IMPLEMENTATATION MATTERS

A Quality Improvement Project

Katlin Davis

16408 Nottingham Court
Tinley Park, IL 60477

708-369-8273
katlin.s.davis@vanderbilt.edu

VANDERBILT
UNIVERSITY

Acknowledgments, Gratitude, & Dedication

"The price of success is hard work, dedication to the job at hand, and the determination that whether we win or lose, we have applied the best of ourselves to the task at hand." – Vince Lombardi

To my husband, Bedo, thank you for your continued love, support, and encouragement over the last three years. You knew what I needed to hear and when I needed to hear it. Thank you for listening and being patient as I went through highs and lows during the program and life.

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Executive Summary

St. Michael School is a private catholic elementary school located in Orland Park, Illinois, the southwest suburbs of Chicago. St. Michael School serves students in three-year-old preschool through eighth grade. The school has approximately 597 students (U.S Department of Education, 2020). St. Michael School has four pillars: knowledge, hope, faith, and guidance. These pillars are the basis for their school and are at the forefront of all decisions (*Why SMS*, 2019).

The quality improvement project at St. Michael School focused on the implementation of i-Ready. I-Ready is an adaptive individual learning platform that uses a diagnostic test to assess a student's reading and math ability and then provides online lessons matched to that student's level. When the project began, i-Ready was in its first year of implementation of the program within the school. The principal wanted to investigate if it was being used, if it was changing instruction, and if it helped students learn and grow.

Quality Improvement Questions
- To what extent are the resources, capacity, and stakeholder support available to support the online learning initiative?
- In what ways did teacher practice change as a result of the online learning initiative?
- What is the level of student engagement in the online learning initiative?
- What is the relationship between engagement in the online learning platform and performance on assessments?

In this quality improvement project, I examined the implementation of i-Ready. I did this by collecting qualitative and quantitative data. The qualitative data included a focus group, interviews with teachers, interviews with administrators, and classroom observations of i-Ready in use. The quantitative data included analysis of i-Ready and student use. Within the quantitative data, I examined time spent engaged in i-Ready per grade level, amount of lessons passed and completed in i-Ready per grade level, and relationships between the time spent on i-Ready, lessons passed, and lessons completed through growth on diagnostic tests. The relationships were analyzed at each grade level to examine if specific grade levels showed a relationship or better growth. The combination of qualitative and quantitative data allowed for an in-depth analysis of the implementation and program evaluation of i-Ready.

Key Findings
Question 1 - To what extent are the resources, capacity, and stakeholder support available to support the online learning initiative?

To a certain extent there are resources, capacity, and stakeholder support available to support the online learning initiative. One impact that was brought up during the interviews and focus group was lack of sufficient technology, and the loss of the technology support teacher, created challenges for teachers. Another was that teachers lacked buy-in and wanted more training. Finally, the testing coordinator was a strong source of support.

Question 2 - In what ways did teacher practice change as a result of the online learning initiative?

Overall, teacher practice did not change significantly as a result of the online learning initiative. Teachers appreciated the ability to identify students for small group instruction, but data access and time to analyze data limited their ability to do so. Finally, teachers monitor student engagement and pacing while using i-Ready.

Question 3 - What is the level of student engagement in the online learning initiative?

Overall, students are using i-Ready consistently, but only one grade level meets each subject's weekly time requirements. Students in junior high appear to be more motivated and interested in i-Ready compared to the primary grades. Also, students in the primary and intermediate grades expressed frustration with using i-Ready. In addition, teachers monitor students while engaging in i-Ready and offer rewards as incentives.

Question 4 - What is the relationship between engagement in the online learning platform and performance on assessments?

The data revealed interesting relationships. As a school, overall relationships were found in lessons passed and weekly time for reading. In 2nd grade reading, more time on i-Ready was associated with negative growth. In math, relationships were found in lessons passed, lessons completed, and weekly time. In math, more time was associated with positive growth, particularly in higher grades.

Recommendations

Support for i-Ready

The first recommendation is for the administration to build support and validation for the use of i-Ready. The Archdiocese requires i-Ready at the primary level, and it will continue to be required in the near future. Therefore, the teachers need to support the new program and understand its importance. The first step will be for the administrators to find the teachers who use and support i-Ready. Those teachers will act as i-Ready mentor teachers. Mentor teachers have proven to build relationships, collaborate, and support professional development (Stanulis, 1995). The mentor teacher's responsibility will be to help model the use of i-Ready and share the benefits they see in their classrooms. Mentor teachers will open up their classrooms to the other teachers to watch i-Ready in action and show the small groups they are running based on i-Ready data.

Professional Development & Training

The second recommendation is to offer professional development and training on i-Ready. The best step would be to give each teacher a survey about i-Ready. The survey would ask the teacher's comfort level with each expectation of i-Ready. The administrators would then use the survey data to create i-Ready classes based on each specific teacher's needs. This way, the teachers only have to attend the sessions they need.

Increase Technology

The next recommendation is to increase iPads in the primary grades. If the younger students had more access to iPads, they would complete i-Ready in smaller, more meaningful, and engaging sessions. More access to iPads would also lessen the teacher's stress. Right now, the teachers are frustrated with having to stop mid-instruction to use their iPad time slot. More iPads would reduce

the stress and pressure the teachers are feeling to meet the schedule.

Adjust Delivery

Once the number of iPads increases at the primary level, the next recommendation would be to adjust the delivery of i-Ready. During the observation of the second-grade classroom, the younger students were more off-task and disengaged. Throughout the focus group, the primary teachers discussed the difficulty of engaging students in the program, using their allotted time slot, not having enough iPads, and i-Ready being a disruption to the day. Based on the teacher's feedback and observations, i-Ready should be used in small manageable chunks of time in the primary grades. This would include eliminating the mandatory 45 minutes a week of each subject. Instead, only one subject should be the focus of each week. By picking just reading for a week, the teachers will fit the time into their schedule and not feel they are losing as much instructional time.

Focus on Reading Instruction

The last recommendation is to focus on reading instruction and improve reading growth at St. Michael School across all grade levels. The data showed three grade levels (Kindergarten, second, and third grade) with negative growth on the i-Ready diagnostic from Fall 2019 to Winter 2020. Sixth grade had between 0-5 points in growth. First and eighth grade had between 5-10 points of growth. Finally, the fourth, fifth, and seventh grades had between 10-15 points of growth. When compared to math, the students had much lower growth in reading.

The first step in improving the reading growth would be to analyze the student data. Since the teachers will have already received specialized training on access and using data, they will run the reports that show the subcategories of reading and their students' scores. Once they have the reports, the teachers will use the data to create small groups. Since time was an overall concern during interviews and focus groups, it will be critical that teachers are given time to analyze the data, create groups, and make lesson plans. The administrators will change the use of the current monthly data meeting times. Instead of the administrators directing the teachers during the data meeting times, the teachers will be given time to analyze the data, create groups, and make lesson plans. The mentor teachers will help guide and support the teachers as they go through the data, create, find, and implement lessons.

Introduction

St. Michael School is a private catholic elementary school located in Orland Park, Illinois, the southwest suburbs of Chicago. St. Michael School has four pillars; knowledge, hope, faith, and guidance. These pillars are the basis for their school and are at the forefront of all decisions (*Why SMS*, 2019).   The aim of St. Michael School's pillar of knowledge is to be academically progressive. With hope, it is the goal of St. Michael School that the students understand the world and their place within it. Faith includes building a strong Catholic identity, which teaches students to live in faith and serve others. The last pillar of guidance includes having teachers with advanced degrees, a long history of teaching in Catholic education, and teachers who strive to keep learning and growing (*Why SMS,* 2019).

Education is a rapidly changing and progressive field. Due to the COVID-19 pandemic, the changes and gains in education have skyrocketed within the last year. Schools have changed and adapted quickly to meet learners' needs (Borup et al., 2020; Carter Jr et al., 2020). One of the most significant changes in education has revolved around the use and implementation of online learning, which is also the focus of this quality improvement project. Online learning has been a common trend in education at all levels (Brown & Park, 2016; Karich et al., 2014; Larreamendy-Joerns & Leinhardt, 2006). This project focuses on the implementation of i-Ready (an online learning platform) at St. Michael School. In the summer of 2019, the principal, Mr. Smith, had the opportunity to pilot the program, i-Ready, for a significantly discounted rate. The principal jumped at the chance and decided in August 2019 to use i-Ready for the 2019-2020 school year. While St. Michael School utilizes technology, including iPads in the primary grades, chrome books in the intermediate and

upper grades, and SMART Boards in all classrooms, this was a switch to an online learning platform with specifically tailored work for each student at the whole school level.

This project provides St. Michael School with the information needed to understand the implementation of i-Ready, how it is being used in the classroom, and how it is affecting student performance. While this project is specific to St. Michael School, it does offer an opportunity for other schools to look at these essential reminders when implementing a new online program in education.

In this quality improvement project, I examined the implementation of i-Ready. I collected qualitative and quantitative data. The qualitative data included a focus group, interviews with teachers, interviews with administrators, and classroom observations of i-Ready in use. The quantitative data included analysis of i-Ready and student use. Within the quantitative data, I examined time spent engaged in i-Ready per grade level, amount

of lessons completed in i-Ready per grade level, and relationships between the time spent on i-Ready and growth on diagnostic tests from Fall to Winter. The relationships were analyzed at each grade level to examine if any specific grade level showed a relationship or better growth. The combination of qualitative and quantitative data allowed for an in-depth analysis of the implementation of i-Ready.
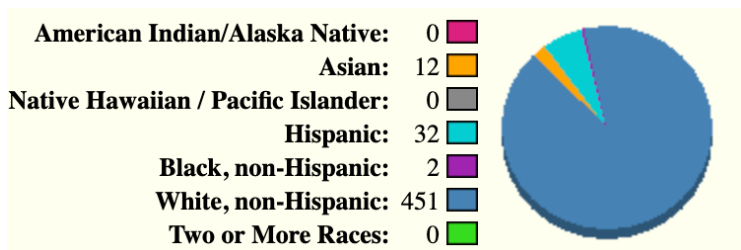
Organizational Context

St. Michael School is a private catholic elementary school located in Orland Park, Illinois, the southwest suburbs of Chicago. St. Michael School serves students in three-year-old preschool through eighth grade. The school has approximately 597 students (U.S Department of Education, 2020). The staff of St. Michael's includes a principal, assistant principal, four office assistants, thirty-five teachers (including classroom, resource, interventionist, technology, and specials), ten instructional aides, and two nurses (*Staff Contacts*, 2019).

 St. Michael School is not diverse in terms of ethnicity; the population is mainly white students (91%), the rest of the student population is Hispanic (6.4%), Black (0.004%), and Asian (2.4%) (U.S. Department of Education, 2020).

St. Michael School emphasizes academics, discipline, and moral values (*Saint Michael School – Knowledge, Faith, Hope, Guidance*, n.d.). St. Michael School has four pillars; knowledge, hope, faith, and guidance. These pillars are the basis for their school and are at the forefront of all decisions (*Why SMS*, 2019).   The aim of St. Michael School's pillar of knowledge is to be academically progressive with sound instruction. With hope, it is the goal of St. Michael School that the students understand the world and their place within it. Faith includes building a strong Catholic identity, which teaches students to live in faith and serve others. The last pillar of guidance includes having teachers with advanced degrees, a long history of teaching in Catholic education, and teachers who strive to keep learning and growing (*Why SMS,* 2019).

When considering the quality improvement project at St. Michael School, it is essential to understand the stakeholders involved in the project. The stakeholders are the students and staff of St. Michael School. The students use i-Ready for reading and math; the goal of i-Ready is for the students to improve academically. The staff members are the other stakeholders involved in this project. The teachers use their instruction time in order for the students to go on i-Ready. Administrators and teachers are hopeful that the instructional time spent on i-Ready will lead to overall higher scores on standardized tests. Due to COVID-19 and the cancellation of standardized tests during the 2020 school year, the staff at St. Michael School have been unable to see if i-Ready impacts standardized test scores.

American Indian/Alaska Native:	0	
Asian:	12	
Native Hawaiian / Pacific Islander:	0	
Hispanic:	32	
Black, non-Hispanic:	2	
White, non-Hispanic:	451	
Two or More Races:	0	

St. Michael School Demographics

When looking at this quality improvement project, it is also critical to consider the decisions that might be affected by the project's results. The first is the continued use of i-Ready. The Archdiocese of Chicago has mandated the use of i-Ready in kindergarten through second grade in all Catholic Schools for the 2020-2021 school year. However, St. Michael School has chosen to purchase i-Ready for their students in third through eighth grade. The cost is thirty-six dollars per child, which is a significant cost. The principal shared that to pay for i-Ready other instructional materials were eliminated, which was a tough choice since St. Michael School is fully in-person for learning this school year. Therefore, the decision to keep purchasing i-Ready for all students could be affected by this project. Another decision that could be affected by this project is the teachers' continued use of i-Ready in the classroom. The teachers are the program's implementors, and they must see it as valuable and vital to keep using their instructional time on the program. The last decision that could be affected by the program is how often the program is used. The quantitative analysis will determine if a certain number of minutes or lessons affects students' performance. These results could cause a change in the mandatory number of minutes/lessons at each grade level for both reading and math, depending on the data.

Before examining the factors and decisions that may be impacting the implementation of i-Ready, it was important to understand the i-Ready program itself. I-Ready is an adaptive individual learning platform that uses a diagnostic test to assess a student's reading and math ability and then provides online lessons matched to that student's level. The goal of i-Ready is to provide teachers with data about what students know and do not know (Curriculum Associates, 2020). The data from i-Ready allows teachers to deliver personalized digital learning and in-person instruction. i-Ready offers real-time data to make instructional decisions and facilitate student learning (Curriculum Associates, 2020). Once students take the initial diagnostic test, the program is customized to meet each student's needs by identifying gaps and providing enrichment opportunities in areas where children are ready (Curriculum Associates, 2020).

i-Ready provides easy-to-read reports that teachers can use to tailor individual and small group instruction. Targeted lessons can be printed or assigned in specific areas for selected students to differentiate instruction (Curriculum Associates, 2020). To see significant gains impacted by i-Ready, students should engage for an average of forty-five minutes in each domain, reading and math weekly. When engaged for the specified time periods, student gains were proven in all subgroups of students, including English Language Learners, and students with disabilities (Curriculum Associates, 2020).

Area of Inquiry

In August 2019, Paul Smith (St. Michael School Principal) decided to pilot i-Ready. Mr. Smith knew this was a short time frame to implement a new program, but he anticipated the Archdiocese would soon be investing in the program. Therefore, he decided to take the opportunity to learn more about the program and how it works. I met with Mr. Smith in December of 2019 to discuss the focus of my project. The first possibility of investigation at St. Michael was the program i-Ready. Mr. Smith expressed interest in learning if i-Ready was successful and if the teachers were using it with the students. After the initial pilot year, the cost of i-Ready would substantially increase; if St. Michael School kept the program, the School Board would require data and justification for the added expense. Differentiation and whole group teaching were other concerns at St. Michael School. If used correctly, i-Ready provides teachers the opportunity to differentiate and use small groups. However, this project's focus was to investigate if these changes were happening due to i-Ready. i-Ready was the perfect issue to understand better. Since it was the first year of the program, it was critical to investigate the program's implementation and its use.

After conducting classroom observations, the administrative team had concerns about teachers utilizing i-Ready and all of the program's resources. Mr. Smith shared that several teachers had come to him and expressed concerns about i-Ready and the amount of instructional time it took away from them. While he felt that St. Michael School has the best teachers, some were not open to change and not willing to get away from their core curriculum for the new programming.

Teachers are critical to implementing any new online program (Carrier, 2017; Doumanis et al., 2019; Larreamendy-Joerns & Leinhardt, 2006; Mclaughlin, 1990). If teachers are not implementing the program correctly or invested in using the program, it will be unsuccessful. Investigating the implementation and use of i-Ready allows for an in-depth analysis of what is happening in classrooms, including the teacher's feelings, attitudes, and student use. Suppose this project were not used at St. Michael School. In that case, the school could potentially keep spending a significant amount of money on a program that was not correctly implemented or appropriately used.

The cause of this issue at St. Michael School may be a fast implementation that was not rolled out successfully to staff. Another reason could be the lack of use of the program or the teachers not fully utilizing the program's possibilities. Finally, another cause to consider could be student engagement in the program. This could include the students not using the program or being held accountable to engage in the program.   The specific cause of the issue was not clear at the beginning of the project. The project's goal was to understand the initial implementation, explore the potential causes, and provide the school with evidence to make future decisions.

Literature Review

It is with a spirit of learning and growing that St. Michael School decided to undertake a significant shift by entering into the online learning field. To understand the change that St. Michael School undertook, it is important to understand online learning, the teacher's role, and how students can obtain success. Once online learning is understood, then the next step is to examine the implementation of online learning. This can be achieved by looking at the facilitating conditions, implementation supports, and outcomes. The outcomes are based on implementation supports and facilitating conditions.

St. Michael School follows the prevailing trend of online learning, which is becoming a common practice in education. There are examples of online learning at all levels of education, from elementary school to the university level (Brown & Park, 2016; Karich et al., 2014; Larreamendy-Joerns & Leinhardt, 2006). Many themes of online learning have emerged over the years, including democratization (access to people throughout the world), liberal education (a more profound sense of purpose), and instructional quality, including personalization of instruction (effectiveness of teachers and environments) (Larreamendy-Joerns & Leinhardt, 2006). These themes have established the uses and benefits of online learning at all levels of education and describe why St. Michael School decided to make a move to online learning.

When a school decides to implement online learning into the curriculum, it is common for teachers and staff to question if online learning is as effective as in-person education. When determining online learning effectiveness, it can be challenging to measure which is more effective, an in-person educational experience, or a virtual experience. One study measured students' learning and retention of learning over an extended time (Brown & Park, 2016). Students participated in either an in-person or virtual class. The same instructor taught both classes, and standardized assessments were given to both groups of students immediately following the end of the course and then a year later. The study showed that neither classroom was more effective for learning or retaining knowledge (Brown & Park, 2016). This study has significant ramifications for the education field, even though it was only at the college level. While teachers at St. Michael School (and all across the United States) may feel that online learning inhibits or takes away from the art of teaching, this study points out that when the teacher is the same the students can learn just as well in a virtual environment. While other studies

have pointed out the negative consequences of online learning (Hart et al., 2019; Heinrich et al., 2019), it is important to note the differences in these studies compared to Brown & Park (2016). Heinrich et al. (2019) found negative outcomes on a large scale for high school students that needed to take an online course for credit recovery. These are students who struggled academically and were mandated to take the online course to meet graduation requirements. Even though negative consequences were found on a large scale for online learning, the students struggled academically and were mandated to take the online course. However, the students in the Brown and Park (2016) study were average college students with the choice to take the course online with the same instructor. These studies point out the need for vital conversations about best practices in online education.

Teachers' impact, including their attitudes, interactions, and relationship with online learning, have also been proven to be beneficial to online learning (Carrier, 2017; Doumanis et al., 2019; Larreamendy-Joerns & Leinhardt, 2006; Mclaughlin, 1990).

While the previous study accounted for the same teacher, it is also essential to consider the art of teaching when discussing online learning. Online learning and access to online learning strongly impacts teachers and their instructional quality both positively and negatively (Carrier, 2017; Doumanis et al., 2019; Larreamendy-Joerns & Leinhardt, 2006; Mclaughlin, 1990; Pamungkas et al., 2020). Online learning has created a community of teachers with a joint effort (Larreamendy-Joerns & Leinhardt, 2006). Teachers have a desire to search for pedagogical practices

and show a greater sense of inquiry using online learning (Larreamendy-Joerns & Leinhardt, 2006). It is important to note that teachers face dangers within this new online learning initiative (Carrier, 2017). Some dangers include disregarding current research and practices and instead relying on personal influences and biases (Carrier, 2017). A teacher's job should focus on providing guidance, using evaluations to tailor instruction, providing assessments, and ensuring students have ideological and psychological support (Pamungkas et al., 2020). Teachers sometimes worry and struggle to complete all of these job duties when online learning is introduced (Pamungkas et al., 2020). Instead, teachers may seek out other teachers who have the same experience and current practices as themselves (Carrier, 2017). This lack of diversity of practice can lead to misconceptions among educators and could spread poor instructional practices across the online learning system (Carrier, 2017).

Teachers' perspectives act as a guide when designing learning programs (Carter Jr et al., 2020; Gray & Diloreto, 2016; Mclaughlin, 1990). When engaging in online learning, the teacher's most important role is to establish a presence through instructional management, building understanding, and direction instruction (Gray & Diloreto, 2016). This includes providing constructive feedback when students engage in online learning while also supporting independent learning skills (Gray & Diloreto, 2016). When designing and engaging in online learning programs, teachers also need to provide pacing support and problem-solving techniques (Carter Jr et al., 2020). After the design is complete, teachers are responsible for delivering pacing support and monitoring students closely while engaging in the online learning platform (Carter Jr et al., 2020; Mamun et al., 2020; Pamungkas et al., 2020). Teachers have a fundamental role in the implementation, use, and design of an online learning program. This role can have a positive or negative effect, which is essential to keep at the forefront when making decisions surrounding online learning initiatives.

Student engagement, collaboration, involvement, and motivation are all factors that are effective when using online learning (Doumanis et al., 2019; Karich et al., 2014; Prescott et al., 2018). Student collaboration proved to be most beneficial when using an online virtual learning environment (Doumanis et al., 2019). When the students had the opportunity to create a learning narrative within a virtual environment for group tasks to be completed, they showed the most gains and progress.

A students' overall motivation to use the online learning platform has a significant overall effect on performance (Carter Jr et al., 2020; Gray & Diloreto, 2016; Karich et al., 2014). One way to increase motivation when using online learning is to set goals and emphasize personal accountability (Carter Jr et al., 2020). When students have an investment in what they are trying to accomplish, they become more motivated. This can be best accomplished when the students are in a supported environment.

Student engagement has a significant impact on online learning success (Borup et al., 2020; Carter Jr et al., 2020; Gray & Diloreto, 2016; Martin & Bolliger, 2018; Prescott et al., 2018). When students are engaged, they have a willingness and desire to succeed in the learning process (Gray & Diloreto, 2016). The level and amount of student engagement within a learning environment is correlated to the student's achievement in both in-person and online learning (Carter Jr et al., 2020; Gray & Diloreto, 2016). Student engagement within the online learning environment has also been most successful when students work on realistic scenarios, and learners can explore and discover themselves (Martin & Bolliger, 2018). Student engagement needs to be at the forefront

of decisions about implementing and using online learning platforms.

> Student engagement, collaboration, involvement, and motivation are all factors that are effective when using online learning (Doumanis et al., 2019; Karich et al., 2014; Prescott et al., 2018)

When thinking about students' engagement within the online learning program, blended learning is an important option. Blended learning is a combination of online learning and teacher-directed learning (Prescott et al., 2018). In blended learning, when students are actively engaged for the recommended amount of time with the online learning platform, the students had the most significant achievements on standardized tests (Prescott et al., 2018). The most significant benefits of online learning in a blended learning environment were in the younger elementary grades (kindergarten through third grade) (Prescott et al., 2018). Students need to be engaged and motivated, and to collaborate to find the most success with online learning.

These factors lead to the importance of implementation when starting an online learning initiative at St. Michael School. The research conducted around online learning has been able to identify areas that are most beneficial to students and teachers to see the most significant results. While some of the research identified focused on older students, the themes of engagement, motivation, collaboration, and involvement shone through for students (Brown & Park, 2016; Carrier, 2017; Carter Jr et al., 2020; Doumanis et al., 2019; Gray & Diloreto, 2016; Karich et al., 2014; Larreamendy-Joerns &

Leinhardt, 2006; Martin & Bolliger, 2018; Prescott et al., 2018). Teachers' impact, including their attitudes, interactions, support, knowledge, and relationship with online learning, have also been proven to be beneficial to online learning (Carrier, 2017; Carter Jr et al., 2020; Doumanis et al., 2019; Gray & Diloreto, 2016; Larreamendy-Joerns & Leinhardt, 2006; Mclaughlin, 1990). For the students to have access to online learning and be collaborative, engaged, motivated, and involved, they have to be given access by their teachers. The teachers need to buy-in to the online program and have the training resources necessary to ensure students effectively use it. This will lead to improved outcomes for students (Carrier, 2017; Doumanis et al., 2019; Gray & Diloreto, 2016; Larreamendy-Joerns & Leinhardt, 2006; Martin & Bolliger, 2018; Mclaughlin, 1990)

Conceptual Framework

The scope of this project revolves around the implementation of a new online learning platform at St. Michael School (Table 1). When considering the success of any program, the most critical aspect to consider is its implementation. Implementation of a new program requires careful planning, measurement, reflection, and assessment (Durlak & DuPre, 2008; Meyers, Durlak, et al., 2012; Meyers, Katz, et al., 2012). In terms of online learning implementation this means examining students' engagement and involvement when using i-Ready. The facilitating conditions of the online learning program should be the first aspect to examine before implementation can occur at St. Michael School. The facilitating conditions are what need to be in place before implementation. One facilitating condition is the importance of contextual factors and community.
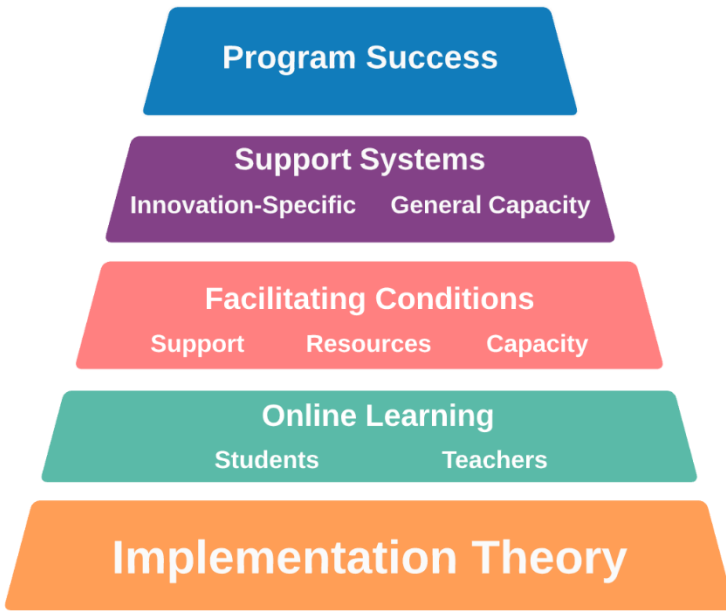
Table 1 - Online Implementation Theory

This includes having members of the community participate in shared decision-making regarding the original implementation. In St. Michael's case, it was adopting the online learning program (Durlak & DuPre, 2008; Meyers, Durlak, et al., 2012; Meyers, Katz, et al., 2012). At St. Michael's, this includes looking at who was involved in the decision-making process, community involvement in the decision, program selection criteria, and the level of consultation with the teachers. When considering facilitating conditions, the organization members must have the resources, capacity, and supports to implement (Meyers, Katz, et al., 2012). In terms of St. Michael School, this meant examining if teachers have the resources they need to use the online learning platform and what supports are in place to guide them through the switch to online learning.

The next step in implementation is the support system. Supports are broken into two categories; innovation-specific and general capacity (Meyers, Katz, et al., 2012). Innovation-specific refers to the required knowledge, skills, and motivation needed to use the implementation (Meyers, Katz, et al.,

2012). In St. Michael's case, this meant examining if teachers have specific knowledge on how to use the online learning platform. This also meant analyzing professional development opportunities and training. General capacity refers to the infrastructure and functional factors (Meyers, Katz, et al., 2012). At St. Michael School, this meant examining the technology available to the students and staff. It also includes the internet accessibility of the building.

The facilitating conditions and support system work together to decide the outcome of an implementation (Meyers, Katz, et al., 2012). Support systems help maintain a level of capacity in the delivery system, which puts the innovation into practice so that the outcome is achieved. Programs implemented carefully and lacking any significant implementation problems have an effect size two to three times higher (Durlak & DuPre, 2008). There must be specific data that precisely shows the conducted program involved and how the outcome data should be interpreted (Durlak & DuPre, 2008; Meyers, Durlak, et al., 2012; Meyers, Katz, et al., 2012). The use of the online learning platform at St. Michael School has assessments built in that allowed for a measurement tool to gauge the success of the implementation of the online learning platform. Teacher interviews and classroom observations were evaluated to learn about the implementation of the online learning platform. The data on implementation allowed for an analysis of how outcome data should be interpreted (Durlak & DuPre, 2008). Gathering data from the online learning platform as well as from teachers regarding the implementation and classroom observations allowed for a thorough analysis of the online learning program used at St. Michael school.

Quality Improvement Questions

This quality improvement project examined the implementation of an online learning program (i-Ready) at a Catholic elementary school. The literature highlights the importance of teachers' impact, including attitudes, support, knowledge, and interactions when implementing and utilizing online learning (Carrier, 2017; Carter Jr et al., 2020; Doumanis et al., 2019; Gray & Diloreto, 2016; Larreamendy-Joerns & Leinhardt, 2006; Mclaughlin, 1990). For an online learning initiative to be implemented, successful students should be motivated, engaged, supported, and collaborative. (Brown & Park, 2016; Carrier, 2017; Carter Jr et al., 2020; Doumanis et al., 2019; Gray & Diloreto, 2016; Karich et al., 2014; Larreamendy-Joerns & Leinhardt, 2006; Martin & Bolliger, 2018; Prescott et al., 2018). Implementation of a new program also needs to ensure that facilitating and supporting systems are in place. In this case, examining how the program was implemented and chosen, as well as making sure that teachers have the training, resources, and support to implement i-Ready (Durlak & DuPre, 2008; Meyers, Durlak, et al., 2012; Meyers, Katz, et al., 2012). This project used literature about best practices of online learning and theory around implementation to investigate the following questions.

Quality Improvement Questions

To what extent are the resources, capacity, and stakeholder support available to support the online learning initiative?

In what ways did teacher practice change as a result of the online learning initiative?

What is the level of student engagement in the online learning initiative?

What is the relationship between engagement in the online learning platform and performance on assessments?

Project Design

Data Collection

A mixed-method approach to collect both quantitative and qualitative data answered the quality improvement questions (Table 2). The qualitative data included focus groups, interviews with teachers and administrators, and observations of primary and junior high students using i-Ready in the classroom. The quantitative section had only i-Ready data. The i-Ready data included individual student usage, including time engaged in the program, lessons passed (students received a 70% or higher), lessons completed (all lessons completed), and student growth was measured using the diagnostic test scores from Fall to Winter in reading and math.

The first quality improvement question: To what extent are the resources, capacity, and stakeholder support available to support the online learning initiative? This question incorporates theory around implementation and online learning. For online learning implementation to be successful, the teachers need to have their facilitating conditions met and support systems in place. The facilitating conditions mean being part of the decision to adopt the program, establishing a need for the program, as well as providing all necessary resources, training, and support (Durlak & DuPre, 2008; Meyers, Durlak, et al., 2012; Meyers, Katz, et al., 2012). The support systems mean having specific knowledge on how to use the online learning platform and general capacity. This will mean analyzing professional development opportunities and training as well as the technology available to the students and staff. In order to answer this question, it was critical to conduct a focus group and interviews with administrators and teachers to learn about the implementation through their experiences, capacity, and support.

The second quality improvement question is: In what ways did teacher practice change as a result of the online learning initiative? Teachers' impact, including attitudes, support, knowledge, and interactions when implementing and utilizing online learning, affect the program's success (Carrier, 2017; Carter Jr et al., 2020; Doumanis et al., 2019; Gray & Diloreto, 2016; Larreamendy-Joerns & Leinhardt, 2006; Mclaughlin, 1990). A change in teacher practice should be seen when an online learning program is implemented and used successfully. The change to teacher practice will also depend on the teachers having the proper support system, including innovation-specific and general capacity (Meyers, Katz, et al., 2012). Focus group, interviews with teachers and administrators, and observations helped answer the question. The interviews and focus group allowed the teachers to discuss and explain their

changes in teacher practice. The administrator interviews focused on teacher practice, changes in instruction/classrooms, monitoring, and feedback. Teacher practice in action as well as teacher's navigation and use of technology was witnessed during observations.

The third quality improvement question is: What is the level of student engagement in the online learning initiative? This question needed to be examined because online learning is successful when students are engaged, motivated, supported, and collaborative. (Brown & Park, 2016; Carrier, 2017; Carter Jr et al., 2020; Doumanis et al., 2019; Gray & Diloreto, 2016; Karich et al., 2014; Larreamendy-Joerns & Leinhardt, 2006; Martin & Bolliger, 2018; Prescott et al., 2018). In order to answer this question, student data from i-Ready needed to be examined surrounding how often students were engaging in the program and if they were meeting teacher and program expectations. This question was also answered through the focus group and interviews to understand the teacher's opinion and perspective about student engagement. The last aspect was classroom observations to witness students' engagement, motivation, support, and behavior while using i-Ready.

The final quality improvement question is: What is the relationship between engagement in the online learning platform and performance on assessments? This question examined the program's success by identifying if there was a relationship between students' engagement and their growth on the diagnostic tests within i-Ready. This question is based solely on i-Ready data and the identification of relationships.

Interview and focus group questions (*Appendix A*) were developed based on online learning implementation theory for the teachers and administrators. The same questions were utilized for the focus group and interviews of teachers.

The questions focused on implementation, training, resources, teacher practice, student engagement, technology, and support. The administrator questions focused on implementation, training, teacher practice, changes in instruction/classrooms, monitoring, and feedback. The classroom observations were placed in the following categories: teacher interactions, monitoring, student engagement, types of problems, and off-task behaviors.

Recruitment

Recrutment for the project began in May 2020. The principal introduced the project, shared the recruitment letter (*Appendix B*), and asked teachers to respond to his email if they were interested in meeting with me. The initial recruitment had three responses from all primary teachers (Kindergarten – 2nd Grade). I sent a Google Form to all three teachers to find a common time to meet via Zoom. The first focus group of the primary teachers met in June 2020. I sent several emails through July and August of 2020 asking for more participants. I did get two responses and met with an intermediate teacher and the testing coordinator in July. After no other responses, I asked the principal if he had any suggestions or tips. However, it was a busy time of year with returning to in-person learning while following COVID protocols. I resumed recruitment in September 2020. I set up my interviews with the administrators for September, and we met via Zoom. For the teachers, I started by emailing the previous teachers I had spoken with and asking for any recommendations for potential interviewees, though that garnished no responses. At the end of September, I brought donuts and coffee to St. Michael School; I also included recruitment cards (*Appendix C*) asking teachers to speak with me and offering a $5 gift card if they participated. I followed up the coffee and donuts with individualized emails.
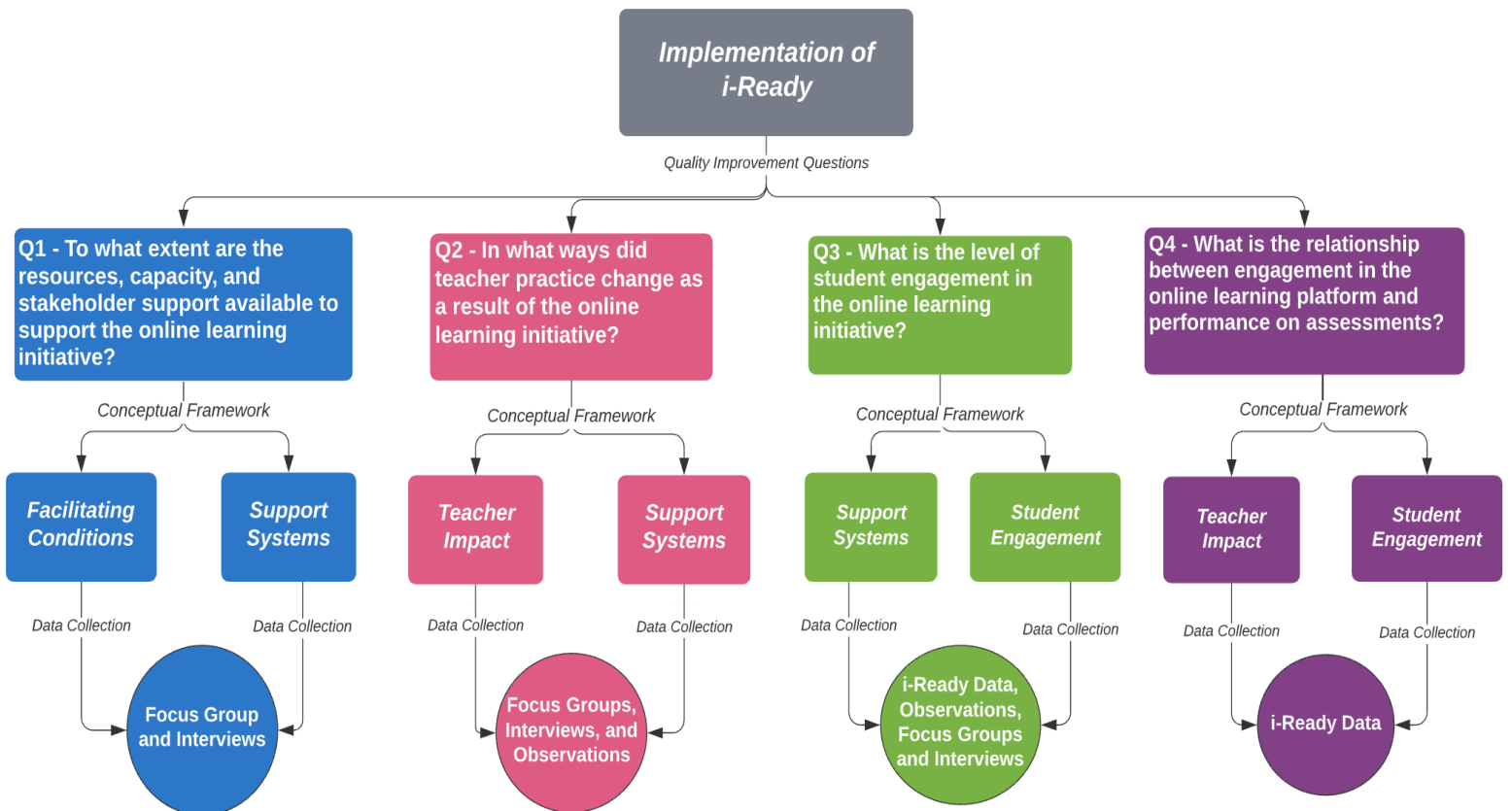

Table 2 - Concept Map

Quality Improvement Questions	Data	Participants

Q1 - To what extent are the resources, capacity, and stakeholder support available to support the online learning initiative?	• Interviews
	• Focus Group
		Administrator Interviews
		  • Principal, Assistant Principal, Testing Coordinator
		Focus Group
		  • Primary Teachers (K-2)
		Teacher Interviews
		  • 2nd thru 8th Grade Teachers

Q2 - In what ways did teacher practice change as a result of the online learning initiative?	• Interviews
	• Focus Groups
	• Observations
		Administrator Interviews
		  • Principal, Assistant Principal, Testing Coordinator
		Focus Group
		  • 3 Primary Teachers (K-2)
		Teacher Interviews
		  • 2nd - 8th Grade Teachers (Seven Teachers)
		Observations
		  • 2nd Grade Classroom
		  • 7th Grade Classroom

Q3 - What is the level of student engagement in the online learning initiative?	• iReady Data
	• Interviews
	• Focus Groups
	• Observations
		i-Ready Data
		  • 433 Students in Kindergarten – 8th Grade
		Administrator Interviews
		  • Principal, Assistant Principal, Testing Coordinator
		Focus Group
		  • Primary Teachers (K-2)
		Teacher Interviews
		  • 2nd thru 8th Grade Teachers
		Observations
		  • 2nd Grade Classroom
		  • 7th Grade Classroom

Q4 - What is the relationship between engagement in the online learning platform and performance on assessments?	• iReady Data	***i-Ready Data*** • 433 Students in Kindergarten – 8th Grade

Table 3 - Data Collection & Participants

That effort garnished numerous responses. In order to accommodate all of the teachers, I conducted individual interviews at times that were convenient. Out of the six additional interviews, four were done using Zoom, and the other two teachers were more comfortable speaking on the phone. Once all the interviews were completed, I was able to speak with ten out of the twenty classroom teachers, which included teachers at every grade level. I used the interviews to learn about i-Ready schedules and set up observations with teachers receptive to me coming into their classroom. I observed the second and seventh-grade classrooms in November 2020. Table 3 shows a summary of the data collected and participants used for each quality improvement question.

Data Analysis
Interviews and Focus Groups
I transcribed all interviews and focus group then uploaded into MAXQDA. Along with the transcripts, the video and audio files were also attached to the transcripts in MAXQDA.
Before I analyzed the transcripts, I examined the literature around online implementation theory to develop codes. The codes were: capacity, leadership, planning, reflection, resources, support, student engagement, teacher practice, and training. Once the codes were established, I listened to the videos and read

through the transcripts to assign appropriate codes to the transcripts. After this process was completed, I reread the transcripts under each coded section and broke down the coded section into the themes that emerged. I did this for each of the nine coded areas. When I finished that process, I typed notes regarding that theme, including quotes, how often specific themes were brought up, and observations about what was said. After all notes were typed, I printed them and organized the codes and themes to find the overarching themes that emerged from the data. Finally, I organized each coded theme into the related quality improvement question, making sure to highlight answers that were given by administrators as compared to teacher answers. Once the transcripts were coded and themes were identified, the notes and transcripts were used to answer the relevant quality improvement questions. When analyzing the data and looking at

Quality Improvement Question	Interview / Focus Group Codes	Interview Focus Group Themes	Observation Focus Areas
Q1 - To what extent are the resources, capacity, and stakeholder support available to support the online learning initiative?	• Capacity • Resources • Support • Leadership • Training	• Technology • Differentiation • Community • Implementation • Resources • Collaboration • Uninformed • Professional Development • Testing Coordinator	NA
Q2 - In what ways did teacher practice change as a result of the online learning initiative?	• Teacher Practice • Planning • Support • Reflection • Resources	• Instruction • Technology • Data • Time • Monitoring • Student Problems • Resources	• Teacher Interactions • Monitoring
Q3 - What is the level of student engagement in the online learning initiative?	• Student Engagement	• Motivation • Interest • Frustration • Teacher Monitoring • Rewards • Time	• Student Engagement • Types of Problems • Off-task behaviors

Table 4 - Data Coding and Themes

the themes it was necessary to note the differences in observations and experiences between the administrators and the teachers. The quality improvement questions used the themes and frequency of responses under each theme to answer the questions (Table 4).

Observations
Observations were conducted in a second and seventh-grade classroom. During the observations, I took field notes in the following areas: teacher interactions, monitoring, student engagement, types of problems, and off-task behaviors. After the observations, I typed up the field notes and added additional details and observations. Then I matched the notes and details to the specific research question being answered and the theme, if applicable.

i-Ready Data
The quantitative analysis focused on the student data from i-Ready. The reports were exported from i-Ready and sent to me via email. The first step was to clean the data and import the data into R. In cleaning the data, I anonymized one report that had accidentally left student names within the file. I also made sure that categorical and number data were coded correctly so that analysis could be done successfully. The diagnostic testing data had each student listed three times based on the three diagnostic tests from the 2019-2020 school year. This required filtering out the correct data and having only one of each student in the data set. Once the data was cleaned, it was imported into R.

After the data was imported into R, I had to create code and sort the data in order to be able to use it for the analysis. All of the usage data was sorted by months. The first step was creating new columns with the total time, lessons passed, and lessons completed for the whole school year. Then totals were also needed for August 2019 until January 2020. I did this because the analysis focused on the fall and winter diagnostics. Since

St. Michael School moved to eLearning due to COVID in March 2020, diagnostic test three was given at home. St. Michael School found out that many parents took the test at home for their child and decided not to count or use the Spring diagnostic. Once the usage data was completed, the diagnostic test data was used to create a new column for student growth. This was done by inserting a formula that subtracted the overall score of the Fall diagnostic from Winter diagnostic. The student growth column was vital because it would help to determine if a relationship exists in the data.

Now I was ready to begin the descriptive analysis. I first started looking at the average number of minutes used, lessons passed, and lessons completed across each grade level for both reading and math for the 2019 – 2020 school year. I graphed each result to compare and observe usage per grade level. Next, I ran the same analysis but for August 2019 – January 2020. The final aspect I examined with descriptive analysis was the average amount of student growth per grade level.

Once the descriptive analysis was complete, I was able to run the statistical analysis.   I decided to use a linear regression model. This model allowed me to examine how the independent variables (usage time, lessons passed, and lessons completed) affected the dependent variable, student growth. I did a simple model first for each independent variable. Next, I did a multiple linear regression model for each independent variable, accounting for each grade level separately. This allowed for an in-depth analysis to find relationships between the variables.

Triangulation of Data
Some of the quality improvement questions include multiple measures that need to be triangulated to answer the question. Quality improvement question two about teacher practices involves observation data and focus

group/interviews. The observation data is incorporated into similar themes as the transcripts. Therefore, the data will be combined from both observations and focus group/interviews to answer the question. Quality improvement question three focuses on student engagement. All of the collected data will be used to answer this question. As noted in quality improvement question two, observation data and focus group/interviews were combined under common themes. From there, the focus group/interviews data and observation data will be compared against the descriptive and statistical analysis to find themes and answers to the questions.

Data Concerns

I do have some data concerns about my analysis. The first concern is that St. Michael School is a small school with only two to three classes per grade level. I examined data and relationships per grade level. When running a multiple linear regression analysis, it is more accurate with more data points. By running the analysis per grade level, I have small sample sizes that may not correctly portray the data. Another concern with data is the lack of the special education perspective. One special education teacher did not return for the 2020-2021 school year, while the other took a different position, which meant I did not have a teacher to interview. One new special education teacher was hired in the Fall of 2020, but she had no experience with i-Ready.

Findings

Question 1 - To what extent are the resources, capacity, and stakeholder support available to support the online learning initiative?

To a certain extent there are resources, capacity, and stakeholder support available to support the online learning initiative. Some impacts that were brought up during the interviews and focus group was the lack of sufficient technology, and the loss of the technology support teacher, created challenges for teachers. Another was that teachers lacked buy-in and wanted more training. Finally, the testing coordinator was a strong source of support.

The lack of sufficient technology, and the loss of the technology support teacher, created challenges for teachers.
The biggest resource hurdle mentioned in all interviews and the focus group was technology. The teachers shared frustrations with navigating technology and their access to using it. As one junior high teacher put it, "I'm so tired of navigating technology" (Junior High Teacher, Pos. 32).

St. Michael School does not have enough iPads. Kindergarten through third-grade students share iPads. Teachers shared that most classrooms have around seven iPads. One teacher mentioned that at her grade level, there are 86 students sharing 20 iPads. To use i-Ready, each student needs to have their own iPad. Due to COVID, sharing iPads is more difficult because of sanitizing. The teachers developed a rotating schedule to share iPads and use the computer lab, which has a computer teacher and 14 computers available. While the teachers appreciate the other teachers' collaborative and flexible nature, they shared frustrations with stopping in the middle of instruction to do i-Ready. As one of the primary teachers mentioned, "But we lose instructional time now because you're so tied into your schedule and sharing it with four other teachers. So, I might have something that I really need to work on with my kids, but I have to drop what I'm doing, or maybe we're really doing something cool but everybody's going to stop because this is my 30-minute scheduled time for i-Ready" (Primary Teacher Focus Group, Pos. 1291-1294). An intermediate teacher also shared her frustration, "You're sanitizing after every use… And we're really

short iPads because our Chromebooks for the fourth graders didn't come in. And so now the fourth graders are using third-grade iPads. So, second-grade iPads are being shared between second and third grade. So, my level of support for i-Ready is not high" (Intermediate Teacher, Pos. 192). The testing coordinator also mentioned the issues with not enough iPads, "And in kindergarten through third grade they use iPads. We don't have enough iPads for each child to have their own, and that became a real big problem trying to move the iPads around" (Testing Coordinator, Pos. 1830). Teachers also reported issues with iPads not charging, being broken, or having to send for repair. "[iPads are] broken or weren't charging or the cord got stuck in it forever, then you had to know which ones you take out. So, you've gotten down to just the bare minimum. This year is going to be worse though" (Primary Teachers Focus Group, Pos. 895). The administrators did have a contrasting view compared to the teachers. They believed that i-Ready was easy to set up and use. There was also no mention of problems with iPads or a shortage.

There was a range of abilities as self-reported during the interviews and focus group by teachers in terms of using technology. Three teachers mentioned they were completely comfortable with technology. The other seven teachers stated that they are somewhat comfortable with technology. About half of the teachers reported that they do not remember how to navigate i-Ready technology or change student levels. Implementation theory suggests that support systems need to be in place to have a successful program (Meyers, Katz, et al., 2012). Since there are not enough iPads, and many teachers do not feel they have enough technical knowledge, it suggests a problem with the support systems in place at St. Michael School.

In December 2019, St. Michael School suffered a heartbreaking tragedy. Two teachers were struck, one fatally, in a hit-and-run by a retired priest from St. Michael. This tragedy was brought up in almost every interview and focus group. The teachers highlighted that the death presented challenges for the staff and community. The teacher who passed away was the technology teacher who oversaw devices and helped with technical issues. The other teacher who was struck took a leave of absence. As one teacher stated, "It has been a difficult year for St. Mike's. We have had a lot of other issues to worry about besides i-Ready" (Intermediate transcripts, Pos. 564). This tragedy affected the whole school community and can be tied back to the facilitating conditions of online implementation theory. Facilitating conditions highlight the importance of contextual factors and the community; in this case, when looking at St. Michael School and what facilitating conditions and support systems were in place, it is essential to note the effect this tragedy had on the entire school, staff, and community (Durlak & DuPre, 2008; Meyers, Durlak, et al., 2012; Meyers, Katz, et al., 2012).

> "It has been a difficult year for St. Mike's. We have had a lot of other issues to worry about besides i-Ready" (Intermediate transcripts, Pos. 564)

Teachers lacked buy-in and wanted more training. Paul Smith, St. Michael School principal, was the only school member to decide to implement i-Ready. In August 2019, the program was chosen, and implementation began. Mr. Smith shared that "When we came in, in August [we chose i-Ready]. We didn't have much time. But we knew we wanted some assessment" (Paul Smith, Pos. 84). Every teacher confirmed Mr. Smith's quick implementation, felt that the program was sprung on them, and mentioned that they had no part in adopting it. The primary teachers stated, "And it was just put on us" (Primary Teacher Focus Group, Pos. 103). While an intermediate teacher stated,

"We didn't have, you know, like the summer to prepare for this [i-Ready]" (Intermediate teacher, Pos. 879). A junior high teacher stated, "Oh, as far as adopting it, it was pretty much put upon us" (Junior High Teacher, Pos. 150). The testing coordinator also realized the issue with a quick implementation stating, "Like it's August. We're starting school. You know, now we're starting a new program with these teachers, they're going to kill me…" (Testing Coordinator, Pos. 885). Online learning theory suggests that all stakeholders should be involved in the decision to adopt a program (Durlak & DuPre, 2008; Meyers, Durlak, et al., 2012; Meyers, Katz, et al., 2012). However, due to pressure from the archdiocese, the opportunity, and a reduced price, Mr. Smith decided to use i-Ready. Though Mr. Smith did acknowledge during his interview that he did not follow best practices for choosing a new program.

While the initial introduction to the program was quick and rough for the teachers, the level of support for i-Ready is currently split among the teachers. Some teachers see value in the program and its use, while others are strongly opposed to i-Ready. One supporter of i-Ready stated, "[i-Ready] is providing some additional resources. I think it was a good program, especially when we were in e-learning to keep them using their skills and their knowledge current. I don't know as far, and I can't really speak to, does it really enhance the specific topics that they're working on right now?" (Junior High Teacher, Pos. 20). Another supporter stated, "It (i-Ready) really is a nice program. You know, if you do find the time to kind of use it to the best of its capability because it will…identify and provide materials" (Junior High, Pos. 156-162). However, on the contrasting view, other teachers were direct with stating, "I hate it" (Intermediate teacher, pos. 72). While the testing coordinator also shared, "There are certain teachers that don't think it's a good program" (Testing Coordinator, Pos. 921).

The most significant discrepancies in teacher responses focused on the professional development and training the teachers received. Several teachers did not remember any initial training in August, while some remembered an introduction at a faculty meeting. All teachers discussed professional development opportunities and videos that were offered by the assistant principal and testing coordinator. A few teachers felt they were trained well and knew all they needed to know about i-Ready. However, many teachers felt that the training was not enough and also wanted additional training, including training from Curriculum Associates, the developers of i-Ready. As one junior high teacher put it, "But it was like we didn't get to practice. We don't see what the kids see. We only see the end results, like when they completed a lesson, …how much they passed it by, or their minutes they've spent on it. So, the training was kind of iffy…. its' just the other teacher and I thought we should be involved in the training from the company so we could see how i-Ready is setup" (Junior High Teacher, pos. 18 – 24). During the assistant principal mentioned during her interview that only she and the testing coordinator attended Curriculum Associates' training because it was during the school day. While the assistant principal stated that the training was still available to other staff members, the junior high teachers said they explicitly stated they wanted training from Curriculum Associates. The assistant principal's view was, "I always went to those and then any other teacher who wanted to was able to go, but it was during the school day, so we had to get subs and things. So, but pretty much, we [assistant principal and testing coordinator] would go to that PD. We would take notes, we would do it. And then we would give the PD to the teachers, but any teacher who really wanted to could come" (Maureen Morrissey, Pos. 147-153).

"The administration had many i-Ready meetings, but we did not" (Focus Group Primary, Pos. 2398.

Many teachers mentioned that they needed additional training and support on using the tools i-Ready offers. Teachers wanted to be trained on how to find lessons within i-Ready, adjust the program for each student, and analyze student progress. A primary teacher mentioned issues navigating the program, "I'm somebody I need to be explicitly trained on something new, I'm not quick, and I had a hard time following. I mean, I remember having a hard time and going to [administration] a lot. So, then I'd go and find out. Because I had a hard time when students would be red-flagged, I didn't know what to do with them" (Primary Focus Group, Pos. 155).   While a junior high teacher mentioned she did not know what she had or needed in terms of resources, "I haven't spent enough time to know that I have questions. I don't feel like I have access to materials or things like that because I haven't felt it really impacted my moving forward. So, I'm comfortable and I can get what I need, what I'm told I needed, but I don't go looking for it. I don't need to add to my workload" (Junior High Teacher, Pos. 41-44). Another teacher mentioned insufficient knowledge to find lessons to use with the students "Because we didn't have that knowledge. We didn't know from the name of a lesson what to do with it" (Primary Focus Group, Pos. 994).

When implementing a new program, it is crucial to ensure that teachers have support systems in place, specifically innovation-specific knowledge surrounding the content (Meyers, Katz, et al., 2012). In the case of St. Michael School, it appears that at least some of the teachers do not feel they have the innovation-specific knowledge needed to implement i-Ready fully and successfully.

The testing coordinator was a strong source or support.

One area where the staff seems to have all the resources and support necessary to succeed is their testing coordinator. Every teacher and administrator brought up the importance of the testing coordinator. Every teacher feels comfortable going to the testing coordinator for help and support. The testing coordinator shares a weekly email with student progress. She also administers the diagnostic test to students as needed. The administrators count on the testing coordinator to manage i-Ready, answer questions, and help support the program's teachers. The testing coordinator is part of the facilitating conditions and support system at St. Michael School. She helps maintain a level of capacity in the delivery system, which puts the innovation into practice to achieve the outcome (Meyers, Katz, et al., 2012).

Question 2 - In what ways did teacher practice change as a result of the online learning initiative?

Overall, teacher practice did not change significantly as a result of the online learning initiative. Teachers appreciated the ability to identify students for small group instruction, but data access and time to analyze data limited their ability to do so. In addition, teachers monitor student engagement and pacing while using i-Ready.

Teacher Practice did not change significantly as a result of the online learning imitative.

Almost every teacher stated during their interview or focus group that their instruction did not change due to i-Ready. Instead, their focus was on how i-Ready takes away from their instruction time.
A primary teacher pointed out that time is limited, and it is important for the students to bond and spend time with each other and the teacher. "I just felt like our school day is so short. So, we did what we had to do, and there was no time to do any extra [i-Ready] … They need to be with their teacher and they need to be with each other" (Primary Focus Group, Pos. 214-220). Another primary teacher discussed the time i-Ready took away from meaningful instruction. "To me, it took away from other more meaningful things I could

have been doing" (Primary Focus Group, Pos. 1093). An intermediate teacher also pointed out the trouble with fitting i-Ready into their schedule and the time it takes away from instruction. "That was the first challenge, where do we fit this in [i-Ready] …. time was the main challenge…. because it takes away from instruction" (Intermediate Teacher, Pos. 867). A different intermediate teacher stated, "I don't care the kids are bored. I have to squeeze it into my day and I would rather work with my curriculum and teach. I want to teach" (Intermediate Teacher, Pos. 174-177). A junior high teacher also pointed out the issue with time "But again, it just takes time" (Junior High Teacher, Pos. 357).

Administrators had hoped to see significant changes as a result of i-Ready. Their biggest goals were frequent use of small group instruction and differentiation. Administrators shared that they had observed some small groups in action due to i-Ready. They also shared that i-Ready automatically differentiates for the teachers, so they like that i-Ready meets the higher and lower students' needs. However, teachers were much less supportive of how i-Ready changed their teaching practices. Teachers that teach something other than reading and math shared that i-Ready does not apply to their teaching. Many teachers expressed frustration that i-Ready does not align with their curriculum and what they are teaching. They feel that instead of adding to their learning, i-Ready is taking away from it. A couple of teachers did mention ways that i-Ready had slightly adjusted or changed their classroom teaching practices. One teacher shared that i-Ready allowed them to see who needed small group instruction. Another teacher shared that you can review concepts with students who struggle.

Teachers appreciated the ability to identify students for small group instruction, but data access and time to analyze data limited their ability to do so.

Several teachers shared that they did not know how to use the i-Ready data to modify their instruction correctly. Teachers liked the program's ability to put students into small groups. However, only two teachers knew how to utilize this function. "But as far as the reading and math teachers…it definitely helps them…. with small groups and stuff like…to work with kids more like on the certain topic" (Intermediate Teacher, Pos. 243-252). An intermediate teacher also explained how she used i-Ready to drive small groups. "Last year it was good because it helped me to put them in differentiated groups … They could work independently and then I knew the groups that I needed to work with more maybe at a different level. I really do like to, you know, group them in that certain way in order to help them" (Intermediate Teacher, Pos. 2067 – 2069). While other teachers liked the idea of small groups they were unable to review the data to create groups. "So, the data, I don't understand that much. I just look at what they've passed or what they haven't passed" (Junior High Teacher, Pos. 42).

Another frustration a few teachers mentioned is that they are only able to access homeroom student's data. According to a junior high teacher, "I can only check my homeroom and as far as their math minutes and, and scores and things like that" (Junior High Teacher, Pos. 70). In addition, an intermediate teacher shared, "I teach all three fourth grade classrooms and I teach the two fifth grade classrooms for science. So, if I'm only seeing my homeroom that's not going to really help me a whole lot" (Intermediate Teacher, Pos. 372-384). The teachers at St. Michael School often teach across grade levels since the school is small. This means that each teacher focuses on one subject and teaches that subject to two different grade levels. While the teachers have these multiple

classrooms at different grade levels, the only data they have access to is their one homeroom class.

Administrators shared that the first test results were shocking and that the second test results seem to be more accurate. As Mr. Smith stated, "Their first test was crazy tough and some of the results were a little shocking. Kids were, you know, reading at like two grade level below" (Paul Smith, Pos. 297). The shocking test results made the teachers nervous because the students were new to the teachers and they were not sure how accurate the scores were. The administrators were hesitant to share the results with parents. However, "the second test really kind of …added some more confidence for the teachers at their thoughts [if results matched the students] … and what was being kind of displayed through this testing. (Paul Smith, Pos. 318-324). The administrators also feel the data is extensive and easy to read and interpret. The teachers and administrators agreed that they could not truly see an impact yet of i-Ready because their formalized standard test for all Catholic Schools in the nation was canceled due to COVID-19. All stakeholders are anxious to see if there is a difference in their scores due to i-Ready this upcoming Spring.

> "It [i-Ready] gives you all these suggestions, but I just felt like I didn't have enough time to look at all of the information" (Focus Group Primary, Pos. 745)

Teachers also do not feel they have enough time to sit down and understand the i-Ready data to use the data correctly. One intermediate teacher said, "If I wanted to lose a weekend or two, then I guess I could try to figure out i-Ready" (Intermediate Teacher, Pos. 357). A junior high teacher added, "but I would say that the downfall is it does take a lot of time to go through all the results" (Junior High Teacher, Pos. 219-222). The testing coordinator also realized the teachers' lack of time to analyze the i-Ready data, "I know that they

haven't had time really to sit back and analyze any of this yet, because they're just trying to get through a curriculum" (Testing Coordinator, Pos. 276). Even Mr. Smith, brought up the time needed by the teachers, "Really we needed more time to kind of go through those results" (Paul Smith, Pos. 342).

In order to analyze and use data to modify teaching practices, the teachers need to have innovation-specific knowledge within their support systems. This includes proper training and time to access and use the data to change teaching practices (Durlak & DuPre, 2008; Meyers, Durlak, et al., 2012; Meyers, Katz, et al., 2012). Based on the responses from interviews and the focus group, many teachers do not feel comfortable, have the time, or understand how to use the i-Ready data to enhance teaching practices.

Teachers monitor student engagement and pacing while using i-Ready.
In both the second and seventh-grade classroom observations, the teachers monitored the students' progress on i-Ready. In second grade, the teacher walked around and gave positive praise ("Take a deep breath") and support. While in seventh grade, the teacher watched from her laptop in the front of the classroom and directed students ("Turn around") as needed. During the interviews and focus group, the teachers highlighted the feature of watching students from their computers. They shared that they like to keep a close watch on students to see if they are struggling, going too fast, or not even trying.
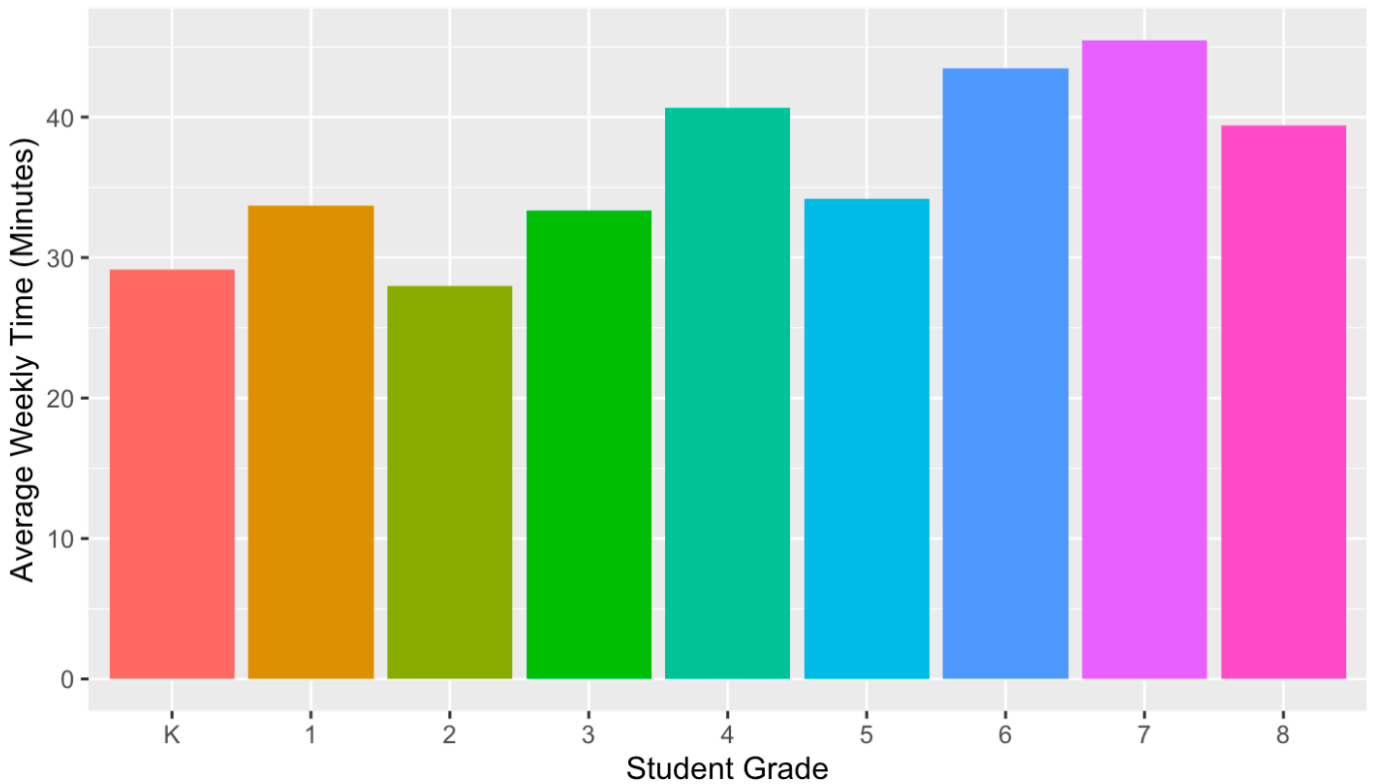
> "But I do try to especially keep tabs on my individual kids that I know might be struggling. If they're not struggling I don't worry about them, you know, it's the ones that struggle that you want to bring them up to grade level." (Intermediate teacher, Pos. 282).

Graph 1 - Reading Average Weekly Minutes

iReady Reading Average Weekly Usage
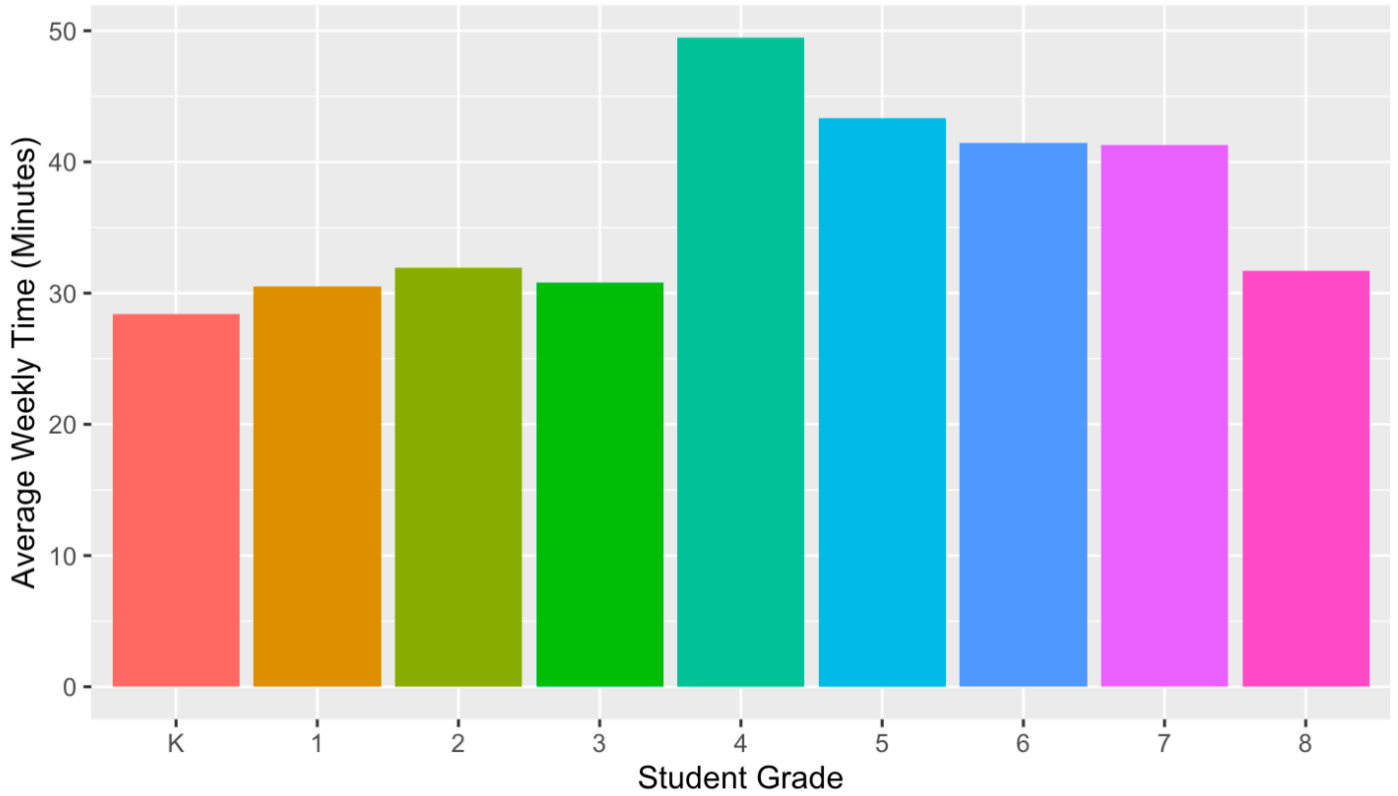
iReady Math Average Weekly Usage

Graph 2 - Math Average Weekly Minutes

A teacher's role should focus on providing feedback while students are engaged in i-Ready and provide pacing support (Carter Jr et al., 2020; Gray & Diloreto, 2016). The teachers at St. Michael School are doing both of these aspects by closely monitoring students while engaging in i-Ready and monitoring their pacing within i-Ready. These practices highlight the existing and essential teaching practices of the St. Michael School teachers.

Question 3 - What is the level of student engagement in the online learning initiative?

Overall, students are using i-Ready consistently but only one grade level is meeting the weekly time requirements in each subject. Students in the junior high appear to be more motivated and interested in i-Ready compared to the primary grades. Also, students in the primary and intermediate grades expressed frustration with using i-Ready. In addition, teachers monitor students while engaging in i-Ready and offer rewards as incentives.

Students are using i-Ready consistently but only one grade level is meeting the weekly time requirements in each subject.

The student data on i-Ready shows students logging on and utilizing i-Ready consistently. The data also shows that the whole school started using i-Ready in October 2019. The amount of weekly time on i-Ready was the first data point I analyzed (Reading – Graph 1) (Math – Graph 2). Four of the grade levels (4th – 7th) met at least 40 minutes per week in reading, which was St. Michael's goad. However, sixth grade is the only grade level in reading that is meeting the 45-minute per week requirement that i-Ready suggests. In math, three of the grade levels (4th, 6th, and 7th) met at least 40 minutes per week. However, only fourth grade is meeting the 45-minute requirement in math. The students are using i-Ready, but many are not meeting their

weekly time requirements. During the interviews and focus group many teachers admitted to not being able to have enough time for students to meet the weekly benchmark. As a primary teacher stated, "I think we only did 20 minutes [a week] because of their age" (Primary Teacher, Pos. 1525). An intermediate teacher shared, "we don't hit that we usually get 35" (Intermediate Teacher, Pos. 309). The lowest amount of time engaged in reading and math is in the primary grades. During the interviews and focus group, the primary teachers shared that making time for the students to complete i-Ready was difficult and overlooked. As shown above, the challenges of shared iPads and competing instructional demands made it difficult for teachers to get all of their required time.

All grade levels are passing and completing lessons. When students receive a 70% or higher on a lesson, they pass, and any lesson attempted goes as lessons completed. This means that the student must receive a score of a 70% or higher to be considered a lesson passed. However, any attempted lesson, regardless of score, counts as a completed lesson. The number of lessons passed in reading and math decline as the grades increase (Reading – Appendix D) (Math Appendix E). In reading, kindergarten had the most lessons passed (over twenty), while first through fourth grade had about 15 lessons passed, and the junior high had between 5 to 10 lessons passed. In math, Kindergarten through third grade averaged 15 to 20 lessons passed, while fourth and fifth grade had between 10 to 15 lessons passed, and sixth through eighth grade had 10 lessons or less passed. This makes sense because the older the students get, the harder the lessons' content and the longer time it takes to do each lesson. This is also evidenced by the older students having higher amounts of weekly time engaged in i-Ready as compared to the primary students.

Graph 3 - Math Average Student Growth

iReady Math Average Student Growth through January 2020

iReady Reading Average Student Growth through January 2020
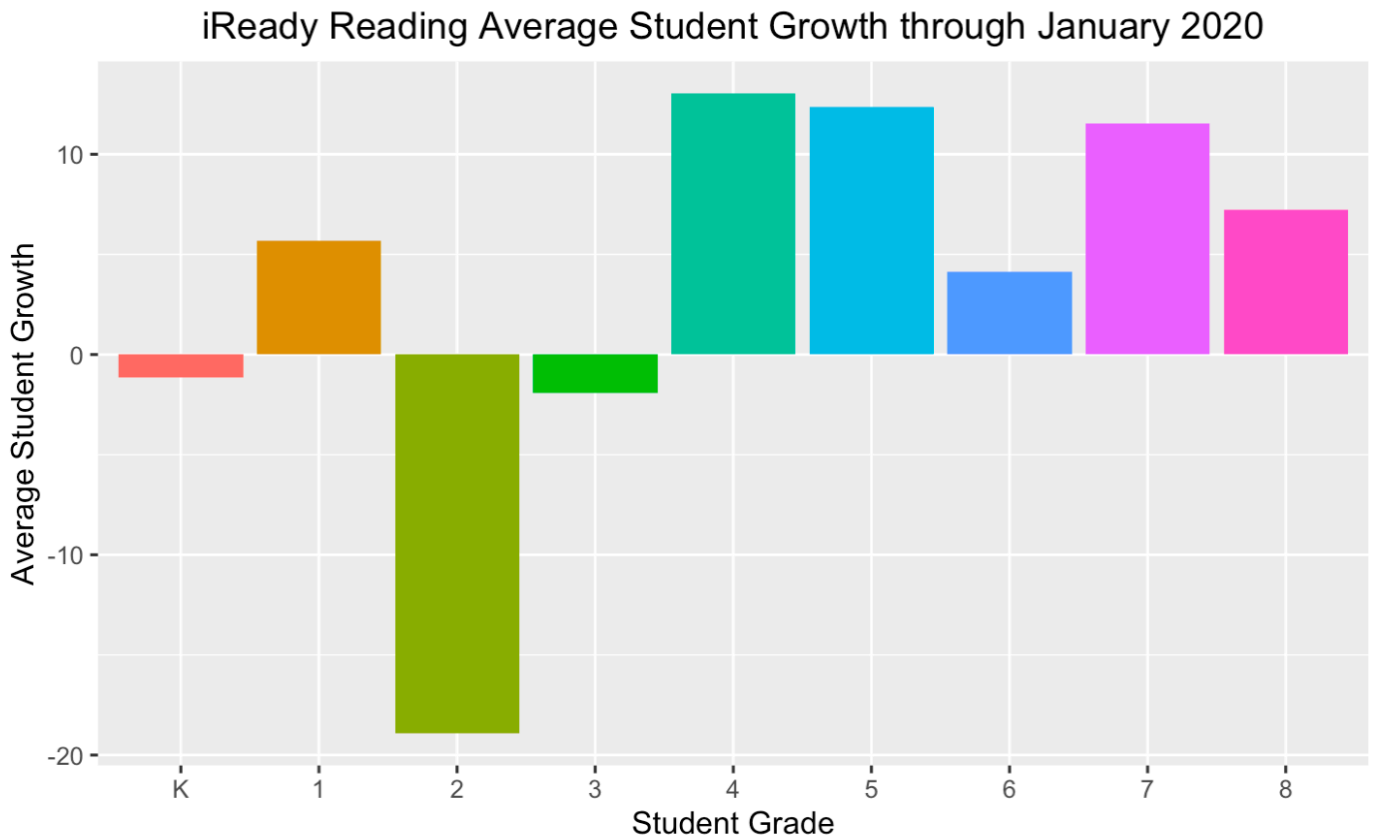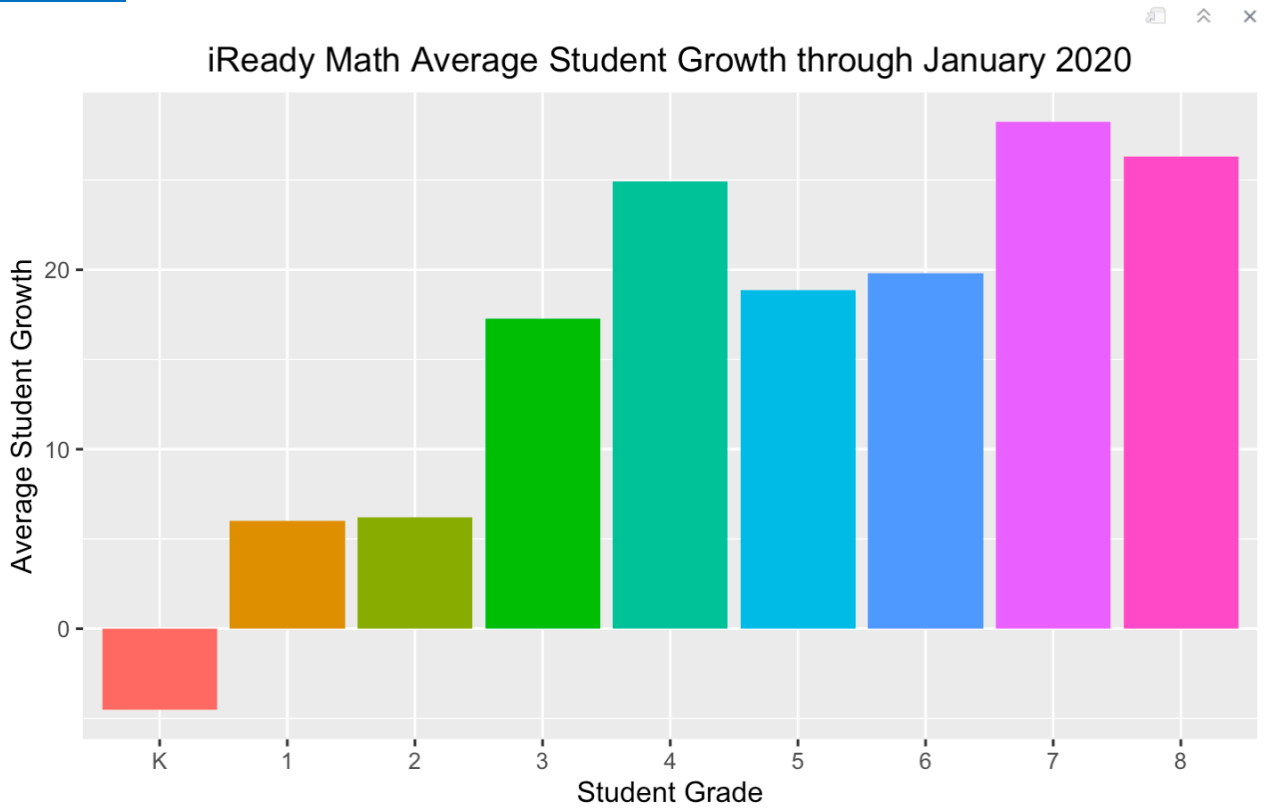
Graph 4 - Reading Average Student Growth

Student growth from the Fall to Winter i-Ready diagnostic tests were used to measure engagement as well. The average amount of reading growth was substantially lower than the math growth. While some of the primary grades did show negative growth from the Fall to Winter the upper grades showed more growth in both math (Graph 3) and reading (Graph 4).

> "But there this year, especially when they're into something. I mean, the walls could fall down, doesn't matter because they're so into it [i-Ready]" (Intermediate teachers, Pos. 111-116).

Students in the junior high appear to be more motivated and interested in i-Ready compared to the primary grades.
The seventh-grade students appeared to be more motivated and interested than the second-grade students during the observations. In the seventh-grade classrooms, there were two students out of twenty-two students who demonstrated off-task behavior. The other students were on i-Ready and engaging in the content. However, there were four students out of nine students who showed off-task behavior in the second-grade classroom. The other students appeared to be engaged and interested in the content. Both groups of students had various question types that seemed to keep students engaged: drag and drop, why questions, multiple-choice, writing, etc. Another method that kept some students interested was the use of games. When a student passes two lessons, they get to play a game within i-Ready. Also, when a student passes a lesson, they get a gold trophy. The software also contains cartoon graphics and fun images. These fun features do motivate some students. Though from the teachers' perspectives it can be hard to motivate other students, specifically the eighth graders and all students during the last month of school.

The administrators felt that students are motivated to complete i-Ready and are eager to engage in the program.   Some teachers stated that students are engaged and motivated to move up lessons and see their progress. Teachers have even seen motivation and perseverance with students who are struggling and not passing a lesson. Student engagement, collaboration, involvement, and motivation are all factors that are effective when using online learning (Doumanis et al., 2019; Karich et al., 2014; Prescott et al., 2018). Many students are engaged, involved, and motivated at St. Michael School. Opportunities for collaboration among students were virtually absent. While the teachers did not mention or recognize the lack of collaboration among students, best practices suggest online learning should be collaborative (Doumanis et al., 2019).   I-Ready is an individualized activity, and the students do not get the opportunity to work together.

Students in the primary and intermediate grades expressed frustration with using i-Ready.
Several primary and intermediate teachers described students as frustrated while engaging in i-Ready. Three teachers mentioned that students have cried over the level of difficulty. Two teachers said students were refusing to come to school due to i-Ready, and another two said students were suffering from anxiety when their levels increased.   When students are engaged, they are willing and have a desire to succeed in the learning process (Gray & Diloreto, 2016). The level and amount of student engagement within a learning environment correlates to the student's achievement in both in-person and online learning (Carter Jr et al., 2020; Gray & Diloreto, 2016). Some of the primary students are not fully engaged because they feel overwhelmed and frustrated with the program. If the student is frustrated, anxious, and upset, it would be challenging to see achievement.

Table 5 - Reading Grade Level Linear Regression Models

Teachers monitor students while engaging in i-Ready and offer rewards as incentives.

READING LINEAR REGRESSION MODELS

Grade Level	Multiple Linear Regression Area	Average Growth / Intercept	Grade Level Relationship	Adjusted R-Square
2nd Grade	Lessons Passed	25.14	-26.74 for every lesson passed	0.09
2nd Grade	Lessons Completed	6.50	-20.22 for every lesson passed	0.05
2nd Grade	Weekly Time	-1.39	-17.79 for each minute completed	0.05

The teacher immediately corrected the two instances of off-task behavior in the seventh-grade classroom. The teacher was able to use technology to watch each student's live progress within i-Ready. I was also able to watch students engaged in i-Ready in real time on the teacher's laptop. In the second-grade classroom, the teacher walked around the room the entire time, encouraging students, helping with questions, and checking in with them. Similar themes were found in the interviews and focus group. Teachers mentioned watching students through i-Ready and looking for students who stay on the same page for too long. If a student fails two lessons in a row, i-Ready locks the student out until the teacher acts. The teachers also mentioned that slower-paced students might take up to 40 minutes to pass one lesson.

A couple of teachers also mentioned using rewards to try and engage students in i-Ready. The junior high competes as grade levels against each other, and the students are motivated to beat the opposing grade levels. During the seventh-grade observation the teacher began their i-Ready day with each grade level's standings. The intermediate teachers started rewards in January when the engagement was dropping off. A few students found ways to cheat the system to try and win, but most were motivated and engaged.

When engaging in online learning, the teacher's most important role is to establish a presence through instructional management, building

understanding, and direction instruction (Gray & Diloreto, 2016). This includes providing constructive feedback when students engage in online learning while also supporting independent learning skills (Gray & Diloreto, 2016). The St. Michael School teachers are giving feedback to students if they get locked out of the program as well as watching the students and making sure they are on the correct app. However, it seems like there are opportunities for building understanding and providing instructions on the use of i-Ready tools.
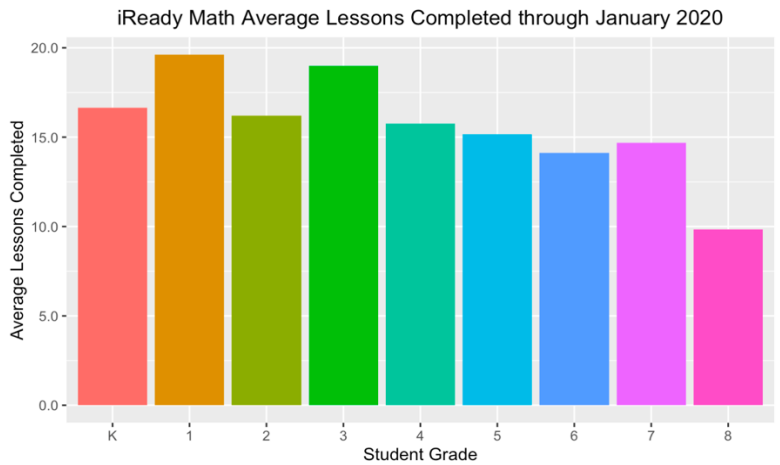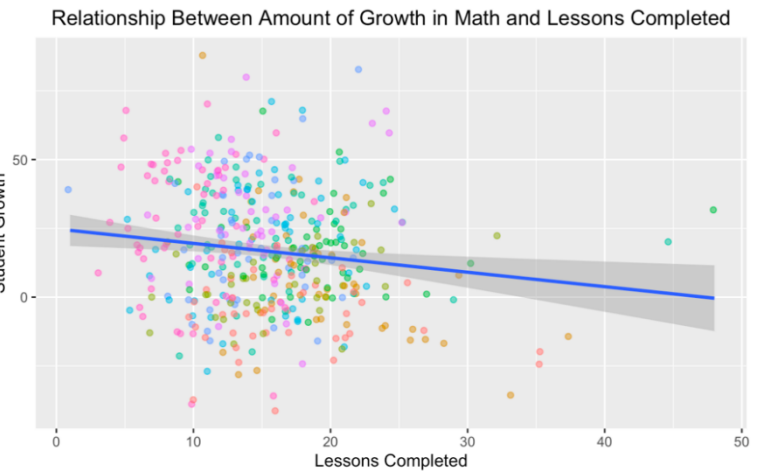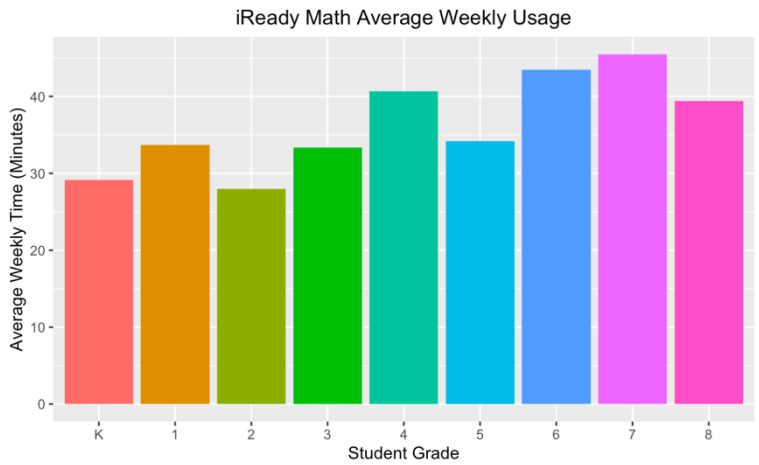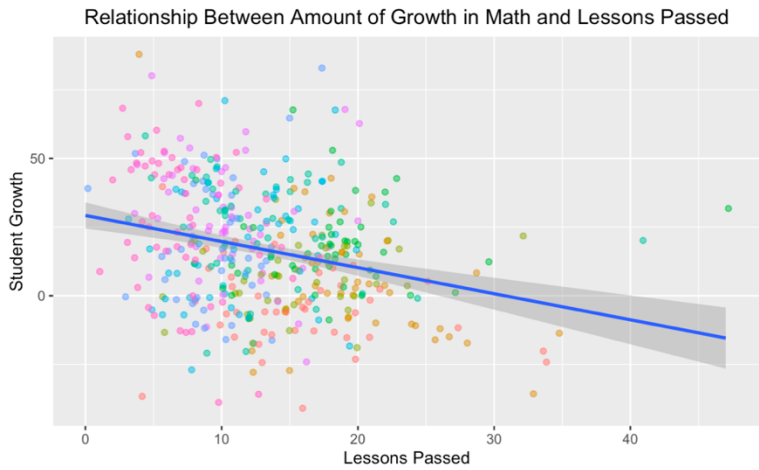
Question 4 - What is the relationship between engagement in the online learning platform and performance on assessments?

The data revealed interesting relationships. As a school, overall relationships were found in lessons passed and weekly time for reading. In 2nd grade reading, more time on i-Ready was associated with negative growth. In math, relationships were found in lessons passed, lessons completed, and weekly time. In math, more time was associated with positive growth, particularly in higher grades.

Reading

Linear regressions were used to test the models for relationships. A p-value of 0.05 indicated a statistically significant relationship. First, a single linear regression was used to look at the comprehensive school data. In reading, there were

Graph 5 - Math Average Lessons Passed

Relationship Between Amount of Growth in Math and Lessons Passed

iReady Math Average Weekly Usage

Relationship Between Amount of Growth in Math and Lessons Completed

iReady Math Average Lessons Completed through January 2020

Graph 6 - Math Average Lessons Completed

Relationship Between Amount of Growth in Math and Weekly Time

iReady Math Average Lessons Passed through January 2020
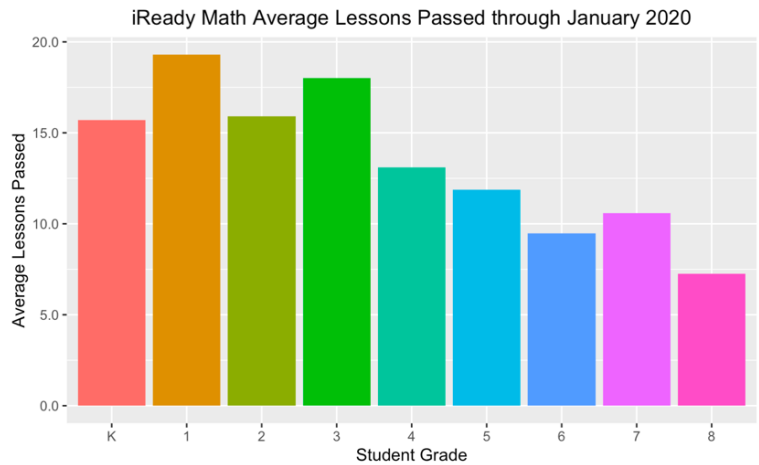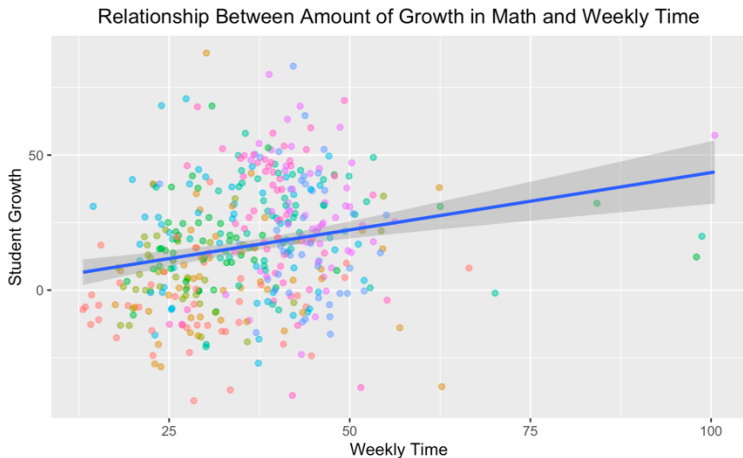
Graph 7 - Math Average Weekly Usage

relationships within lessons passed and weekly time. For reading lessons passed, the average growth on the diagnostic tests was 17.57 points. For every one lesson passed, the growth dropped 0.94 points. For reading weekly time, the average growth was -5.89, and for each increase in minute on i-Ready, the score rose 0.28 points.

This indicates positive growth for an increase in minutes students engaged in the program and negative growth for the more lessons passed. This may be due to a positive relationship with the amount of time students engage in the program. Students in the upper grades use the program for more minutes, show more positive growth and complete fewer lessons as compared with the lower grades.

After the overall analysis, multiple linear regression models were run to look for relationships at each grade level. In reading, the only relationships were found in lessons passed, lessons completed, and weekly time in second grade (Table 5). Second grade had a large amount of negative student growth, with an average of about negative 20 points. The model shows that as students complete more minutes, pass more lessons, and complete

more lessons, their growth continues to decline. The classroom observation of second-grade students did show almost half of the students not engaged. Also, the primary teachers had the strongest objections and issues with using i-Ready. When taking the observations, interviews, and quantitative data together, it appears that the primary students are struggling with using i-Ready, and they are not successful.

Math
Numerous relationships were found overall and at specific grade levels for math. Overall, student growth was higher and more consistent in math. This was interesting because, in almost every

MATH LINEAR REGRESSION MODELS

Grade Level	Multiple Linear Regression Area	Average Growth / Intercept	Grade Level Relationship	Adjust R-Squared
Kindergarten	Lessons Passed	1.95	-0.41 for every lesson passed	0.21
Kindergarten	Lessons Completed	-3.76	-0.05 for every lesson completed	0.20
Kindergarten	Weekly Time	-6.67	0.07 for each minute completed	0.20
1st Grade	Lessons Passed	1.95	12.02 for every lesson passed	0.21
1st Grade	Lessons Completed	-3.76	10.68 for every lesson completed	0.20
1st Grade	Weekly Time	-6.67	10.21 for each minute completed	0.20
2nd Grade	Lessons Passed	1.95	10.81 for every lesson passed	0.21
2nd Grade	Lessons Completed	-3.76	10.71 for every lesson completed	0.20
2nd Grade	Weekly Time	-6.67	10.82 for each minute completed	0.20
3rd Grade	Lessons Passed	1.95	22.74 for every lesson passed	0.21
3rd Grade	Lessons Completed	-3.76	21.90 for every lesson completed	0.20
3rd Grade	Weekly Time	-6.67	21.48 for each minute completed	0.20
4th Grade	Lessons Passed	1.95	28.37 for every lesson passed	0.21
4th Grade	Lessons Completed	-3.76	29.40 for every lesson completed	0.20
4th Grade	Weekly Time	-6.67	28.59 for each minute completed	0.20
5th Grade	Lessons Passed	1.95	21.78 for every lesson passed	0.21
5th Grade	Lessons Completed	-3.76	23.30 for every lesson completed	0.20
5th Grade	Weekly Time	-6.67	22.99 for each minute completed	0.20
6th Grade	Lessons Passed	1.95	21.76 for every lesson passed	0.21
6th Grade	Lessons Completed	-3.76	24.21 for every lesson completed	0.20
6th Grade	Weekly Time	-6.67	23.27 for each minute completed	0.20
7th Grade	Lessons Passed	1.95	30.66 for every lesson passed	0.21
7th Grade	Lessons Completed	-3.76	32.68 for every lesson completed	0.20
7th Grade	Weekly Time	-6.67	31.56 for each minute completed	0.20
8th Grade	Lessons Passed	1.95	27.36 for every lesson passed	0.21
8th Grade	Lessons Completed	-3.76	30.53 for every lesson completed	0.20
8th Grade	Weekly Time	-6.67	30.08 for each minute completed	0.20

Table 6 - Math Grade Level Linear Regression Models

interview, the teachers felt math was more difficult for the students than reading. In terms of overall relationships, each area investigated: lessons passed, lessons completed, and weekly time showed a relationship. The scatterplots show the Lessons Passed (Graph 5), Lessons Completed (Graph 6), and Weekly Time (Graph 7) that were analyzed and then fit with the linear regression model line for all grade levels. Next to each scatterplot is the data for each area.

For math lessons passed, the average growth on the diagnostic tests was 29.23 points. For every one lesson passed, the growth dropped 0.95 points. For math lessons completed, the average growth was 24.79, and for each lesson completed, the score dropped 0.52 points. For weekly math time, the average growth was 1.08, and for each increase in minute on i-Ready, the score rose 0.42. The same negative growth associated in reading with lessons passed also exists in math. This may be due to the younger students completing and passing many more lessons since they are quicker and easier to get through. Still, those same students did not spend as long on the program and/or engage truly with the program to reap the benefits or show success. This discrepancy amongst grade levels becomes clear when the multiple linear regressions are run in each of these areas against specific grade levels (Table 6).

The multiple linear regression models for math highlight that the intermediate and junior high-grade levels predict a more significant growth than the primary grades. The interesting results from these three different models are the similarity in results at each grade level. The amount of growth is very similar across the grade level even though there are three different models. The adjusted r-squared is also similar, which makes sense since the predicted growth is similar. This means that the accuracy of the models are similar, which results in similar growth predictions. It is also important to note that the upper grades

completed fewer lessons and passed fewer math lessons than the primary grades. This is most likely due to the more challenging content that takes longer to work through in the upper grades. This is a logical explanation since the weekly usage time was higher in the upper grades than the lower grades.

Recommendations

Support for i-Ready
The first recommendation is for the administration to build support and validation for the use of i-Ready. The Archdiocese requires i-Ready at the primary level, and it will continue to be required in the near future. Therefore, the teachers need to support the new program and understand its importance. During the focus group and interviews, teachers discussed their dislike of i-Ready. Several teachers felt that i-Ready was a waste of their instruction time. Teachers did not see the value in the program and repeatedly pointed out its the lack of alignment with their curriculum. Many teachers expressed frustration with i-Ready feeling that it robbed them of their customary amount of instructional time. However, some teachers like i-Ready and understand the importance of the program.

The first step will be for the administrators to find the teachers who use and support i-Ready. These teachers will act as the mentor teachers. Their first and most important role will be to build the understanding and purpose of i-Ready with the teachers. Mentor teachers have proven to build relationships, collaborate, and support professional development (Stanulis, 1995). The mentor teacher's responsibility will be to help model the use of i-Ready and share the benefits they see in their classrooms. Mentor teachers will open up their classrooms to the other teachers to come and watch i-Ready in action and the small groups they are running based on i-Ready data. Embracing and utilizing mentor teachers will also open the door

for conversations and collaboration around i-Ready. Often in schools, teachers are alone on their island (Stanulis, 1995). However, mentor teachers would allow teachers to talk openly about ideas and struggles with i-Ready. Teachers usually respect each other's opinions and professional judgment; establishing mentor teachers opens the door for conversations and the ability to change perspectives and feelings towards i-Ready (Stanulis, 1995).   The use of mentor teachers offers an opportunity at St. Michael School to build support for i-Ready.

Once the mentor teachers have opened their classrooms and changed mindsets about i-Ready, the next step would be to introduce small-group instruction. Small group instruction was another concern raised by administrators and teachers. Therefore, it would be helpful to have the mentor teachers run a staff training on small group instruction. This should include showing a video of how to use it in action, giving ideas of what the other students could be doing while the teacher meets with a small group, and answering all questions. Mentor teachers could also showcase how they use small group instruction in their classroom when the teachers come for their observations.

St. Michael School will need to consider the best way to let teachers observe mentor teachers. For instance, teachers could us plan time or administrators could cover the teacher's classroom. The administrators will also need to consider and be mindful of how the mentor teachers are perceived. This will include check-ins with the mentor teachers and the other teachers to gauge everyone's feelings and progress.

Professional Development & Training
The second recommendation is to offer professional development and training on i-Ready. During the interviews and focus group, many teachers stated that they did not know how to

assign and find lessons in i-Ready, run reports, and use the data to create small groups or tailor instruction. In order to best use i-Ready and achieve the administrators' goals of small group teaching and differentiation, the administrators need to ensure the teachers have all necessary training. While a couple of teachers feel confident using i-Ready and are already using the data to build small-groups there are many who do not. During the focus group and interviews, it was also clear that each teacher had different experiences and recollections about their training with i-Ready. Therefore, the best step would be to give each teacher a survey about i-Ready. The survey would ask the teacher's comfort level with each expectation of i-Ready. For instance, "I can find lessons I need on i-Ready," "I can use the data from i-Ready to create small groups in my classroom," etc. The administrators would then use the survey data to create i-Ready classes based on each specific teacher's needs. This way, the teachers only have to attend the sessions they need.

St. Michael School will have to design the survey, then analyze the results and find someone confident and competent to provide the training. The testing coordinator would be a good option because the teachers all feel confident and supported by her. The mentor teachers may also be able to help facilitate the training. The administrators will also have to consider when they can offer these trainings, maybe in place of a staff meeting or before school. Due to COVID, the meetings may need to be held over Zoom or smaller settings depending on each group's needs. (Meyers, Katz, et al., 2012)

Currently, some teachers lack the innovation-specific capacity to be successful with i-Ready. When implementing a program, the correct support systems need to be in place (Meyers, Katz, et al., 2012). In this case, the teachers need to fully understand how to utilize i-Ready, its purpose, and how it can be used to tailor instruction. Once

these trainings are implemented, and teachers understand how and why i-Ready is being used, then the innovation-specific capacity will be reached, and successful outcomes can be seen.

Increase Technology

The next recommendation is to increase iPads in the primary grades. During the interviews and focus group, every teacher brought up issues with technology. The primary teachers focused on the lack of available iPads and the difficulty of sharing iPads across the grade level. The teachers are being forced to have younger students sustain in the program past their engagement level because it is their slotted i-Ready time. If the younger students had more access to iPads, they would complete i-Ready in smaller, more meaningful, and engaging sessions. More access to iPads would also lessen the teachers' stress. Right now, the teachers are frustrated with having to stop mid-instruction to use their iPad time slot. More iPads would reduce the stress and pressure the teachers are feeling to meet the schedule.

The administrators at St. Michael School would have to consider the cost of purchasing more iPads. More iPads might also affect their internet and infrastructure. Currently, the iPads at St. Michael School are stored on carts. Another cost to consider would be the number of additional carts needed. It would be essential to make sure the budget accordingly for the additional iPads. Once iPads are purchased, the school would need someone to set up the iPads for student use.

When implementing a new online learning program, the school needs to have existing supports in place. The need for iPads falls under general capacity. General capacity refers to the infrastructure and functional factors (Meyers, Katz, et al., 2012). This means having the technology available to the students and staff. For i-Ready to have successful outcomes, the students and teachers need to have the necessary technology.

By providing more iPads to the primary grades then i-Ready can provide successful outcomes at all grade levels.

Adjust Delivery

Once the number of iPads increases at the primary level, the next recommendation would be to adjust the delivery of i-Ready. During the observation of the second-grade classroom, the younger students were more off-task and disengaged. Throughout the focus group, the primary teachers discussed the difficulty of engaging students in the program, using their allotted time slot, not having enough iPads, and i-Ready being a disruption to the day. Based on the teacher's feedback and observations, i-Ready should be used in small manageable chunks of time in the primary grades. This would include eliminating the mandatory 45 minutes a week of each subject. Instead only one subject should be the focus of each week. By picking just reading for a week the teachers will be able to fit the time into their schedule and not feel they are losing as much instructional time.

Once teachers have enough iPads, they can pick small manageable chunks of time. A ten-minute slot four times a week could work well with i-Ready. The times could be during transitions, bathroom breaks, or snack time. This would alleviate teachers' complaints about not giving up a big chunk of instruction time. The smaller amount of time would also help sustain the students' engagement in the program. The teacher could then use monitoring to watch students' attention, provide feedback and encouragement. When the teacher notices the students are becoming disengaged, then i-Ready could be finished for the day. The delivery adjustment also eliminates the need for scheduled iPad times and allows more flexibility in the teacher's schedule.

The administrators should implement this change out once the new iPads have arrived and are ready to use. Then the administrator should provide help

and guidance with adjusting to a new routine with i-Ready. This can be done by having a meeting with the primary teachers and asking for their feedback and ideas to make this the most successful. Some teachers may have push back about a shorter time each day because now it cuts into their day more frequently. Other teachers may say that ten minutes is not worth it because of having to have the students log in to i-Ready. The administrators will need to clarify that the students need to be engaged in i-Ready and one way for this to happen is by providing smaller chunks of time. However, the administrators will be flexible and let teachers do the smaller amount of time that works for them as long as the teacher's role in monitoring and providing feedback is clear.

Effective teaching strategies include monitoring, pacing, providing feedback, and chunking (Carter Jr et al., 2020; Mamun et al., 2020; Marzano, 2009; Pamungkas et al., 2020). While these are well-known teaching strategies in the classroom, it may be easy for teachers to forget to apply these techniques when students are engaged online. However, the teacher can still monitor students' progress by watching them on her device or going throughout the classroom. Monitoring can let the teacher know who is disengaged or struggling. Pacing and chunking help the teacher know when to end the daily session of i-Ready because students may be on cognitive overload or become disengaged (Marzano, 2009). The teacher's feedback is still critically important even when students are online (Pamungkas et al., 2020). When students feel supported outcomes will improve.

Focus on Reading Instruction
The last recommendation is to focus on reading instruction and improve reading growth at St. Michael School across all grade levels. The data showed three grade levels (Kindergarten, second, and third grade) with negative growth on the i-Ready diagnostic from Fall 2019 to Winter 2020.

Sixth grade had between 0-5 points in growth. First and eighth grade had between 5-10 points of growth. Finally, the fourth, fifth, and seventh grades had between 10-15 points of growth. When compared to math, the students had much lower growth in reading.

The first step in improving the reading growth would be to analyze the student data. Since the teachers will have already received specialized training on access and using data, they will run the reports that show the subcategories of reading and their students' scores. Once they have the reports, the teachers will use the data to create small groups. Since time was an overall concern during interviews and focus groups, teachers should be given time to analyze the data, create groups, and make lesson plans. The administrators will change the use of the current monthly data meeting times. Instead of the administrators directing the teachers during the data meeting times, the teachers will be given time to analyze the data, create groups, and make lesson plans. The mentor teachers will help guide and support the teachers as they go through the data.

Once the teachers analyze and make plans then implementation can begin in the classroom. During the Daily 5 (guided reading time), the teachers will pull each small group and use the teacher lessons on i-Ready they found during data meetings. The lessons are designated and ready for use. Since the lessons are based on student scores for each subcategory, the teacher will use that lesson and their ideas to facilitate a mini-lesson for each student group.

A teacher's job should focus on providing guidance, using evaluations to tailor instruction, providing assessments, and ensuring students have ideological and psychological support (Pamungkas et al., 2020). By facilitating and providing small group instruction based on i-Ready reading subcategories, the teachers use data to guide

instruction. The students benefit from small groups because they get the correct amount of support and work at their level (*How to Implement Effective Small Group Instruction - TeachHUB*, n.d.). When the teacher pulls the small groups, it also allows the students to collaborate, and students are more successful when they collaborate (Prescott et al., 2018). Small groups using reading subcategory data from i-Ready will lead to more significant growth and improve outcomes at St. Michael School.

Conclusion

The quality improvement project at St. Michael School focused on the implementation of i-Ready. I-Ready is an adaptive individual learning platform that uses a diagnostic test to assess a student's reading and math ability and then provides online lessons matched to that student's level. When the project began, i-Ready was in its first year within the school, and the principal wanted to investigate if it was being used, if it was changing instruction, and if it helped students learn and grow. After consulting best practices around online learning, including the teacher's role and what makes students successful, then intertwining best practices around implementation theory, the following quality improvement questions were formed, and these answers were found:

- **Question 1 - To what extent are the resources, capacity, and stakeholder support available to support the online learning initiative?**
  - There are resources, capacity, and stakeholder support available to support the online learning initiative to a certain extent. The most significant impacts that were brought up during the interviews and focus group were lack of sufficient technology, and the loss of the technology support teacher,

which created challenges for teachers; teachers lacked buy-in and wanted more training; and the testing coordinator was a strong source of support.

- **Question 2 - In what ways did teacher practice change as a result of the online learning initiative?**
  - Overall, teacher practice did not change significantly as a result of the online learning initiative. Teachers appreciated the ability to identify students for small group instruction, but data access and time to analyze data limited their ability to do so. In addition, teachers monitor student engagement and pacing while using i-Ready.

- **Question 3 - What is the level of student engagement in the online learning initiative?**
  - Overall, students are using i-Ready consistently but only one grade level is meeting the weekly time requirements in each subject. Students in the junior high appear to be more motivated and interested in i-Ready compared to the primary grades. Also, students in the primary and intermediate grades expressed frustration with using i-Ready. In addition, teachers monitor students while engaging in i-Ready and offer rewards as incentives.

- *Question 4 - What is the relationship between engagement in the online learning platform and performance on assessments?*
  - The data revealed interesting relationships. As a school, overall relationships were found in lessons passed and weekly time for reading. In 2nd grade reading, more time on i-Ready was associated with negative growth. In math, relationships were found

in lessons passed, lessons completed, and weekly time. Also, in math, more time was associated with positive growth, particularly in higher grades.

Limitations

Several limitations need to be addressed in this quality improvement project. The first limitation is that the interviews and focus group took place from June to October. This is significant because some teachers only had one year of experience with using i-Ready, while others were in year two of the program. The second year of implementation could lead to teachers feeling different or their experiences changing. This could be the difference in the primary teachers compared to the junior high teachers' answers because the primary teacher focus group was completed in June, and most of the junior high teachers were interviewed in October.

The other limitations focus on the data, including the small sample size and the small number of data points. St. Michael School has a small population with only two to three classes at each grade level. The smaller grade levels make it challenging to run accurate multiple linear regression models for each specific grade level. In addition to the small sample size, there was also a lack of data points to use for relationships. Due to COVID, the only comparison for student growth was Fall to Winter. However, if COVID had not started, the model would have been able to look for relationships from Fall to Spring.

The last limitation is the lack of all perspectives within the stakeholders. There was no special education or intervention perspective included throughout this study. The special education teachers had either separated employment with St. Michael School or refused participation. When conducting a quality improvement project, it is valuable to get a clear picture from all perspectives. However, the special education

aspect was missing from this project.

Continued Inquiry

One avenue for potential inquiry is to examine the year two data of i-Ready and compare it to year one. This would include looking to see if the same trends, growths, and relationships still exist. This year the nationwide standardized assessment (ASPIRE) is back, which will provide an opportunity to look for growth and improvement that can be attributed to i-Ready.   Another avenue for potential inquiry is to survey the students about i-Ready to understand their feelings and engagement with the program. The students might also offer ways to help them sustain in the program and be more successful.

Decisions

I hope that St. Michael School will use this capstone project to make decisions regarding the implementation, use, and assessment of i-Ready. I also hope this project helps justify the need for additional iPads at the primary level. This capstone project can help with making decisions about professional development and training for teachers.

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Appendix A – Focus Group and Interview Questions

<div align="center">

Data Collection Instruments

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Administrator Interview Questions
- What were the goals in adopting iReady?
- Who was involved in the decision to adopt iReady?
- How was iReady rolled out to teachers?
- What has professional development looked like for teachers throughout the implementation process?
- How did teachers react to the shift to iReady?
- What changes have you seen in classrooms as a result of iReady?
- How are you checking in with teachers about iReady?
- What resources were made available?
- What feedback have you received about iReady from parents, students, and teachers?
- What changes have you made or do you anticipate making due to iReady?

Focus Group – Classroom Teachers
- What do you see as the goals of iReady? To what extent were you involved in the decision to adopt it?
- How were you trained to use iReady? What did training entail before implementing iReady and once it was being used?
- What is your level of support of iReady overall? What do you see as its strengths? As the main challenges?
- How has iReady changed your classroom? Instruction?
- How comfortable are you with navigating technology in general? How comfortable are you with using iReady in the classroom?
- What have been student reactions to iReady?
- How do you know when students are engaged in iReady?
- How do you incorporate iReady into the school day?
- Do you have all the resources you need to make the program success?
- How do you measure if the program is successful?
- How do you use the data to modify instruction?

Appendix B – Recruitment Letter

<div align="center">

Recruitment Materials
Katlin Davis

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E-Mail

Dear St. Michael Teachers,

I am contacting you on behalf of Vanderbilt University to ask if you would agree to be in a focus group about the implementation of iReady at your school. I am contacting you for my quality improvement project because you teach at the school where the quality improvement project is taking place.

Should you agree to participate; I will contact you to setup a time of your convenience. During this 60-minute focus group (virtually), I will ask you about your knowledge and experience with the implementation and use of the iReady online learning system.

I hope that you will choose to participate in this important quality improvement project that will benefit your school. If you are willing, please email back confirmation and I will follow up to schedule the focus group.
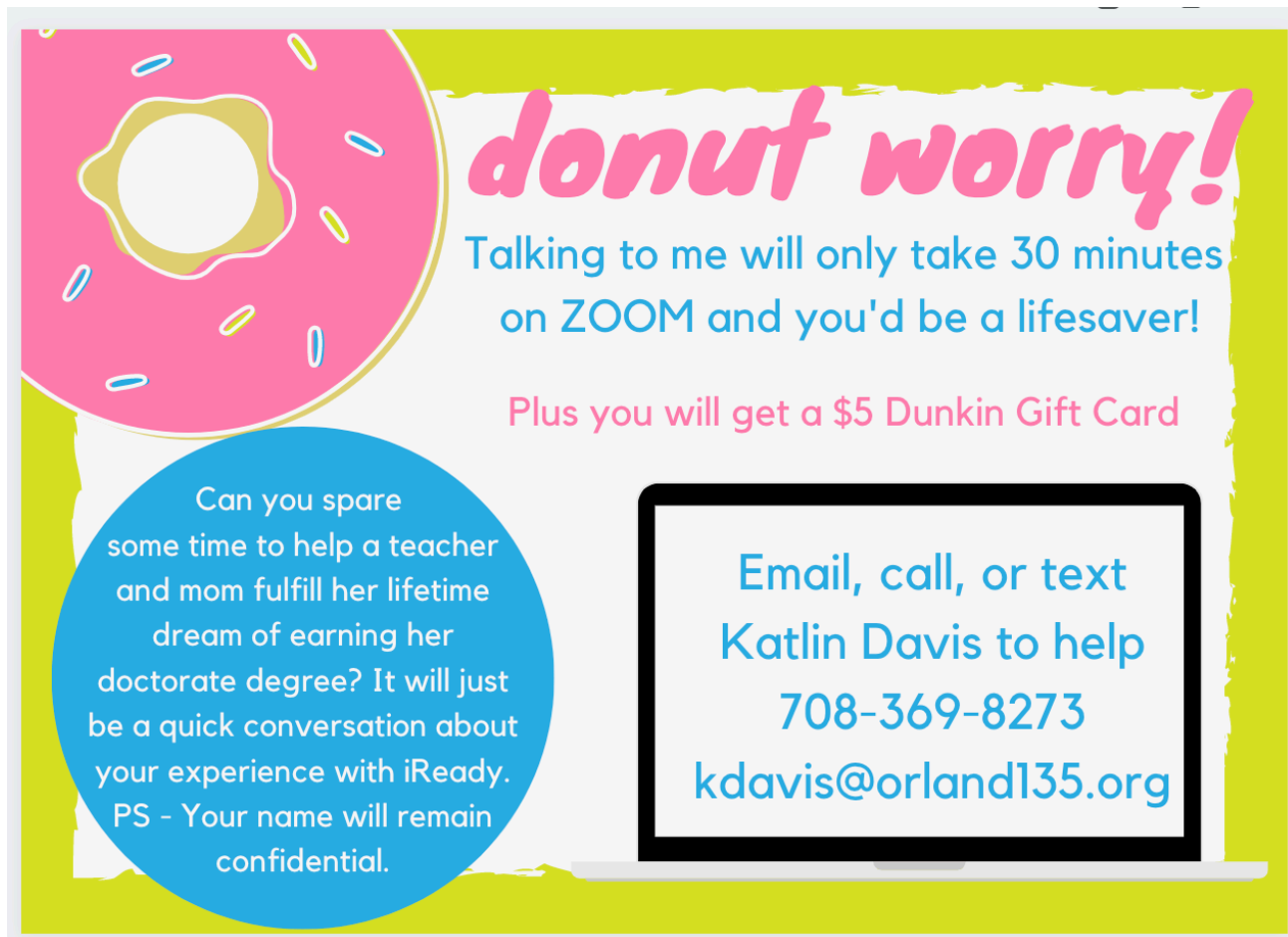
I look forward to hearing from you.

Thank you,

Katlin Davis
Katlin.s.davis@vanderbilt.edu
708-369-8273
Vanderbilt University
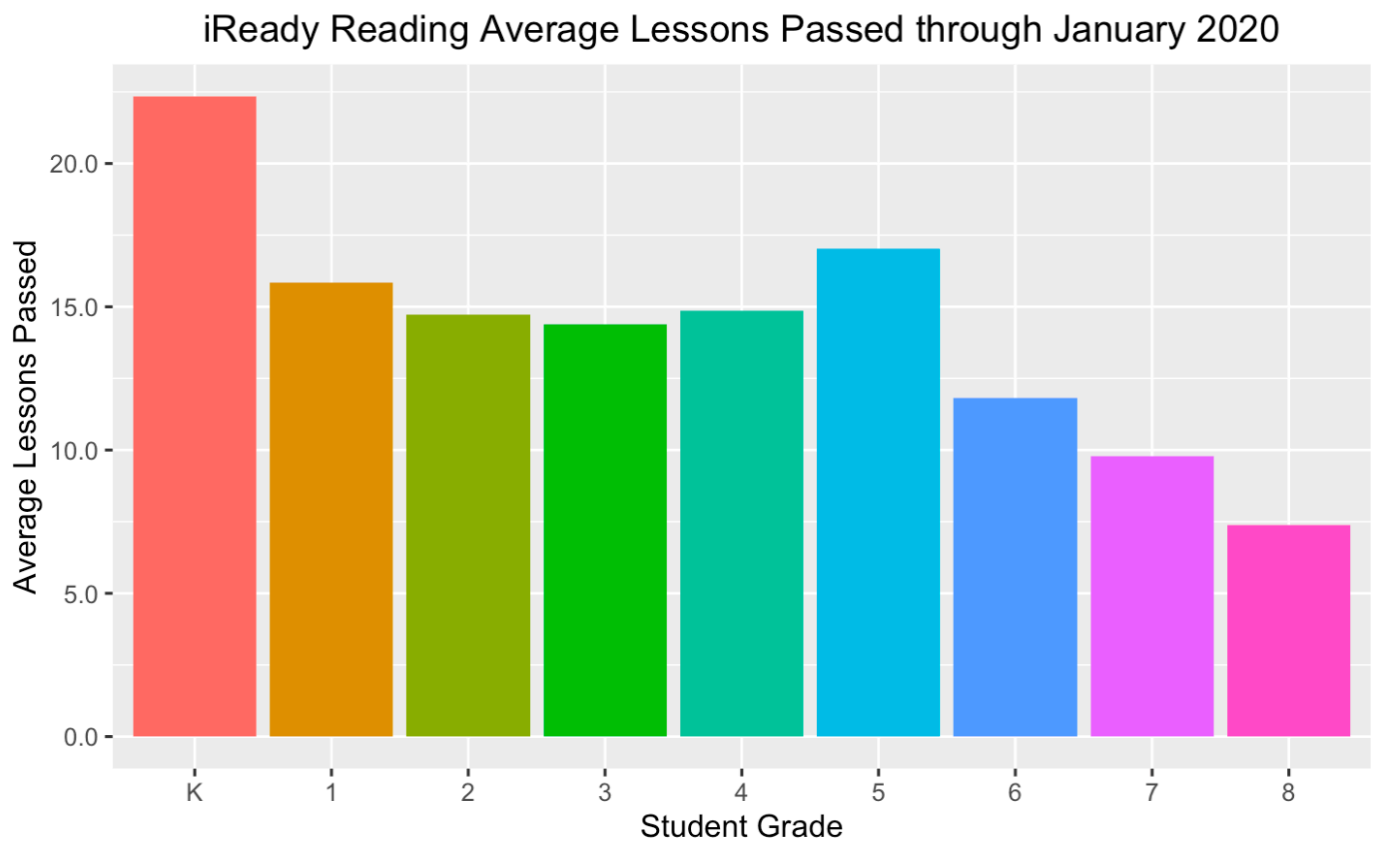
Appendix C – Donut Recruitment

donut worry!

Talking to me will only take 30 minutes on ZOOM and you'd be a lifesaver!

Plus you will get a $5 Dunkin Gift Card

Can you spare some time to help a teacher and mom fulfill her lifetime dream of earning her doctorate degree? It will just be a quick conversation about your experience with iReady. PS - Your name will remain confidential.

Email, call, or text Katlin Davis to help
708-369-8273
kdavis@orland135.org

Appendix D – Reading Lessons Passed

iReady Reading Average Lessons Passed through January 2020

Appendix E – Math Lessons Passed

iReady Math Average Lessons Passed through January 2020