropriately use technology. Students' perceptions and abilities regarding online tools and technology can affect their performance levels when given an assignment or assessment (Han et al., 2019).

Creating formative assessments comes with multiple considerations for teachers. The use of online tools for formative assessments decreases the amount of time on reviewing and providing additional instruction for students (Shute & Rahimi, 2017). Integrating technology into instruction can also provide an extra route for educators to complete assessments in the

classroom (Martin et al., 2022). Teacher fidelity using these aspects within an online tool can increase the quality of instruction. When digital tools were being integrated, the first question about them revolved around if they were necessary, questions now revolve around the "how" of integrating these tools into instruction (Pilli & Aksu, 2013). Educators' willingness and knowledge of integrating these tools and using the benefits of them to their advantage can alter multiple forms of instruction. The needs of students can be met using online platforms due to the breadth and depth of content coverage provided from the online tools.

i-Ready

i-Ready is an online tool used amongst various school districts. The use of i-Ready within the United States jumped from 10% to 25% between 2016 and 2020 (Pangrazio et al., 2022). Districts that require this tool use its qualities and the features found within it to personalize instruction based on needs within the classroom. Commonly used is the diagnostic feature found within i-Ready (Cook et al., 2022). These diagnostic measures students' abilities regarding specific subskills and "next steps" for teachers to use when developing instruction. i-Ready provides lessons, immediate feedback, automatic grading, resources for remediation, and additional resources based on subskills students need support with (Pangrazio et al., 2022). i-Ready's abilities to pinpoint areas of concern, and areas for improvement can increase educators' abilities to create impactful instructional materials that are specific to each student.

Discussed previously was the inclusion of additional resources found within i-Ready. Data provided by i-Ready math includes student growth and ability levels, specific areas of concern, and possible personalized instructional practices to provide support to students and teachers (Cook et al., 2022). This tool is liked by students based on the instructional games provided within it. These games are specific to the subskills each student needs improvement on,

making them engaging for students (Petrelli, 2022). Using this tool allows educators to identify common trends amongst their classroom and enhances their instructional practices by including these games that are specific to their students' needs.

Cook and others (2022) researched the impacts of i-Ready's personalized learning instruction on students' mathematics scores in grades 3-8. These researchers investigated students' performance in multiple schools where students received personalized instruction, and some only had diagnostic results. The data were taken from the students' i-Ready math diagnostic testing scores from 2020-2021 and the students' scores from the Massachusetts Comprehensive Assessment System scores (MCAS scores) (Cook et al., 2022). From this research, Cook and others were able to determine the positive effect that i-Ready math had on students' success. While evaluating the scores, researchers concluded that the students who received the personalized instruction from i-Ready math scored, on average, 5 points higher than the students who only received the diagnostic data points (Cook et al., 2022).

Summary

This review's purpose was to determine common themes within elementary school classrooms regarding educators' use of digital tools, common perceptions, online assessments, and integration of digital tools. From this research reviewed, digital tools are becoming more prevalent within mathematics instruction. The literature calls attention to the importance of professional development for educators when new tools are introduced. Overall, this review supports the implementation of integrating digital tools into instruction for teachers and students. Enhancing instructional practices allows for connections and understanding to be developed when given a new task to learn. When tools are integrated effectively, they can increase student engagement levels and provide a clear understanding for educators when determining the next

steps for students. The ways educators are developing their instruction impact students' learning in the classroom and preparation for online assessments given throughout the year. Narrowing the overall idea of digital tools to i-Ready focuses on a specific tool that is increasing in usage across the United States. i-Ready holds multiple tools within itself and is commonly used as a diagnostic tool with a focus on areas of improvement for individual students. Accessing these features found within i-Ready and how educators are using i-Ready can prepare students for online standardized assessments.

CHAPTER 3: METHODOLOGY

For my methodology, I used a mixed method case study approach to collect quantitative and qualitative data. Creswell & Guetterman (2019) discuss multiple ideas to consider when completing mixed methods research. Creswell and Guetterman (2019) emphasize the importance of triangulation when conducting mixed methods research. They also focus on the multiple types of mixed methods that can be used depending on the data collection process. I used *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (Creswell & Guetterman, 2019) to help guide processes and procedures. Providing both forms of data collection enhances the answer to my research problem (Creswell & Guetterman, 2019). I sent out a survey to collect quantitative data, leading to a follow up interview where I identified my case study participant and collected qualitative data. Other mixed methods research follows this similar pattern (e.g., Onwuegbuzie & Leech, 2009).

The focus of my research was how third-grade teachers are presenting their instruction and their feelings regarding the utilization of i-Ready math to enhance their students' learning experiences. My intention was to identify multiple methods of how educators integrate i-Ready math and how they compare, how they are using i-Ready math, how they feel about this tool, what expectations they are considering and how they affect the way they present instruction. Therefore, mixed methods research was necessary.

Using a survey design for my research allowed me to identify quantitative and qualitative trends and patterns when using i-Ready math as an instructional tool. Within my survey there are Likert scale questions regarding usage of i-Ready math. I analyzed the responses to determine common topics and variations educators are using when integrating i-Ready math into their mathematics instruction, The trends reveal how third-grade teachers are using i-Ready math to

prepare students for online mathematics assessments.

Context

The environment for my study took place in a rural Southeastern district, in mid-Atlantic United States. The district consists of thirty-eight schools (public and private), with over twenty thousand students. For the district, there is an even split between male and female students from multiple backgrounds (U.S. News Education and World Report, n.d.). I sent out my survey to third grade teachers in a public-school setting. There is a large variance of third grade teachers from school to school, ranging between two and twelve third grade teachers.

Participants

My survey was sent to 56 third-grade teachers implementing i-Ready math into mathematics curricula, as approved in the IRB protocol (see Appendix A). Classroom sizes range from twenty to twenty-three students, consisting of various strategies to integrate this online mathematics tool. This study included 11 participants in the survey, and 1 participant in the follow-up case study.

Table 1 provides the demographics of 11 third-grade teachers who responded to the survey. Among the participants, there are 11 females with a variety of teaching experiences and certifications. Presented in the data are 3 beginning teachers, 4 participants who taught 10-14 years, and 4 participants who taught over 15 years. Respondents also have varying experience teaching in third-grade classrooms within this district: 4 who have been teaching third grade for 0-4 years, 5 who have been teaching third grade for 5-9 years, and 2 who have been teaching third grade for over 15 years. Additionally, 4 participants are National Board Certified Teachers (NBCT), 1 participant is certified in Academically or Intellectually Gifted (AIG), and one

participant has an additional teaching license in the District of Columbia. All respondents are teaching in a Title 1 school throughout this specific district.

Table 1

Demographics

Questions	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
Q1 Gender you identify as:	F	F	F	F	F	F	F	F	F	F	F
Q2 Degree attained in education	Other	B	B	B	B	M	M	M	B	B	B
Q3 Years of experience teaching	10-14	15+	0-4	0-4	10-14	15+	15+	10-14	0-4	15+	10-15
Q4 Years of experience teaching third grade	5-9	15+	0-4	0-4	5-9	15+	5-9	5-9	0-4	0-4	5-9
Q5 Additional certifications. Check all that apply	n/a	n/a	n/a	n/a	NBC	NBC, AIG	NBC	n/a	Additional teaching license	n/a	NBC
Q6 Are you teaching in a Title 1 school?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Description of Case Study

"Rebecca" is the pseudonym of the interview participant. Rebecca, a White female, has been teaching for over 15 years within multiple grade levels, and she is currently teaching third grade. Rebecca had attained a bachelor's and master's degree in education and her National Board Certification (NBCT). Rebecca attended county meetings where she shared valuable insights from PLC discussions. Rebecca is an advocate for others and always encouraged beginning teachers and provided skills and resources that helped develop instruction. She is a knowledgeable teacher who radiates a passion for teaching and has been a role model and advocate for her students and colleagues.

The county in which Rebecca works requires elementary school teachers to integrate i-Ready math within their instruction for a minimum of 45 minutes every week, per student.

Common practices mentioned by Rebecca are using i-Ready math as supplemental instruction by assigning teacher lessons and instructing students to complete a certain number of minutes for morning work to hit those district and school requirements. Rebecca finds that the online component of i-Ready math is a great preparation tool when considering online assessments that third grade students must take.

I selected Rebecca due to her favorable responses towards using i-Ready math to prepare students for online assessments. Choosing a participant who was favorable when using i-Ready math supports my research by having the chance of providing information relevant to how they are using i-Ready math.

Procedures

There are many steps that I have taken prior to conducting my research. First, I sought approval from the county. Then, I submitted my proposal to IRB for exempt approval (see Appendix A). Once approved, I invited teachers to participate in the study (see Appendix B). I kept a record of who accepted the participation and only collected data from those who agreed to participate. There were 11 participants who completed the survey (see Appendix C). I created an audit trail to maintain organization during this process. Following the analysis of my responses, I determined a participant for a follow-up interview for my case study. No other participants who met the criteria agreed to participate in the follow-up interview. I asked for verbal consent (see Appendix D) from the participant prior to starting the interview (see Appendix E). After my interview, I concluded my data collection.

Data Collection

For this study, I collected data from two sources: survey and interview. Prior to beginning my data collection process, I gained approval from the county where the research took place.

Descriptive statistics were used to identify topics as well as participants who were highly favorable towards using i-Ready math. The respondent was selected who was highly favorable and willing to participate in a follow up interview. The survey was developed by

Survey

To begin my data collection process, I created a survey asking participants about specific features found on i-Ready math and their overall feelings about the digital tool (see Appendix C). The survey was sent out via email to third grade teachers throughout the district who teach in a K-5, public school setting. Throughout my survey, I included quantitative and qualitative questions. I developed the survey by investigating the i-Ready tool and included questions about specific features provided by i-Ready math. Additionally, I reflected on my own practices when using i-Ready and included grade level expectations of using i-Ready math to prepare students for online assessments.

I sent out a survey through an invitational email (see Appendix B) to all third-grade teachers in K-5 public schools within the district I am completing research in. Within the email I provided a recommended timeline of two weeks. This data source consisted of quantitative and qualitative questions (see Appendix C). The quantitative questions used Likert scale questions, while the qualitative questions were provided in an open-ended form. Including both forms of questions will allow me to triangulate information (Creswell & Guetterman, 2019). Before answering the questions, participants completed demographic questions. I collected information about specific features seen within i-Ready math, how participants are using i-Ready as an assessment tool, integration strategies, and how they are using i-Ready math to prepare students for online assessments. By asking these questions, I was able to identify common themes when integrating i-Ready math. I also included a question asking if the participant would be willing to

participate in a virtual follow-up interview. Out of fifty-six third-grade teachers surveyed, eleven responded, resulting in a response rate of 19.6%.

Interview

Following the collection and analysis of survey responses, I determined a participant who was willing to participate in a follow-up interview. The interviewee was determined by identifying an individual who was highly favorable towards using i-Ready math based on their survey responses. Conducting this follow-up, virtual, one-on-one interview allowed me to collect data regarding the usage and feelings of i-Ready math when preparing students for online assessments. The interview questions consisted of more personal, open-ended questions (see Appendix E). This interview helped bind the case. I determined common themes following the analysis of the survey and interview responses.

Data Analysis

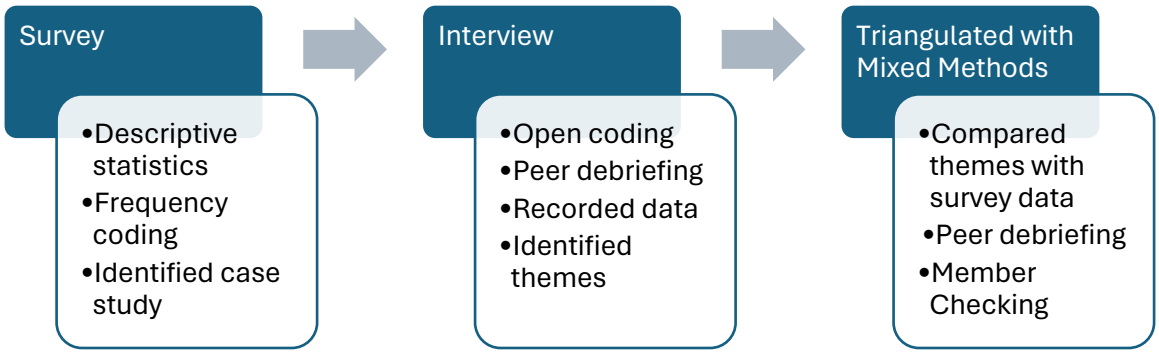
Once the survey concluded, I used descriptive statistics to identify common topics and tendencies (Creswell & Guetterman, 2019). As I completed my analysis, I organized the content into tables and summarized my findings. Using descriptive statistics allowed me to identify the range, median, mode, mean, and standard deviation of tendencies, showing my quantitative data that indicate common usages of i-Ready math amongst teachers (Creswell and Guetterman, 2019). As I analyzed my open-ended questions, I used open coding to determine topics and emerging concepts (Creswell & Guetterman, 2019); due to the nature of the responses and number of participants, I used frequency of topics to analyze the open-ended data.

I chose the case study participant, by reviewing the survey respondents that were highly favorable towards using i-Ready math and respondents who were willing to complete a follow up interview. Analysis was completed in separate manners, starting with quantitative analysis,

followed by open coding of the interview responses. Quantitative analysis was used to identify the mean, median, mode, and range of survey responses. I used open coding to analyze the interview responses to triangulate survey and interview data (see Figure 1) and created coding tables to present the data (see Table 2). I included the theme, codes, examples, and an alignment to the survey column to exhibit the triangulation of the case study's responses in the survey and interview. Triangulation between the two data points was completed and revealed three themes that related to the overall research question and purpose.

Figure 1

Data Analysis Process



Table

Sample Coding Table

Theme	Code	Example	Alignment to Survey
Using i-Ready to make data-based instructional decisions	1. Data used for goal achievement monitoring	**"**Yes, all of my students from beginning of the year to end of year grew or not significantly but made growth like they all grew."	Q18- Strongly agreed ability to differentiate instruction using i-Ready math
		"And so, one of the data points we looked at was i-Ready as a team because it is all online and how she was doing and if she was making growth there and she was, so it did help with those skills."	Q20- Strongly agreed she can monitor students' growth
	2. Determining next steps for students	"It's the data that it does give me."	Q24- "I like that the program gives students instruction on their level based off their assessment data"
		"I can see how much time they're on it, it lets me know if they're rushing, it flags the domains that they're having issues with."	
		"So this last time I took whatever skills some of them did not do well on and I have assigned them those skills and already."	
		"But I have, I'm trying something new because some of them are not doing the review skills like on our CFAs."	

Trustworthiness

Prior to conducting my research, I contacted and worked with a mentor and researcher who guided and checked all aspects of my research methodology. I engaged in IRB preparation tasks and identified district requirements prior to conducting my study. When my interview concluded, I checked in with my participant to ensure the information was accurate as well as showing gratitude for the efforts provided (Creswell & Guetterman, 2019). An audit trail was

used to ensure all processes were completed and data is organized to provide valid and reliable data.

Reliability and Consistency

Creswell and Guetterman (2019) highlight the importance of triangulating research using multiple data points, member checking and maintaining an audit trail during the research process. As I completed steps in my research, I tracked my data collection and resources in an Excel sheet to ensure I was on track and staying consistent with my research. As I created my survey for participants, I spread out questions across topics to demonstrate multiple points within my research increasing the reliability of the survey (Creswell & Guetterman, 2019). Triangulation was used between the survey and interview data, increasing the accuracy of information presented within this case study (Creswell & Guetterman, 2019).

Positionality Statement

I am a beginning teacher working in a third-grade classroom where the research took place. As a beginning teacher, there have been many online resources presented to me with the expectation of implementing and integrating them into my instructional practices. Starting my first year of teaching in 2022, the district informed teachers that the End of Grade test (EOG) would be moved online. Due to this, teachers scrambled to find methods of preparation for students to complete this standardized assessment. When discussing with our instructional coaches, they stated that i-Ready math provides a solid indication of how students will perform on the EOG. Hearing this encouraged me to dive into the features and tools seen in i-Ready. i-Ready math provides many data points for teachers to use, and I began using i-Ready math regularly. Although I cannot say for certain that i-Ready math made my students perform better, most of my students passed the math EOG and made tremendous growth throughout the year.

The research question I proposed, “How are third grade teachers using i-Ready math to prepare students for online assessments?” stems from the curiosity of how others are implementing this tool into their instruction to increase preparedness amongst students. To prepare students for online mathematics assessments using i-Ready math, I analyzed the diagnostic reports that are taken in the beginning of the year. I establish stations based on students' needs and specific areas of focus. From completed teacher assigned lessons, I can pinpoint students' strengths and weaknesses and use features in i-Ready to close gaps based on the needs of individual students. This allowed me to monitor my students' growth and make sure they are hitting their specific milestones. i-Ready math helped me expose my students to online components that are seen during testing, while increasing their engagement to mathematics instruction.

Summary of the Chapter

Focusing on quantitative data, I explored multiple strategies and angles that are considered when deciding optimal practices for integrating i-Ready into mathematics instruction by conducting a survey within my district. Factors must be considered and identified by educators based on expectations and guidelines from schools and the district in which they work. Additional features are seen within i-Ready math and teacher fidelity plays a role when optimizing the features within this tool. The qualitative data was collected by conducting a virtual interview. Within the interview, questions were asked to understand how third grade teachers are using i-Ready math to prepare students for online assessments. During the interview strategies, methods, and feelings were discussed.

CHAPTER 4: FINDINGS

The conversation surrounding the ways educators are presenting instruction to students is everchanging. Teaching in the 21st century comes with more advancements, strategies, and individual factors to consider, student needs, student abilities, requirements, expectations. Although there is not one way that will work in all classrooms, there are methods shown to prepare students when completing assignments and assessments. This mixed methods research study explored how third grade teachers are using a specific tool, i-Ready math, within their instruction to prepare students for online mathematics assessments. Third grade teachers in a K-5, Title 1, public school setting shared their thoughts about using i-Ready math to prepare students for online assessments.

Survey questions were created to understand the underlying opinions and usages of i-Ready math in third-grade classrooms. After the survey, participants were asked to participate in a virtual follow-up interview if they were willing. One interview was conducted where the participant was asked about overall feelings towards using i-Ready math when preparing third-grade students for online assessments. Reflecting on the practices of Rebecca, I accumulated three themes from the data that support the focus of how educators are using i-Ready math when preparing students for online assessments. The data found through this study can provide the opportunity for district members to understand struggles faced when using i-Ready math and notice the multiple ways educators are integrating this tool to enhance instructional practices.

The following section is structured to address quantitative findings followed by qualitative findings. The inclusion of embedment and connection of both data points back to the research question are included amongst the three themes found from the present research study to best answer the research question.

Quantitative Findings: Likert Scale Surveys

Survey question number 7 (see Table 3) asked participants how often they are using i-Ready math within their instructional practices. I analyzed this question using a five-point Likert scale, which included the ratings of Never (1), Rarely (2), Sometimes (3), Regularly (4), and Often (5). The data representing the use of i-Ready math were ranked highly among the 11 participants in the online survey (Regularly= 4, Often=5). Third grade teachers are required to use i-Ready math as a diagnostic tool and supplemental instruction where the research took place.

Table 3

How Often Educators Are Using i-Ready Math

	Range	Median	Mode	Mean	SD
Q7 How often do you use i-Ready math in your classroom?	1	5	5	4.55	0.52

Note. SD= Standard Deviation

Table 4 shows the descriptive statistics of how often third grade teachers are using specific tools found on the platform, i-Ready math when answering survey question 8. I analyzed this question using a five-point Likert scale, which included the ratings of Never (1), Rarely (2), Sometimes (3), Regularly (4), and Often (5). Overall, participants statistically ranked the use of Instructional Groupings, Teacher Toolbox, Instruction Lessons, and Prerequisites. For these categories, the ranking of "Sometimes" were prominent (Mo= 3). The biggest differences between these categories were in the means of using Prerequisites (M=2.73), and Instructional Groupings (M=2.82), compared to the use of Teacher Toolbox (M=3.55) and Instruction Lessons (M=3.73). The features (instructional groupings, teacher toolbox, instruction lessons, prerequisites) found in Table 3 act as a tool to aid teachers in preparing lesson plans for

mathematics instruction. The use of prerequisites and instructional groupings comes from diagnostic testing which allows educators to meet students at the levels in which they reside.

Table 4

Features Used Within i-Ready Math

Q8 How often do you use the features below on i-Ready math?	Range	Median	Mode	Mean	SD
Instructional Groupings	4	3	3	2.82	1.33
Teacher Toolbox	3	3	3	3.55	1.13
Instruction Lessons	2	3	3	3.73	0.90
Prerequisites	4	3	3	2.73	1.10

Note. SD= Standard Deviation

Table 5 shows the descriptive statistics and the raw data for research question 9, what third grade teachers are considering when implementing i-Ready math into their mathematics instruction. Participants ranked their considerations of District Requirements, School Requirements, Students Proficiency Levels, and Flagged Students using a five-point Likert scale, which included the ratings of Never (1), Rarely (2), Sometimes (3), Regularly (4), and Often (5). Comparing data across these survey responses, the mean presented high amongst all considerations, District Requirements (M=4.10), School Requirements (M=4.18), Students Proficiency Levels (M=4.18), and Flagged students (M=4). There was a slightly higher mean within considerations of School Requirements (M=4.18) and Students Proficiency Levels (M=4.18) compared to District Requirements (M=4.10) and Flagged Students (M=4). The participants' ratings for using i-Ready math in instruction and their consideration of school and district requirements from question 9 align in terms of considerations when integrating this tool within mathematics instruction.

When integrating i-Ready math into instruction, third grade teachers considered all aspects that were provided. The district in which the research takes place requires teachers to implement 45 minutes of i-Ready weekly. The response to district requirement considerations were high (M= 4.10) and the range was low (R=1). Diagnostic testing is used within i-Ready for the beginning of the year, middle of the year, and end of the year. i-Ready math is meant to assist in the preparation of online assessments and provides rigor when holding students accountable. Considering the diagnostic testing, the features presented in survey question 8 (Instructional groupings, Instruction Lessons, and Prerequisites) and survey question 9 (Students' Proficiency Levels, and Flagged Students) are items meant to be used by educators to aid in determining next steps for students and seeing where they need additional support.

Table 5

Features Considered When Using i-Ready Math

Q9 How often do you consider the below items when integrating i-Ready math into instruction?	Range	Median	Mode	Mean	SD
District requirements	1	4	4	4.10	0.83
School requirements	2	4	4	4.18	0.75
Students Proficiency Levels	3	4	5	4.18	0.98
Flagged students	3	4	5	4	1.10

Note. SD= Standard Deviation

Table 6 shows the descriptive statistics for survey question 10 where participants used a 4-point scale to express their considerations of using i-Ready math as an assessment tool. The 4-point Likert scale measured participants' consideration of i-Ready math as an assessment tool using the ratings Never (1), Rarely (2), Sometimes (3), and Often (4). Statistically, the response to this question had a large range of 4, with participant 1 ranking it Never (1) and the other respondents ranking it between Sometimes and Often (3-5). The mean of the 11 respondents using i-Ready math as an assessment tool is closer to Often rather than Never. With the large

range that is presented, readers may take into consideration the one response of "Rarely" to the overall responses from the other 10 respondents of "Sometimes" and "Often." Many respondents (n=6) chose "Sometimes" (Mo=3). However, the remaining participants (n=4) ranked question 10 as "Often" (4). i-Ready math acts as an assessment tool but is also used as supplemental instruction for classroom lessons.

Table 6

Considering i-Ready Math as an Assessment Tool

	Range	Median	Mode	Mean	SD
Q10 How often do you consider the below items when integrating i-Ready math into instruction?	3	3	3	3.18	0.87

Note. SD= Standard Deviation

Table 7 shows the descriptive statistics for survey question 11, where participants used a 4-point scale to express their comfort levels regarding using specific tools provided by i-Ready math. The 4-point scale included the rankings of Not Comfortable (1), Somewhat Comfortable (2), Comfortable (3), and Very Comfortable (4). The features listed are also represented in Table 5 where participants answered the survey questions in terms of using it. Reflecting on the data shows from the 11 participants, not one ranked "Very Comfortable" when using these tools within i-Ready math. Highly ranked were the use of Teacher Toolbox, and Instruction Lessons compared to Instructional Groupings and Prerequisites. When comparing Table 5 and Table 7's data the comfort levels align with usage. However, comfort levels when using Prerequisites (M=2.91) were higher compared to Instruction Lessons (M=2.82), Teacher Toolbox (M=2.82), and Instructional Groupings (M= 2.55). With this comparison, it shows that although third grade teachers may be familiar with the use of specific tools in i-Ready, there are higher rankings for what they assume is more beneficial when preparing students for online assessments.

Table 7

Comfort Using i-Ready Math in Instruction

Q11 How comfortable do you feel integrating these i-Ready math features into your instruction?	Range	Median	Mode	Mean	SD
Instructional Groupings	3	2	4	2.55	1.29
Teacher Toolbox	3	3	4	2.82	1.25
Instruction Lessons	3	3	2	2.82	1.08
Prerequisites	3	3	3	2.91	1.14

Note. SD= Standard Deviation

Tables 8 through 15 show the data of descriptive statistics for survey responses to questions 12 through 22. Table 8 provides an overview of participant responses and descriptive statistics of questions 12-22 with the same ranking scale. The data represented in these tables established rankings by 11 third-grade teachers who used a 5-point scale to provide their interpretations and usages of i-Ready math within mathematics instruction. The rankings included Strongly Disagree (1), Somewhat Disagree (2), Neither Agree nor Disagree (3), Somewhat Agree (4), and Strongly Agree (5).

Table 8

Overall Rankings of Q12- Q22

	Range	Median	Mode	Mean	SD
Q12 i-Ready math is an effective tool in supporting my students learning.	3	4	4	4.09	0.83
Q13 i-Ready math is a useful online tool when preparing students for online assessments.	3	4	4	3.91	1.04
Q14 i-Ready math aligns with instructional goals and standards.	3	4	4	4.18	0.87
Q15 i-Ready math has positively impacted students' engagement levels when participating in mathematics instruction.	3	4	4	3.36	1.03
Q16 There is support and professional development provided to me to integrate i-	4	2	1	2.55	1.57

Ready math in a meaningful and impactful way.					
Q17 The tools in the i-Ready math platform are helping my students.	4	4	4	3.64	1.03
Q18 I am able to differentiate instruction using i-Ready math.	3	5	5	4.45	0.93
Q19 I received proper training and/or information to effectively use i-Ready math.	4	4	1	3	1.79
Q20 I can monitor progress and student growth using i-Ready math.	2	4	4	4.36	0.67
Q21 I enjoy using i-Ready for mathematics instruction.	4	4	4	3.18	1.25
Q22 My students enjoy using i-Ready math.	4	4	5	3.45	1.37

Table 9 shows survey participants' responses and descriptive statistics for questions 12 and 13 of the survey. Categorized together, these questions hold the rankings of respondents' beliefs of i-Ready math as an effective learning tool and an assessment tool. Many respondents ranked these questions highly with one outlier: participant 1 (Q12: 2, Q13: 2). From this data, third-grade teachers demonstrated that they felt i-Ready math were an effective instructional tool. Question 13 asks respondents about i-Ready math and their feelings about it being an effective tool when preparing students for online assessments. On average, participants recorded a response of Somewhat Agree (4). Responses to question 13 support the research question, "How are educators using i-Ready math to prepare students for online assessments?" by portraying high rankings for i-Ready math.

Table 9

Is i-Ready a Useful Digital Tool?

	Range	Median	Mode	Mean	SD
Q12 i-Ready math is an effective tool in supporting my student learning	3	4	4	4.09	0.83
Q13 i-Ready math is a useful online tool when preparing students for online assessments	3	4	4	3.91	1.04

Note. SD= Standard Deviation

Table 10 exhibits responses and descriptive statistics from survey participants when answering question 14. Survey respondents identified their ranking of i-Ready math aligning with instructional goals and standards. Teachers are expected to maintain students' use of i-Ready math at a minimum of 45 minutes a week where the research was completed. The range of this question is larger than expected due to the outlier (Range=3). Although this outlier is present, other respondents recorded that they somewhat (4) and strongly agree (5) that i-Ready math and district standards align.

Table 10

Aligning with Goals and Standards

	Range	Median	Mode	Mean	SD
Q14 I-Ready math aligns with instructional goals and standards.	3	4	4	4.18	0.87

Note. SD= Standard Deviation

Demonstrated in Table 11 are the descriptive statistics of survey respondent's views on how i-Ready math impacts their student' learning. Presented in this table are survey questions 15, 17, and 22. Shown in the table, participants were asked to rank question statements regarding their beliefs on if i-Ready math impacts their students' learning. High ranges fall within this table, consisting of 3, and 4. The scores participants presented in their survey responses vary closely (M=3.63 Q15, M=3.64 Q17, M=3.45 Q22). Question 17, "The tools in the i-Ready math platform are helping my students." were ranked highly with one outlier, participant 1 (Q15= 2, Q17= 1, Q22= 1) (see Appendix F). Appendix F shows participants responses from the survey questionnaire. From previous and future tables, participant 1 ranks specific items lower compared to the remaining 10 participants (see Appendix F).

i-Ready math carries specific features to enhance students' levels while considering students' proficiency levels regarding specific areas of need and ability. The three questions presented within the table support the literature review in using online tools to increase engagement levels among students.

Table 11

Impacting Students' Learning

	Range	Median	Mode	Mean	SD
Q15 i-Ready math has positively impacted students' engagement levels when participating in mathematics instruction.	3	4	4	3.63	1.03
Q17 The tools in the i-Ready math platform are helping my students.	4	4	4	3.64	1.03
Q22 My students enjoy using i-Ready math.	4	4	5	3.45	1.37

Note. SD= Standard Deviation

The third-grade teachers' responses (Table 12) align with descriptive data that is shown in Table 6, where participants expressed the comfort levels using i-Ready math. Table 12 provides the descriptive statistics from question 16 and question 19. Statistically, survey respondents demonstrated their concern of minimum training and lack of professional development regarding using i-Ready math in mathematics instruction. Considering that data presented in Table 12, the range is high for both questions (4). Table 12 shows deficiencies regarding participants i-Ready training. This can be linked to the lack of integrating i-Ready math into instruction when preparing students for online assessments.

Statistics shown in Table 12 align with responses seen in Table 7, "Comfort using i-Ready math", also mentioned earlier. Survey respondents 1, 3, 6, 8, and 9 ranked their comfort levels using i-Ready math lower compared to other respondents (see Appendix F). I identified through descriptive statistics that there is a connection between lack of training and participants' low scores for their comfort levels. Although there are many participants who did not receive

appropriate training and professional development, other respondents ranked questions 16 (n=3) and 19 (n=6) highly. I considered the possible relationship between participants' years of teaching experience to their responses for questions 16 and 19. With further analysis, the data does not align for there to be any connection between years of teaching and their rankings for support and professional development.

Table 12

Support and Professional Development

	Range	Median	Mode	Mean	SD
Q16 There is support and professional development provided to me to integrate i-Ready math in a meaningful and impactful way.	4	2	1	3.36	1.03
Q19 I received proper training and/or information to effectively use i-Ready math.	4	4	4	3.64	1.03

Note. SD= Standard Deviation

Table 13 provides survey respondents and descriptive statistics seen within responses from question statement 18, “I am able to differentiate instruction using i-Ready math”. Compared to other tables, the range for differentiation is smaller (3). Statistically, survey respondents demonstrated that they are able to differentiate instruction using i-Ready math (4.45). i-Ready math provides instructors with tools to incorporate within their instruction to meet student needs (Table 4). By providing specific tools that align with standards and student needs, i-Ready math acts as an effective tool for preparing students for online assessments based on their struggles and higher scored standards. On the End of Grade (EOG) test, some standards are not presented as frequently as others. For example, fractions, two-step word problems and multiplication questions are more prominent than elapsed time questions.

Participant 1 acts as an outlier to the data presented (see Appendix F). This is a common concept among the survey responses. Although participant 1 somewhat disagreed (2) the data

were not drastically skewed amongst the other responses (see Appendix F). The standard deviation is small, providing a minimal difference in responses (SD=0.93).

From the data identified between the statistics of question 11 and questions 16 and 19 (professional development and preparation tasks) there may be connections linked between comfort levels and lack of professional development and training when using i-Ready math.

Table 13

Differentiating Instruction

	Range	Median	Mode	Mean	SD
Q18 I am able to differentiate instruction using i-Ready math	3	5	5	4.45	0.93

Note. SD= Standard Deviation

Table 14 provides survey responses regarding being able to monitor their student's growth for question 20. i-Ready math includes features in which users can monitor and track their student's progress when completing assigned lessons and learning games. Overall, survey respondents acknowledge that using i-Ready math facilitates progress monitoring and student growth (Mo= 4). Monitoring students' progress and proficiency with formative assessments helps teachers determine specific skills of improvement and next steps. This is a preparation task used to prepare students for online assessments. With a common ranking of "Strongly Agree" (5), respondents acknowledge the importance of using i-Ready to complete this task.

Table 14

Monitoring Student Growth

	Range	Median	Mode	Mean	SD
Q20 I can monitor progress and student growth using i-Ready math	2	4	4	4.36	0.67

Note. SD= Standard Deviation

Table 15 shows the descriptive statistics of survey respondents enjoyment using i-Ready math for question 21. Using i-Ready math is a requirement for the survey respondents based on the district the survey was distributed to. Overall, survey respondents enjoy using i-Ready math (M=3.18). However, some respondents ranked their enjoyment of i-Ready math as Somewhat Disagree (n=3), and one respondent Disagree (n=1).

Table 15

Enjoyment Using i-Ready

	Range	Median	Mode	Mean	SD
Q21 I enjoy using i-Ready for mathematics instruction	4	4	4	3.18	1.25

Note. SD= Standard Deviation

Frequency counts for table 16 shows open-ended responses for question 23 from the survey responses. Among the responses there were 4 topics discussed by survey respondents: district requirements, enhancing teaching practices, individualizing instruction, and preparation for online assessments. When implementing i-Ready math into instruction, often times educators are considering the district requirements (see Table 5). The district where the respondents teach requires teachers to implement 45 minutes of i-Ready math weekly for each of their students. Commonly used within the district is the “white paper strategy” where students fold papers to make workspaces for their problem solving. In the open-ended response question, two respondents mentioned the use of i-Ready teacher assigned lessons helping them in promoting this practice amongst classroom assessments. Another respondent agreed the i-Ready math allows students to practice specific tools and skills that are seen on online assessments. i-Ready is also used to notice students' proficiency levels regarding specific third grade standards that are taught throughout the year. Two respondents stated the benefits of i-Ready being a useful tool to prepare students for online assessments by showing students specific tools and strategies to

increase their performance. These topics also coincide with the descriptive statistics seen in Table 7 for research question 10, addressing the frequency of third-grade teachers considering i-Ready math as an assessment tool.

There is a connection between the data represented in Table 15 and Table 9. Open-ended responses for question 23 indicated that the use of i-Ready math assists them in preparing their students for online assessments. “i-Ready allows me to have students practice the skills being taught in class. Though it looks different than the EOG the strategies they use for online are the same and practiced while using i-Ready".

i-Ready can be used as formative assessments which are consistent with the descriptive statistics survey responses for Table 13, addressing survey question 18. There were two respondents who mentioned the use of i-Ready enhances their personal preparation tasks for online standardized assessments. i-Ready reinforces the use of “white paper strategy,” which is used to provide students a space to show their work when answering questions online.

Table 16

Preparing Students for Online Mathematics Assessments

	Topics	Frequency
Q23 How are you using i-Ready math to prepare students for online mathematics assessments? Explain.	District requirements	2
	Enhancing teaching practices	2
	Individualizing instruction	1
	Preparation for online assessments	2

Table 17 shows open-ended responses for question 24 from the survey responses. Among the responses there were 3 common topics that were present: individualizing instruction, features used in i-Ready, and teacher toolbox. i-Ready is meant to individualize instruction by providing teachers with levels at which their students are performing and provides next steps to enhance their learning experiences. Occurring four times, educators believed the features individualized

instruction, and there were two responses regarding specific features within i-Ready math. A survey respondent stated the use of learning games and instructional practices helps her high performing and low performing students.

Mentioned in Table 11, educators are able to use instructional tools within i-Ready math to enhance engagement levels. Survey respondents also believed that they were able to monitor students' growth and performance using i-Ready math. Commonly portrayed throughout survey responses is the use of teacher assigned lessons (2). Respondents stated the extra practice is individualized for students' needs and acts as good practice. Participants included those higher performing students enjoyed using the learning games found within i-Ready math and lower students enjoyed the extra practice. Thus, supporting the claim that educators can use i-Ready math to enhance and support students' engagement levels and learning. Open-ended question 24, asks participants to state the specific features of i-Ready they like most. The relationship between Table 11 and question 24, supports positive perceptions of i-Ready math.

Table 17

Features Commonly Used on i-Ready Math

	Topics	Frequency
Q24 What features do you find on i-Ready math to be most effective for your students learning? Explain.	Individualizing instruction	4
	Features used in i-Ready	2
	Teacher toolbox	3

Table 18 shows open-ended responses for question 25 from the survey responses regarding how third-grade teachers are using i-Ready math within their mathematics instruction. Among the responses, there were 3 common topics: using i-Ready for morning work, using assigned teacher lessons, and using i-Ready math as a station or small group. Teacher lessons are chosen by grade level and then a specific standard is selected. This coincides with specific

standards districts require teachers to follow. Three respondents stated this is how they begin their day for their students.

Table 18

When Educators are Using i-Ready Math in Instruction

	Topics	Frequency
Q25 How are you integrating i-Ready math in your mathematics instruction?	Morning work	3
	Teacher Lessons	3
	Station/Small Groups	2

Qualitative Findings

In the following sections, I will describe each of the three topics from the case study--some struggles figuring out how to use i-Ready math, using i-Ready math to make data-based instructional decisions, and using i-Ready math to foster student success. For each theme, I will also embed the theme with the participants' survey responses. At the end of the chapter, I will summarize the quantitative and qualitative findings.

Theme 1: Struggling With How to Use i-Ready Math

While discussing the impact and overall feelings using i-Ready math and the impacts it has on instructional decisions with Rebecca (Participant 7), the identification of struggles and areas of improvement were present. Rebecca expressed that she faced struggles when figuring out how to use and implement i-Ready math into instruction. Rebecca discussed throughout the interview specific struggles being lack of time, standard pacing not aligning, and tedious efforts finding data.

The county in which Rebecca works requires teachers to implement 45 minutes of i-Ready math weekly, per student. While conversing with Rebecca about the hardships of using i-Ready math, lack of time were a common statement. For example, she said, "Time is always the

biggest thing." With the additional requirement of implementing 45 minutes of i-Ready math into instruction, Rebecca stated, "The biggest challenge is getting the 45 minutes in." Subsequently, while questioning the biggest challenges when using i-Ready math, Rebecca again stated that "And if there was more time in the day, I would be a much bigger fan."

When taking the i-Ready math diagnostic, specific skills are tested to determine students' knowledge and their academic standing at specific points of the year (beginning of year (BOY), middle of year (MOY), and end of year (EOY)). Rebecca is a teacher in a third-grade classroom which is also commonly seen as the "testing grade." The transition from second grade to third grade comes with many learning curves for students and educators, which makes data significant and valuable when identifying individual student's levels of performance. Specifically looking at third grade and the data that is presented from these diagnostic testing, and students grade level placement, i-Ready math acts as a pathway to fourth grade. Rebecca addressed the alignment of what is tested on diagnostics and how this does not always align with the mathematics pacing guide that is provided, stating that she does not "think it fully aligns with our pacing." Pacing guides are put in place to provide teachers with a constructive flow when presenting instruction to students. Rebecca expressed that her "students never show amazing growth from beginning of year to middle of the year." Following this concern, she mentioned how during the MOY testing, she was walking around and noticed fractions on the test, even though based on pacing we are not meant to teach fractions until the third and fourth 9 weeks. Rebecca shared that based on the pacing guide provided, she sometimes does not have an accurate representation of her students' performance levels following the completion of MOY testing on i-Ready math. Once all content is taught from the pacing guide, Rebecca stated that she sees a jump in scores at EOY testing because all areas of curriculum have been touched on and taught. "Once we have taught that by

the end of the year, they make their growth. But checkpoint mid-year doesn't really give me, I feel like an accurate picture of their growth," stated Rebecca. Therefore, there are some struggles faced when figuring out how to use i-Ready math.

Theme 1: Embedding case study and survey. Rebecca's survey responses and interview responses unfolded the theme of struggles faced when using i-Ready math. Although Rebecca was highly favorable towards using i-Ready math, there were some indications to help this theme arise. Represented by question 9 (Table 4) of the survey, participants were asked about specific requirements that were considered when integrating i-Ready math into common core instruction. Analysis of Rebecca's survey responses indicated that she often considered district and school requirements when integrating i-Ready math. Previously discussed was the requirement of Rebecca having to provide 45-minutes of i-Ready instruction to her students weekly. This was also highlighted in her open-ended responses for the survey and when discussing the struggle of lack time, Rebecca expressed the most difficult part about using i-Ready math was finding the time to ensure all students were completing the required amount of time on this specific tool. Also, Rebecca scored "rarely" for both the consideration of student's proficiency levels and flagged students in question 9 (Table 4). The cross-analysis between these survey responses and Rebecca stating that finding data is "tedious" using i-Ready math can indicate a connection of why she is not accessing these tools.

Theme 1: Connection to Research Question. Among the positive trends found from this research, third-grade teachers expressed their struggles when using i-Ready math. When using this tool to prepare students for online assessments, participants included that there are many expectations that are sometimes not feasible. With high expectations, school and district wide, third-grade teacher felt that they weren't using i-Ready math with fidelity because of the limited

time within a school day. Rebecca, the case study, mentioned multiple times that the platform would be more useful and effective if struggles were not presented. This finding brings attention to the high demands of teaching and considerations third-grade teachers are holding in order to use i-Ready math when preparing students for online mathematics assessments.

Theme 2: Using i-Ready Math to Make Data-Based Instructional Decisions

Rebecca's interview responses provided valuable insights about the functionality and usages of i-Ready math when making data-based instructional decisions. An educator's instructional decisions can come from impulse, but data-based instructional decisions stem from evaluating and analyzing data to help determine next steps for specific students based on their needs. The data provided by i-Ready math, following the completion of diagnostic testing, acts as an aid when third-grade teachers are identifying instructional practices. Data points guide teachers when monitoring students' progression towards goal achievement and help teachers identify next steps for students based on specific areas of concern and skill development needs. Rebecca identified i-Ready math acting as a data point when meeting with a team to discuss testing accommodations for one of her students.

Rebecca discussed the ability to monitor student achievement goals when implementing i-Ready math into her instruction. The growth students make is documented throughout the year when students complete diagnostic testing and when students are completing lessons assigned by teachers. When evaluating her students' progress, Rebecca shared that her "...students from beginning of the year to end of year grew or not significantly but made growth." Due to the data tracking features of i-Ready math, Rebecca was able to identify specific areas of focus and overall performance levels of students.

Rebecca shared a personal story regarding using the data from i-Ready math to aid in helping identify test taking accommodations for a specific student. She was trying to decide if the student needed a paper copy of the standardized test, or could she perform to her ability when completing it online. When reflecting on preparing for the accommodations meeting, Rebecca, stated "...one of the data points we looked at was i-Ready as a team because it is all online and how she was doing and if she was making growth..." Upon analysis of the data by Rebecca and her team, they concluded that this specific student was hitting her growth goals when using i-Ready math. Therefore, Rebecca presented how she uses the data that i-Ready math provides to make data-based instructional decisions.

Determining the next steps for students is ubiquitous in teachers' minds and acts as a revolving door when considering multiple data points that are personal to individual students. While discussing the advantages of using i-Ready math with Rebecca, she mentioned the ability of seeing "how much time they are on it [i-Ready math], it lets me know if they are rushing, it flags the domains that they're having issues with." This data provided by i-Ready math promoted accurate step determination when considering students' needs for specific skills for Rebecca. Rebecca mentioned throughout the interview a favorite aspect of i-Ready math was "the data that is does give me." Additionally, Rebecca shared an example of how she is switching her instructional practices and directing her students towards specific math skills that students need to improve. After completing a Common Formative Assessment (CFA), Rebecca shared that she "...took whatever skills some of them did not do well on and I assigned them those skills on i-Ready." i-Ready math provided an understanding of specific areas of strength and weaknesses per student assisting Rebecca in identifying which skill practice would be most beneficial.

Theme 2: Embedding Case Study and Survey. Rebecca's survey responses aligned to interview responses when discussing how i-Ready math is used when making data-based instructional decisions. While considering how data is used for goal achieving monitoring, Rebecca responded in her interviews by addressing her students' growth and using i-Ready math as a data point when considering individual students' progress. This statement aligns with Rebecca's response to question 20 where participants ranked their agreeance when considering i-Ready math as a tool to monitor progress and student growth. Rebecca recorded her answer as "somewhat agree," which aligns with her interview responses when she discusses monitoring her students' growth.

Identifying next steps for students is a highly thought of consideration when making data-based instructional decisions. In Rebecca's interview responses, she was favorable towards the data provided by i-Ready math and provided examples of what is provided and instructional adaptations to how she is presenting i-Ready math to her students based on skills they are struggling with. Considering participants responses to question 18, "I am able to differentiate instruction using i-Ready math," Rebecca responded with "strongly agree." This coincides with her responses from the interview. During the interview, Rebecca mentioned trying something new by taking the skills students are struggling with and assigning them specific teacher lessons provided by i-Ready to see if this will help her students in this area. Rebecca's survey responses support this claim. Question 24 of the survey was an open-ended question where participants were asked about what features they find to be most effective. Rebecca stated that she likes "that the program gives students instruction on their level based on their assessment data." She went on to discuss assigning lessons for students based on what she is teaching to provide extra practice for students.

Theme 2: Connection to Research Question. Encompassed in the digital tool, i-Ready math, are data points that can be used to drive instructional decisions. The theme, using i-Ready math to make data-based instructional decisions developed when Rebecca shared her ability to differentiate instruction and developing next steps for students when using the data provided by i-Ready math. From this research, the use of i-Ready math to make data-based instructional decisions was determined following the triangulation of data points. Third-grade teachers are using the data provided by i-Ready math to make instructional decisions to aide in preparing students for online mathematics assessments by using features on the digital and targeting specific areas of focus.

Theme 3: Using i-Ready to Foster Student Success

Fostering student success comes with the territory of teaching. While interviewing Rebecca (pseudonym), she shared personal stories and the impacts that i-Ready math has had on her students' achievement. Also discussed were the online components of i-Ready math and how this is a tool that can be used and exposes students to online practices to aid in their preparation skills prior to taking online assessments.

When asking Rebecca to elaborate on specific improvements she has seen with her students when using i-Ready math, she discussed a personal story of a student who is currently in her classroom. Overall, she addressed that all her students have made growth throughout the year when using i-Ready math. The focal student chooses i-Ready when the choice is provided and he "likes to do i-Ready at home as well." Rebecca stated that this specific student "happens to be my top math student and his growth was phenomenal." Rebecca, in a jokingly manner, expressed that "it was definitely not anything that [she] taught him because his skills are so far advanced from what we were doing."

Discussed earlier were the transition from second to third grade and the additional testing students face. Currently, in the district where the research was conducted, teachers are identifying methods of preparing students for online assessments and preparing them to use multiple online tools to expose students to this form of testing. When interviewing Rebecca, she stated that she thinks “it helps with the online component because it is strictly online.”

Theme 3: Embedding case study and survey. The responses Rebecca provided from her interview reflected her responses from the survey. When discussing her students' progress who chooses i-Ready math as his platform of choice, Rebecca shared that she does “...think that shows how the program makes a difference.” During this point in the interview, Rebecca pulled up the students i-Ready data and stated that “he grew 152% of his annual typical growth.” The “typical growth” provided by i-Ready math shows teachers their students average expected growth for that grade level based on their diagnostic data. This aligns with Rebecca’s survey response to question 15 where participants ranked their agreeance when considering i-Ready math as a platform that positively impacts their students’ engagement levels. The connection between her student's success and her survey response shows how i-Ready math can be used to impact student learning. While providing i-Ready math to students, Rebecca acknowledges the “strictly online” aspect of i-Ready math exposes students to the many features when completing online assessments.

Theme 3: Connection to Research Question. The connection of this finding to the research question is parallel based on Rebeccas shared experiences of analyzing information provided by i-Ready math to track and monitor students’ success. The inclusion of specific percentages and data points of this student, provided an example of reflection practices and using features of i-Ready math to foster their success providing students with choice, and specific

lessons targeted towards their growth goals. Using i-Ready math to foster student success was a developed finding of the research, connecting back to the research question by providing an example of how third grade teachers are using the digital tool, i-Ready, to develop students learning by providing choice and using growth monitoring features.

Summary of Mixed Methods Findings

The purpose of this mixed methods research study was to explore how third-grade teachers are using i-Ready math to prepare students for online assessments. Descriptive statistics were used to analyze the survey responses provided by the participants. After the survey, a virtual interview was conducted, the bounded case identifies the case study, Rebecca. Rebecca shared valuable insights when answering the open-ended responses from the survey and the interview questions. The triangulation of the data unfolded three major themes when identifying how third-grade teachers are using i-Ready math to prepare students for online assessments. Rebecca discussed some struggles that are faced when using i-Ready math, how she is using i-Ready math to make data-driven instructional decisions, and how she is using i-Ready math to foster student success.

Although struggles were presented by Rebecca, the overall implications of identifying methods for using i-Ready math were favorable. The survey data from the 11 participants highlighted features that third-grade teachers are using in i-Ready math. The survey also addressed the comfort levels of teachers using i-Ready math and overall feelings of this digital tool. Third-grade teachers are using i-Ready math to prepare students for online assessments by using the data provided by i-Ready math to make data-driven instructional decisions and foster students' success by exposing them to an online tool.

Limitations

This research study has two main limitations: the number of participants who were willing to participate in the survey and interview and one grade level focus. Although the current study found components that are beneficial, these limitations can impact the research study. With the responses to the survey being limited, the data collected may be hard for readers to apply in a larger population. The interview criteria focused on third-grade teachers who were willing to participate, and they were favorable towards using i-Ready math to prepare students for online assessments. Due to these criteria, there was one case study, Rebecca. The second limitation is that the research focused on one grade level, third grade, due to third grade being a heavily tested grade. Although the data collected is directed towards third grade, the inclusion of all upper elementary teacher's uses of i-Ready math would represent an entire population: K-5, public schools. This could lead to an increase in responses.

CHAPTER 5: DISCUSSION

The focus of the present research study was to explore how third grade teachers are using i-Ready math to prepare students for online assessments. i-Ready math includes features based on students' levels of performance that aid teachers in determining next steps when preparing them. The research found three themes associated with preparing third grade students for online assessments using i-Ready math: Struggling with how to use i-Ready math, using i-Ready to make data-based instructional decisions, and using i-Ready to foster student success.

TPACK Framework

The theoretical framework, TPACK, supports many aspects of integrating technology into instruction (Mishra & Koehler, 2006). This correlates with the present research because I researched how third grade teachers are using a technological tool, i-Ready math, and how they are using it to prepare students for online assessments. Based on Mishra and Koehler's (2006) research, educators should be considering technology, pedagogy, and content knowledge when integrating online tools into their instruction. From the current research study, third-grade teachers shared how they were making instructional decisions when considering features of i-Ready math. Third-grade teachers are implicitly addressing all components of the TPACK framework when using i-Ready math.

Polly et al. (2021) identified future directions that should be considered when K-12 teachers are integrating technology into instruction. The framework that was used to support their research is TPACK. Using the TPACK model assisted them in identifying the importance of teachers and students reflecting on their practices, teachers' knowledge regarding content, how educators are showing their content to students, and the results of student achievement (Polly et al., 2021). The present study builds upon this source because i-Ready math provides these areas to teachers to support student learning.

Data Driven Instruction

While interviewing Rebecca, a determined theme that unfolded were how i-Ready math is used to create data-driven instruction. This idea intertwines the aspects of TPACK; technology, pedagogy, and content knowledge (Mishra and Koehler, 2006). The case study states that she is using the data provided by i-Ready to help prepare students for online mathematics assessments. i-Ready math provides data and features to consider when integrating the tool into instruction: instructional groupings, teacher toolbox, instruction lessons, and prerequisites (Curriculum Associates., n.d.). Third-grade teachers demonstrated knowledge based on what they know, what their students know, and how they are considering students' needs.

Martin et al. (2016) researched elementary school teachers' perceptions regarding internet-based instructional tools. The school in which Martin and others focus on data driven instruction and using digital tools to supplement students learning experiences. From my interview with Rebecca, the theme of using i-Ready math to create data driven instruction were identified. Supporting the theoretical framework, TPACK, teachers are using their knowledge of i-Ready math, and their students' knowledge of content when identifying how they are going to integrate i-Ready math to prepare students for online assessments.

While considering literature and the connections to the quantitative data, survey respondents shared their insights regarding their usage of i-Ready math when preparing students for online mathematics assessments. Survey participants showed that their use of i-Ready math allows them to differentiate instruction, monitor growth, increase engagement levels. Evaluating the listed features from my research, connects to the TPACK framework (Mishra and Koehler, 2006) by using i-Ready math to meet students at their levels and using the tools provided by i-Ready math to provide optimal, data-driven instructional practices.

Fostering Student Success

Han et al. (2019) identified perspectives from elementary students and teachers when integrating technology into their classrooms. One result from this study was using online tools to meet students at their level of performance (Han et al., 2019). The present study connects and builds upon this source by providing a specific example of a technological platform, i-Ready math and how third-grade teachers are using it. Rebecca discussed using i-Ready math to support her student learning by using the data to help drive her instructional decisions. Using i-Ready math to foster student success is a theme presented in the current research. This theme builds upon Petrilli's (2022) research who discusses specific features that are found in i-Ready math that support student learning: grade level placements, baselines, and areas of improvement.

The specific features found on i-Ready math were discussed and asked about during the present research study, connecting to Petrilli's research, discussing the features provided by the tool to benefit students learning (2022). My research connects to Petrilli's (2022) based on the features included and the scorings regarding these specific tools and what features third-grade teachers are using to prepare students for online mathematics assessments.

Cook and others (2022) provided timelines of noticing possible benefits of using i-Ready math, at least thirty minutes every week, per student, for eighteen weeks. The present research connects to this source by asking survey participants about district and school requirements. Participants consider district requirements when using i-Ready math in order to fulfill requirements and assessment preparation.

Student Achievement

Pilli and Aksu (2013) researched how fourth grade teachers are using a specific online tool for mathematics, Frizbi math. The focus of this research was students' achievement using

Frizbi math. My research builds upon this source because i-Ready math holds a similar presentation to Frizbi math. Connecting this idea to my case study, Rebecca shared how she was adapting her instructional practices by assigning teacher lessons using the i-Ready data, and she identified this being an element to student achievement.

Pangrazio et al. (2022) discussed tools that are provided by i-Ready that educators can use to increase student's achievement. Researchers discussed the use of the i-Ready diagnostic providing teachers with subskills. The connection of this to the technological pedagogical knowledge (TPK) element of TPACK is seen by Rebecca understanding i-Ready math and what it entails to support student learning and outcomes (Mishra & Koehler, 2006). Martin et al. (2022) examined perceptions of formative assessments from elementary school teachers. From this research teachers shared that technology helped them integrate formative assessments. My research builds on this claim because third-grade teachers scored favorably when considering i-Ready math as a tool to increase assessment preparation.

Cook and others (2022) identified that when teachers have access to all aspects of i-Ready math, there were achievement gains. The researchers looked at multiple districts and suggested that i-Ready math played a key role in increasing student scores when given an assessment compared to students whose teachers only received diagnostic data. My research connects to this research by presenting integration methods and teachers usage of how third-grade teachers are using i-Ready math to prepare students for online assessments. Student achievements were highlighted throughout the case study interview and i-Ready math was found to be a factor. Third grade teachers shared effective strategies when integrating i-Ready math to support their students' learning from the survey data. Third-grade teachers are using i-Ready

math to differentiate instruction using the data provided, and creating small groups directed towards specific areas of focus.

The district in which the research took place, has access to all features provided by i-Ready math. When answering question eight of the survey, participants shared their usage of specific features found on i-Ready math (see Table 4). The data collected through this research connects to Cook and others (2022) findings regarding the benefits of and acknowledgement of student achievement when using the features found on i-Ready math.

Struggles using i-Ready Math

O'Neal and others (2017) researched elementary school teachers' beliefs when integrating technology into instruction finding that one of the biggest challenges that is faced is the lack of time, "...demands placed on their time..." This connects to one of the themes identified when interviewing Rebecca, "Struggling with how to use i-Ready math," with a code being lack of time. Rebecca expressed that completing the district requirement of 45 minutes is a hardship when she is integrating i-Ready math into her instructional practices.

Some survey participants scored question 19 lower, regarding their training experiences when being prepared to use i-Ready math, ranking them as Strongly Disagree (1) (n=4), and Somewhat Disagree (2) (n=1) (see Appendix F). Martin and others (2022) identified lack of proper training in regards to digital tools being a common hardship or struggle when identifying integration methods. Their findings are relevant to the present research study based on the lower responses in preparation to using i-Ready math. Common struggles presented from both quantitative data and qualitative data when using i-Ready math to prepare students for online assessments is the lack of time regarding the district expectations and the possibility of third-grade teachers not receiving proper training when using i-Ready math.

Future Directions

Future research should evaluate i-Ready math usage amongst other grade levels due to the dependence on one another. Analyzing the correlation of effective strategies can help evaluate usages of preparing students for online assessments across a larger pool of participants. A recurrence that stuck out throughout the research was the lack of training and professional development when using i-Ready math. Although some participants were favorable in their responses, lack of training may lead to negative perceptions regarding i-Ready math. Identifying specific training received will provide valuable insights on having adequate knowledge when integrating i-Ready math into instruction.

Conclusion

The transition from paper-pencil assessments to online assessments introduced the need for the research question: how are teachers using i-Ready math to prepare third-grade students for online assessments? Third-grade teachers shared struggles using i-Ready math, but highlighted how i-Ready math provided them with effective instructional practices. The third-grade teachers who participated in the research were favorable in using i-Ready math to prepare students. The exploration of how teachers are using i-Ready math to prepare third-grade students for online assessments revealed three themes following the analysis of the data: some struggles figuring out how to use i-Ready math, using i-Ready to make data-based instructional decisions, and using i-Ready math to foster student success. Rebecca shared specific examples of how she is using i-Ready math and her overall feeling regarding i-Ready math. Specifically, she stated the use of teacher lessons that are directed towards specific areas of improvements for students struggles, and monitoring students' progress and growth.

The identified practices can alter how districts are preparing teachers to integrate all digital tools to better meet student's needs and increase understanding of the "why" in how we present instruction. The findings from this research study can provide insights to other educators, district members, and administrators to identify effective integration methods to increase student's preparedness for online mathematics assessments. From the research study, i-Ready math is used to prepare third-grade students by creating data-driven instructional practices and to foster student success.

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APPENDIX A: IRB APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
Willis Building · Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
rede.ecu.edu/umcirb/

Notification of Exempt Certification

From: Social/Behavioral IRB
To: Morgan Fairbrother
CC: Kristen Gregory
Date: 1/10/2024
Re: UMCIRB 23-002365
FAIRBROTHER: Educators Using iReady to Prepare Students for Online Mathematics Assessments

I am pleased to inform you that your research submission has been certified as exempt on 1/10/2024. This study is eligible for Exempt Certification under category # 1, 2 AB.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

Document	Description
Consent form(0.01)	Consent Forms
Email recruitment(0.01)	Recruitment Documents/Scripts
Interview(0.01)	Interview/Focus Group Scripts/Questions
Project Proposal (0.01)	Study Protocol or Grant Application
Survey(0.01)	Surveys and Questionnaires
Verbal Consent(0.01)	Consent Forms

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: INVITATIONAL EMAIL

I hope this email finds you well. My name is Morgan Fairbrother, and I am a graduate student at East Carolina University, completing my master's degree in Elementary Education. I am reaching out to invite you to participate in a research study that I am conducting for my thesis.

The purpose of this research study is to identify common trends, and feelings seen when educators are using I-Readys resources to enhance students' preparedness for online mathematics assessments in K-5, public schools. Your participation will involve completing a survey taking approximately 10 minutes. Upon completion of the survey, you will be asked if you are willing to participate in a follow-up virtual interview via Microsoft teams, taking approximately 30 minutes at a time that is convenient for you. Your responses will be confidential, and you will not be identified throughout this process.

Your participation is voluntary, and you are able to withdraw at any time. This will not affect any relationship that we may hold.

If you are willing to participate in this research study, please complete the following survey at your convenience. Please complete the survey within two weeks, a second email will be sent following the one-week mark as a reminder.

At the beginning of the survey, you will be asked for consent in this research. Upon completion of this survey, you are providing consent for me to use your responses in my research. If there are any questions throughout this process, do not hesitate to contact me.

I appreciate your acknowledgement and consideration of this invitation and look forward to hearing from you.

Best,

Morgan Fairbrother
Fairbrotherm18@students.ecu.edu

APPENDIX C: QUESTIONNAIRE SURVEY

You are being invited to participate in a **research** study titled "Educators Using I-Ready to Prepare Students for Online Math Assessments" being conducted by Morgan Fairbrother, a student at East Carolina University in the Elementary Education department. The goal is to survey 50 individuals. The survey will take approximately 10 minutes to complete. It is hoped that this information will assist us to better understand the use of specific digital tools in third grade mathematics classrooms and how educators are effectively integrating them to prepare students for online assessments.
Your responses will be kept confidential, and no data will be released or used with your identification attached. Your participation in the research is **voluntary**. You may choose not to answer any or all questions, and you may stop at any time. We will not be able to pay you for the time you volunteer while being in this study. There is **no penalty for not taking part** in this research study. Please call Morgan Fairbrother at 252-916-8696 for any research related questions or the University & Medical Center Institutional Review Board (UMCIRB) at 252-744-2914 for questions about your rights as a research participant.

I consent to complete this survey as a part of this study:

- Yes
- No

I.DEMOGRAPHICS:
Mark the appropriate response below.

1. Gender that you identify as:
    - Male
    - Female
    - Non-binary
    - I prefer not to say
2. Degree attained in education:
    - Associates
    - Bachelors
    - Masters
    - I did not receive my degree in teaching
    - Other
3. Years of experience teaching:
    - 0-4 years
    - 5-9 years
    - 10-14 years
    - 15+ years
4. Years of experience in third grade:
    - 0-4 years
    - 5-9 years
    - 10-14 years
    - 15+ years
5. Additional certifications. Check all that apply
    - National Board Certified
    - Other (Type below)
    - _____

6. Are you teaching in a Title 1 school?
    - Yes
    - No

II.I-READY MATH PRACTICES:

7. How often do you use I-Ready math in your classroom?
    - Daily
    - Several times a week
    - Once a week
    - Rarely
    - Never

Using the following 1-5 scales, indicate how often you participate in these activities:

8. How often do you use the below features on I-Ready math?

	Never	Rarely	Sometimes	Regularly	Often
Instructional Groupings					
Teacher toolbox					
Instruction Lessons					
Prerequisites					

9. How often do you consider the below items when integrating I-Ready math into instruction?

	Never	Rarely	Sometimes	Regularly	Often
District requirements					
School requirements					
Students' proficiency levels					
Flagged students					

10. How often are you using I-Ready math as an assessment tool (formative or summative)?

	Never	Sometimes	Often	Always
I-Ready as assessment tool				

11. How comfortable do you feel integrating these I-Ready math features into your instruction?

	Not comfortable	Somewhat Comfortable	Comfortable	Very comfortable
Instructional Groupings				
Teacher toolbox				
Instruction Lessons				
Prerequisites				

Using the below 1-5 scale, check the degree to which you agree with the statements listed:

1	Strongly disagree
2	Somewhat disagree
3	Neither agree nor disagree
4	Somewhat agree
5	Strongly Agree

12. I-Ready math is an effective tool in supporting my students' learning.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree

13. I-Ready math is a useful online tool when preparing students for online assessments.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree

14. I-Ready math aligns with instructional goals and standards.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree

15. I-Ready math has positively impacted students' engagement levels when participating in mathematics instruction.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree

16. There is support and professional development provided to me to integrate I-Ready math in a meaningful and impactful way.
    - Strongly disagree

- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

17. The tools in the I-Ready math platform are helping my students.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree
18. I am able to differentiate instruction using I-Ready math.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree
19. I received proper training and/or information to effectively use I-Ready math.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree
20. I can monitor progress and student growth using I-Ready math.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree
21. I enjoy using I-Ready for mathematics instruction.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree
22. My students enjoy using I-Ready math.
    - Strongly disagree
    - Somewhat disagree
    - Neither agree nor disagree
    - Somewhat agree
    - Strongly agree

III.OPEN-ENDED QUESTIONS:

23. How are you using I-Ready math to prepare students for online mathematics assessments? Explain.

24. What features on I-Ready math do you find to be most effective for your students learning? Explain.

25. How are you integrating I-Ready math in your mathematics instruction?

26. Would you be interested in participating in a one-on-one interview via Microsoft Teams to discuss your experiences and perceptions of I-Ready math?

- Yes- please provide name and email below
- No
- _____

Thank you for completing this survey on I-Ready math. Your feedback is valued and appreciated.

APPENDIX D: VERBAL CONSENT

I hope you are doing well. My name is Morgan Fairbrother, and I am a graduate student at East Carolina University, completing my master's degree in Elementary Education. After completing this research survey, you agreed to participate in this virtual follow-up interview. This interview is to gain additional perspectives when using I-Ready math to prepare students for online assessments. I will identify common themes amongst the interviewees to explore I-Ready math.

I am asking for your verbal consent to participate in this interview and to record this conversation using Microsoft Teams.

The recording of this conversation will be stored on a password-protected device that only the researchers will have access to. After all the interviews have been collected, the list of identifiers will be destroyed. All remaining data will be destroyed after three years, per federal regulations.

Thank you for your time and participation.

APPENDIX E: INTERVIEW

I appreciate your time and willingness to participate in this interview. Completing this interview should take approximately 30 minutes. This is a voluntary interview and if you wish to stop, please stop at any time.

For our interview, I will use Microsoft Teams. This will provide me with a transcript of our meeting, and I will be able to further analyze our discussion. Throughout our meeting, I will record information. Following our discussion, I will provide you with the transcript of our conversation. Following the analysis, I will send notes and comments to ensure that the information I am presenting is accurate.

The information collected will be stored securely. For my final report, I will not use your name, email, or identifying characteristics, you will remain anonymous.

Time:

Date:

Location:

Interviewer:

Interviewee:

This study explored how third-grade teachers are using I-Ready to prepare students for online mathematics assessments. For my study, I sent out the survey to all third grade, public school teachers within the county and you agreed to participate in a follow-up interview. As a participant, you will not be identified specifically. This interview will take approximately thirty minutes.

1. How is your overall experience using I-Ready for mathematics instruction?

2. What are some challenges you face when using I-Ready math?

3. Can you elaborate on specific examples of improvements you have seen in your student's mathematics skills following the use of I-Ready math?

4. Based on your personal preferences for teaching math, does the use of I-Ready math fit into your instructional practices?

5. What are some features you like and dislike?

6. While considering online assessments for students, do you think I-Ready math is an effective tool to use to prepare students for online assessments? How does this affect your everyday instructional practices?

7. Were there any challenges you faced when integrating I-Ready math into your instruction?

8. How are you using I-Ready math to prepare students for online mathematics assessments (i.e., in class assessments, EOG (End of Grade test) test)?

9. Is there anything else you would like to share about your experiences using I-Ready math?

APPENDIX F: PARTICIPANT SURVEY RESPONSES Q7-Q22

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
Q7 How often do you use i-Ready math in your classroom?	4	5	5	5	4	4	5	5	5	4	4
Q8 How often do you use the features below on i-Ready math?											
Instructional Groupings	1	2	2	5	3	3	1	3	5	3	3
Teacher Toolbox	3	3	3	5	3	2	2	4	5	4	5
Instruction Lessons	3	3	4	5	3	3	3	4	5	3	5
Prerequisites	1	2	4	2	3	3	2	3	5	2	3
Overall Mean	2	2.5	3.25	4.25	3	2.75	2	3.5	5	3	4

Q9 How often do you consider the below items when integrating i-Ready math into instruction?	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
District requirements	4	5	3	3	4	4	5	3	5	4	5
School requirements	4	5	4	3	4	4	5	3	5	4	5
Students' Proficiency Levels	3	5	4	5	4	4	2	5	5	4	5
Flagged students	3	5	3	5	4	4	2	5	5	3	5
Overall Mean	3.5	5	3.5	4	4	4	3.5	4	5	3.75	5

Q10 How often do you consider the below items when integrating i-Ready math into instruction?	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
i-ready as assessment tool	1	4	3	3	4	3	3	4	4	3	3

Q11 How comfortable do you feel integrating these i-Ready math features into your instruction?	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
Instructional Groupings	1	2	1	4	2	1	3	4	4	2	4
Teacher Toolbox	2	2	1	4	4	1	3	4	4	2	4
Instruction Lessons	2	2	3	4	2	1	3	4	4	2	4
Prerequisites	1	3	3	3	4	1	3	4	4	2	4
Overall Mean	1.5	2.25	2	3.75	3	1	3	4	4	2	4

Question	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
Q12 I-Ready math is an effective tool in supporting my students' learning.	2	5	5	4	4	4	4	5	4	4	4
Q13 I-Ready math is a useful online tool when preparing students for online assessments.	2	5	5	2	4	4	4	5	4	4	4
Q14 I-Ready math aligns with instructional goals and standards.	4	4	5	4	5	4	5	2	4	5	4
Q15 I-Ready math has positively impacted students' engagement levels when participating in mathematics instruction.	2	5	3	2	4	4	4	3	4	2	4
Q16 There is support and professional development provided to me to integrate i-Ready math in a meaningful and impactful way.	1	5	2	2	5	1	4	1	1	3	3
Q17 The tools in the i-Ready math	1	5	3	4	4	4	4	4	4	3	4

platform are helping my students.											
Q18 I am able to differentiate instruction using i-Ready math.	2	5	4	5	5	4	5	5	5	4	5
Q19 I received proper training and/or information to effectively use i-Ready math.	2	5	1	4	5	1	4	1	1	4	5
Q20 I can monitor progress and student growth using i-Ready math.	4	5	5	4	5	3	4	5	4	4	5
Q21 I enjoy using I-Ready for mathematics instruction.	1	5	4	2	4	2	2	4	4	3	4
Q22 My students enjoy using i-Ready math.	1	5	5	5	2	4	2	3	4	3	4
Overall Mean	2	4.91	3.82	3.45	4.27	3.18	3.82	3.45	3.55	3.55	4.18