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A PROGRAM EVALUATION OF THE IMPLEMENTATION OF PERSONALIZED  
LEARNING IN A RURAL ELEMENTARY SCHOOL

By  
Jaime L. Hembree

A Dissertation Submitted to the  
Gardner-Webb University School of Education  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Education

Gardner Webb University  
2019

## Approval Page

This dissertation was submitted by Jaime L. Hembree under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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## **Abstract**

A PROGRAM EVALUATION OF THE IMPLEMENTATION OF PERSONALIZED LEARNING IN A RURAL ELEMENTARY SCHOOL. Hembree, Jaime L., 2019: Dissertation, Gardner-Webb University.

The global workforce is constantly changing. Students sitting in today's classrooms are being prepared for jobs that do not currently exist. Students must graduate ready to be problem solvers, collaborators, and self-starters. Students must become in charge of their learning, and teachers must possess the skill set in order to facilitate this kind of learning. As a result, many states and school districts are implementing personalized learning. This study provides a program evaluation of the implementation of personalized learning, and focused primarily on the implementation of student data notebooks and teacher-shared flexible grouping and measured teacher efficacy and student achievement as a result. Findings from this study indicated that while the implementation of personalized learning is still in the beginning stages, the structures of student data notebooks and flexible learning groups are in place. While there were not significant changes in the area of student achievement in this study, teachers now have higher levels of efficacy. As the implementation of personalized learning continues, it is the hope that student achievement will increase as a result of the teachers' growing levels of efficacy. Recommendations include the continued growth of collective efficacy, collaboration with other districts implementing personalized learning, and a focus on professional development on instructional strategies to support student individualization and student creativity. The results of this study could be useful to district leaders, school leaders, and teachers as they continue to implement personalized learning.

*Keywords:* personalized learning, student data notebooks, teacher efficacy,  
student achievement

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## Chapter 1: Introduction

“The world is flat” (Friedman, 2006, p. 5). This is according to Friedman (2006) who shared in his book how the explosion of new communication technologies and globalization has “flattened” the world allowing anybody, anywhere, to be connected anytime, with growing efficiency and speed. Jobs that were once paid positions are now being replaced with a computer, a robot, or some other new technological advance. According to Friedman, this brings about a necessary shift in our society. “Today’s workers need to approach the workplace much like athletes preparing for the Olympics, with one difference. They have to prepare like someone who is training for the Olympics but doesn’t know what sport they are going to enter” (Friedman, 2006, p. 294). Successful people will have to be great collaborators and orchestrators, great explainers, great leveragers, great adapters, great people, passionate personalizers, and great localizers. According to Friedman “*How* we educate our children may prove to be more important than *how much* we educate them” (p. 309). Friedman also stated that in a “flattened world,” due to outsourcing, digitization, and automation, the most important ability you can develop is to “learn how to learn” (p. 309).

### **The History of Personalized Learning**

How we educate our students has taken on a new look in many states in the country through a personalized learning approach. Personalized learning, however, is not a new concept. Personalized learning can be traced all the way back to the 19<sup>th</sup> century. In 1889, Preston Search, superintendent of Pueblo Colorado School District, unveiled a plan where students would progress at their own pace. This plan, called the “Pueblo plan,” was a sequence of lessons that students completed individually based on their

needs (The History of Personalized Learning, 2018, para. 4). It was intended to “relieve physical strain, and to train independent, self-reliant workers, in order to result in better work and more enthusiasm” (Januszewski & Yeaman, 2001, p. 58).

A plan for mastery-based learning was in place at the San Francisco Normal School in 1912. The plan was to have students study each content area at the grade level that was specific to their needs. Administrators at the school created worksheets to be used independently by students. This model eventually ended, due to the fear that students were working too much in isolation and would lack necessary real-world skills (The History of Personalized Learning, 2018, para. 5).

A few years later, Dewey (1916) advocated for placing the child at the center of the classroom (The History of Personalized Learning, 2018, para. 6). With Dewey’s early constructivist roots, he believed that knowledge should not be given to a student, but that each student must experience content and engage with it to effectively learn it (The History of Personalized Learning, 2018, para. 6).

The Personal Systems of Instruction (PSI) was developed by Fred Keller in Brazil in 1968. The purpose behind the plan was for students to be able to learn course material without an instructor standing by their side, simultaneously mastering content at their own pace. The curriculum was broken down into shorter units, and students periodically took formative assessments, moving through content at their own pace. If students failed a unit, they returned to the coursework until they could demonstrate mastery with the skill (The History of Personalized Learning, 2018, para. 8). The PSI program was eventually brought to the United States. Due to its heavy roots in behavioral principles, it was quickly adopted by many psychology professors. Keller outlined five basic

components that he deemed to be essential for a PSI class: (a) mastery of course material, (b) the use of proctors, (c) self-pacing, (d) stress upon the written word, and (e) use of lectures and demonstrations primarily for motivational purposes (Eyre, 2007).

In 2001, Joel Rose and Chris Rush developed the School of One in New York City. The purpose of the School of One was to utilize technology to tailor how students learned skills at their individual level. The program used an assessment at the end of the day to create a customized schedule for students and teachers based on the previous day's learning.

That enabled customized programming for each student based on their ability and needs. Each day when students arrive, large flat-screen monitors tell them where to go. Students then work with teachers, individually or online, or in small groups depending on where they are relative to the standards New York State requires all students to master. Quick assessments at the end of each day inform an algorithm that is married with the judgment of the teachers to determine what a student will do the next day. (The History of Personalized Learning, 2018, para. 10)

However, it was not until 2010 that the Association for Supervision and Curriculum Development (ASCD) revealed three reasons why personalized learning is an urgent need, stating that “the industrial-age assembly-line educational model – based on fixed time, place, curriculum, and pace – is insufficient in today's society and knowledge-based economy” (Ariyawong, 2012, p. 7). Second, ASCD stated that “educational equity is not simply about equal access and inputs, but ensuring that a student's educational path, curriculum, instruction, and schedule be personalized to meet the student's unique needs” (Ariyawong, 2012, p. 7). Third, ASCD stated that

“personalized learning requires a leveraging of modern technologies and is enabled by smart e-learning systems, which will help dynamically track and manage the learning needs of all students” (Ariyawong, 2012, p. 8). The movement toward personalized learning has grown from a perception that traditional education is no longer adequate. Many believe that the assembly-line model of education is outdated and irrelevant in a technology-driven society.

Personalized learning became the focal point in 2012 when the United States Department of Education released its final application for Race to the Top. The document called for the following:

Create student centered learning environments that are designed to significantly improve teaching and learning through the personalization of strategies, tools, and supports for teachers and students that are aligned with college and career -ready standards; increase the effectiveness of educators, and expand student access to the most effective educators in order to raise student achievement; decrease the achievement gap across student groups; and increase the rate at which students graduate from high school prepared for college and careers. (Ariyawong, 2012, p. 5)

The Bill and Melinda Gates Foundation simultaneously developed a working definition of personalized learning. According to the foundation, personalized learning includes three core characteristics: (a) Teachers and students collaborate to create learning paths that are fueled by student ownership and teacher insights about high-quality learning and based on students’ individual needs, skills, and personal interests; (b) During the school day, learning happens in various spaces and time periods with teachers,

peers, community members, remote experts and digital content – all depending on what works best for students; and (c) Teachers align curriculum with college- and career-ready standards and students' individual goals to ensure that learning is relevant to the future where students will live and lead (Pane, Steiner, Baird, & Hamilton, 2015, p. 3).

Many state departments of education have created offices of personalized learning, including Tennessee, Wisconsin, and South Carolina. The U.S. Department of Education has given half a million dollars to districts to support personalized learning; and since 2009, the Bill and Melinda Gates Foundation has committed \$300 million to support research and development around personalized learning (Herold, 2016, para. 4).

In order to provide rigorous instruction to prepare students for college and career readiness and simultaneously teach students soft skills, Transform SC was created in South Carolina. Transform SC is an education initiative of the South Carolina Council on Competitiveness and focuses on collaboration of business leaders, educators, students, parents, and policy makers transforming the public education system so that every student graduates prepared for careers, college, and citizenship. Transform SC schools and districts are designing, launching, promoting, and providing transformative practices in the classroom. Currently, there are 63 schools from 25 districts as well as six entire districts in the Transform SC network (South Carolina Council on Competitiveness, 2017, para. 1).

Transform SC has identified four innovative practices that help students achieve the knowledge, skills, and characteristics in the Profile of the Graduate. Schools and districts that participate in Transform SC implement some or all of these characteristics in a new model of learning designed to meet the needs of the students in their community

(South Carolina Council on Competitiveness, 2017, para. 2).

1. Real-world learning. Project-based learning integrates traditional subjects (math, English/language arts, science, social studies, etc.) in the form of a real-world problem for students to solve. Students are engaged in content relevant to them while also learning skills and characteristics like problem-solving, critical thinking, and teamwork listed on the Profile (South Carolina Council on Competitiveness, 2017, para. 2).
2. Anytime, anywhere instruction. Blended learning, a hybrid of face-to-face and digital instruction, gives teachers the capability to instruct students anytime, anywhere. Digital content adapts to students where they are in their learning, allowing teachers the flexibility to design instruction for individual students, and students receive more individual attention (South Carolina Council on Competitiveness, 2017, para. 2).
3. Real-time information. With full integration of technology in the classroom, teachers, parents, and students have the ability to continuously assess student progress. Parents no longer have to wait for report cards or parent-teacher conferences to understand how their child is progressing, and teachers can use frequent feedback to continually monitor and adapt instruction (South Carolina Council on Competitiveness, 2017, para. 2)
4. Students advance when ready. The combination of real-time information and the flexibility of digital content means that students can progress based on competency. If students struggle, they are given more time and support. If students learn quickly, they are allowed to advance. Students in the same

classroom may move at different paces based on their level of learning (South Carolina Council on Competitiveness, 2017, para. 2).

In order to articulate the vision for the transformative components of what schools should be focusing on with students, the Profile of the South Carolina Graduate was developed. According to Dr. Traci Cooper (2015), Chairperson of the State Board of Education in South Carolina,

It is important that efforts to transform South Carolina's public education system are aligned to a common goal. We rally around this new Profile as a framework all South Carolinians can embrace. It allows all of us – across all sectors – to speak a common language, around a common goal, towards unifying expectations of our students' future. (para. 1)

There are three categories that encompass the Profile of the South Carolina Graduate. The first category is *World Class Knowledge*. According to the Profile, students with world class knowledge must experience rigorous standards in language arts and math for career and college readiness. They must also engage in multiple languages, science, technology, engineering, mathematics (STEM), arts, and social sciences. The second category of the Profile of the South Carolina Graduate is *World Class Skills*. In order to meet this tenet, students must be creative and innovative and possess critical thinking and problem-solving skills. They must also demonstrate the ability to collaborate and be a part of teamwork. Last, they must have experiences with communication, information, media, and technology and must know how to learn. The third category of the Profile is *Life and Career Characteristics*. The life and career characteristics that are a part of the profile include integrity, self-direction, a global

perspective, perseverance, a strong work ethic, and interpersonal skills (South Carolina Council on Competitiveness, 2017). As South Carolina focuses on innovation through the Profile of the South Carolina Graduate, it is their hope that schools and districts will be transformed, resulting in graduates who are ready for college, the workforce, and to be productive citizens (South Carolina Council on Competitiveness, 2017, para. 1).

### **Statement of the Problem**

With the “flattening” of the world, teaching methods must change, and teaching and learning must become more individualized than ever. We can no longer rely on “factory-model schools” that once were successful in preparing students for the economy of the early 20<sup>th</sup> century. In 1900, the majority of students would take industrial jobs and did not need a deep education; only 17% of all jobs at the time required knowledge workers.

The fact that many students dropped out of high school, did not attend or complete college, or — more to the point — did not learn much academically did not cripple students when they left for the workforce nor did it significantly hurt the American economy.

But as countries are moving into an economy in which over 60 percent of jobs require knowledge workers, and we expect schools to educate all children so that they can realize their fullest human potential, it leaves too many students behind—and not just ones from disadvantaged backgrounds. (Horn, 2016, paras. 5-6)

With the shift to increased technology and globalization, nearly 65% of children entering grade school today will end up working in jobs that do not yet exist (Krueger,

2017, para. 6). A survey conducted in 2016 found that today's education leaders and scholars are pessimistic about the education system's ability to teach new skills "at the scale that is necessary to help workers keep abreast of the tech changes that will upend millions of jobs" (Krueger, 2017, para. 13). According to Horn (2016), "standardizing won't get our students, schools, and society to the next level. We need a system that is built for learning" (para. 7).

### **Rationale for the Study**

Thirty-nine states have cited personalized learning in their accountability plans submitted under the Every Student Succeeds Act (ESSA), and 11 of those states will prioritize personalized learning strategies for supporting schools identified for improvement (Molnar, 2018, para. 3). However, according to Lillian Pace, the senior director of national policy for Knowledge Works, "implementation of personalized learning could be more of an uphill battle than creating the plans was" (Molnar, 2018, para. 15) Pace stated that "We don't know yet whether the implementation is going to go smoothly or not, so that's why it's incumbent upon stakeholders and advocates to focus in on this as an opportunity, to start the hard work around implementation" (Molnar, 2018, para. 16).

Although personalized learning was mentioned in many ESSA plans, technology did not receive widespread attention. Pace stated, "For the most part, states were really beginning to talk about, 'How do we build learning-centered or student-centered systems?' and 'How do we advance policies focused on what each individual student needs?'" (Molnar, 2018, para. 5). Pace also indicated that although many states were focused on a culture of "continuous improvement," she was hopeful this would play into

the implementation of personalized learning too.

Therefore, the purpose of this study was to measure the impact of implementation of personalized learning, specifically the implementation of student data notebooks and teacher-shared flexible grouping, and its impact on teacher efficacy and student achievement. This study focused on a group of fifth-grade teachers in a rural, elementary school in South Carolina. The researcher conducted a program evaluation in order to better understand these impacts.

### **Research Questions**

Research questions have been developed based on the four complementary evaluations within the CIPP evaluation model; however, the researcher was previously the principal of the elementary school in which the study took place and understood the context in which personalized learning would be implemented. The researcher applied for the school to become a Transform SC school in the fall of 2017 and created a plan for transformation of instructional practices based on personalized learning. The plan created was a 3-year plan that laid out the implementation of personalized learning, beginning first with the fifth grade in the 2017-2018 school year. Personalized learning was selected in order to work on closing the achievement gap among students in the academic areas of reading and math. Personalized learning was also selected as the basis for transformative practices in order to facilitate meeting the Profile of the South Carolina Graduate; therefore, context questions were not a part of the research. For the purpose of this study, the researcher focused on the following questions:

1. How does the use of student data notebooks and flexible learning groups address the needs of all students as it relates to their zone of proximal

development? (Input)

2. How do teachers who are implementing personalized learning characterize the process of using student data notebooks and flexible learning to impact student learning and ensure that students meet the Profile of the South Carolina Graduate? (Process)
3. How effective is the implementation of personalized learning as measured by student achievement and teacher efficacy? (Product)

### **Theoretical Framework**

While there are many theories that address efficacy and individualized learning, Bandura's (1994) self-efficacy and collective efficacy theory and Vygotsky's zone of proximal development (Shabani, Khatib, & Ebadi, 2010) served as the primary driving forces of this study.

Bandura's (1994) theory is based on the concept of self-efficacy, an individual's abilities and cognitive skills that comprise the self-system. Bandura believed that these factors determine how people think, behave, and feel. Bandura also believed that self-efficacy determines how individuals approach goals, tasks, and challenges.

Vygotsky's zone of proximal development theory is defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers" (McLeod, 2018, para. 2). The term "proximal" refers to those skills that the learner is close to mastering. Vygotsky believed that when a student is in the zone of proximal development for a particular task, providing the appropriate assistance will give the student enough of a "boost" to achieve

the task (McLeod, 2018, para. 3).

### **Limitations of the Study**

There are several limitations to this research study. First is the small sample size. The school selected for the study is fairly small, with approximately 500 students enrolled in Grades 3-5. Personalized learning was implemented in the fifth grade only, so the research is limited to this grade only. The fifth-grade team consisted of eight teachers, so the focus of the study, as it pertains to teacher efficacy and collective efficacy, was limited. As a result of the small sample size, it was difficult to make generalizations as a whole about personalized learning and teacher efficacy.

### **Delimitations of the Study**

This study closely examined teacher efficacy as students and teachers implemented student data notebooks and a “flex” time, where students were shared and grouped flexibly based on current data. This study only focused on teacher efficacy, rather than student efficacy. This study did not focus on any technology tools used by students or teachers, only the implementation of the flexible learning groups and the student data notebooks. This study measured the impact of personalized learning on student achievement in math and reading.

### **Overview of the Methodology**

This study used a mixed methods approach using both quantitative and qualitative measures. The CIPP evaluation model developed by Stufflebeam was used for this program evaluation (Fitzpatrick, Worthen, & Sanders, 2011, p. 173). This evaluation model is made up of four interconnected evaluations: context, input, process, and product. The CIPP evaluation model is often used for the evaluation of programs within

school districts. The CIPP evaluation model was selected for this study because of its use for evaluating school-based programs and for the potential uses of information that could result from this evaluation. Methods for collecting data within the CIPP evaluation model will vary and will include analyzing data, administering surveys, and interviewing stakeholders. These methods of collecting data are consistent with a mixed methods study approach (Fitzpatrick et al., 2011), therefore this study consisted of mixed methodology. In this particular study, data were gathered by analyzing NWEA MAP math and reading data, conducting teacher surveys, and conducting teacher interviews.

This study focused on a group of fifth-grade math and reading teachers in a rural elementary school setting as they embarked on personalized learning. Teachers and students implemented student data notebooks and a “flex” time, where teachers shared students based on current data in flexible learning groups. The groups were fluid and changed frequently. The researcher administered a teacher efficacy survey to the fifth-grade math and reading teachers involved. The researcher also conducted interviews with all eight participants. The results of the surveys and interviews were analyzed to measure the impact of personalized learning on teacher efficacy and student achievement. NWEA math and reading MAP data were also closely examined to measure the impact of personalized learning on student achievement.

### **Definition of Key Terms**

**Collective self-efficacy.** Collective self-efficacy focuses on individual and group contributions to the sustained learning experience supported by principles of empowerment and accountability (Balls, Eury, & King, 2011).

**Customized learning path.** Customized learning paths allow learners to co-

design their learning with educators rather than simply comply with the directions and expectations of adults. They are designed to help learners take ownership of their learning, find greater meaning and purpose, and become increasingly independent in their learning skills (Rickabaugh, 2016, p. 40).

**ESSA.** Every Student Succeeds Act (2010).

**iNACOL.** International Association for K-12 Online Learning.

**Learner profile.** Identifies how learners learn best based on how they access information, engage with content, and express what they know. The learner profile also addresses their strengths, challenges, interests, aspirations, talents, and passions (Bray & McClaskey, 2016).

**MAP growth reports.** MAP stands for measures of academic progress. MAP growth creates a personalized assessment experience that accurately measures performance in the areas of reading and mathematics (MAP Growth, 2019).

**Personalized learning.** An approach to learning and instruction that is designed around individual learner readiness, strengths, needs, and interests. Learners are active participants in setting goals, planning learning paths, tracking progress, and determining how learning will be demonstrated. At any given time, learning objectives, content, methods, and pacing are likely to vary from learner to learner as they pursue proficiency aligned to established standards. A fully personalized environment moves beyond both differentiation and individualization (Rickabaugh, 2016).

**Self-efficacy.** Self-efficacy is one's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments (Bandura, 1994).

**Teacher efficacy.** Teacher efficacy is defined as “teachers’ beliefs about their

capability to impact students' motivation and achievement" (Balls et al., 2011, p. 43).

**Visible learning.** Visible learning occurs when teachers see learning through the eyes of students and help them become their own teachers (Visible Learning, 2015).

### **Organization of the Dissertation**

This dissertation is divided into five chapters. Chapter 1 includes the introduction, overview of the problem, rationale for the study, research questions, limitations of the study, delimitations of the study, and key terms. Chapter 2 contains a review of the essential literature pertaining to self-efficacy, teacher efficacy, student data notebooks, flexible learning time, and flexible learning groups as a part of personalized learning. Chapter 3 includes a description of the participant group and methods to be used in data collection, using a program evaluation as the structure. Chapter 4 includes quantitative and qualitative analyses of the data collected. Last, Chapter 5 provides a discussion of the results, draws conclusions, describes limitations, outlines implications of the study and makes suggestions for further improvement and research.

## Chapter 2: Literature Review

### Introduction

As today's high school students graduate from high school and continue on to community college, a 4-year college, a certification program, or a new career, they will be preparing for a workplace that is continuing to change at a very rapid pace due to advances in technology and innovation cycles. However, their schools remain largely the same, with teachers being the sole drivers of curriculum delivery and differentiated supports and interventions. Even as workplace changes require adaptability and deep inter and intrapersonal skills, the goal of education has continued to be the accumulation of content knowledge. Today's students cannot be prepared for the competitive jobs of the future if they do not actively participate in the creation of their own learning and build skills that will translate into the flexibility needed for success in the workforce (Jenkins, Williams, Moyer, George, & Foster, 2016, para. 1).

Learning must become more personalized than ever, and students need to become agents of their own learning. Many states are currently implementing personalized learning as a part of ESSA, and a few states even have offices of personalized learning at their state departments of education. ESSA has provided states with significant flexibility to advance personalized learning and improve equitable outcomes for their students as part of this endeavor (Knowledge Works, 2018, para. 1).

To better understand the impact of personalized learning on student achievement, it is first important to define and understand self-efficacy and teacher efficacy. It is also important to understand the work that has been completed around student data notebooks and flexible learning models as a part of personalized learning.

## **Theoretical Framework**

**Zone of proximal development.** According to iNACOL, the research on how students learn examines how important it is to meet a student within their zone of proximal development, allow for productive struggle and design progressions effectively – where learning hinges on successful prior learning. A student’s zone of proximal development is defined as “the difference between what a learner can do without help and what he or she can do with help” (Frost, Worthen, Truong, & Patrick, 2018, para. 3). We know that when students are able to address prior gaps in their learning, they can accelerate their learning dramatically. As such, educators need to be able to scaffold instruction at the appropriate level as well as offer the supports and resources depending on student needs when delivering instruction. If our old pedagogical approaches force content to be traditionally delivered through one-size-fits-all approaches within age-based grade levels, we are not truly meeting students where they are (Abel, 2016, para. 5).

**Self-efficacy.** According to Bandura’s (1994) theory of self-efficacy, an individual’s “abilities, attitudes and cognitive skills comprise what is known as the self-system” (p.71). Bandura discovered that these beliefs determine how people think, behave, and feel. Bandura identified four sources that contribute to self-efficacy: mastery experiences, vicarious experiences, verbal persuasion, and emotional and physiological states. According to Bandura, the most effective way of creating a strong sense of efficacy is through mastery experiences.

Successes build a robust belief in one's personal efficacy. Failures undermine it, especially if failures occur before a sense of efficacy is firmly established. If

people experience only easy successes, they come to expect quick results and are easily discouraged by failure. (Bandura, 1994, p.72)

After people become convinced that they have what it takes to succeed, they persevere in the face of adversity and quickly rebound from setbacks. By sticking it out through tough times, they emerge stronger from adversity (Bandura, 1994).

The second method of creating and strengthening self-beliefs of efficacy is through vicarious experiences.

Seeing people similar to oneself succeed by sustained effort raises observers' beliefs that they too possess the capabilities to master comparable activities to succeed. By the same token, observing others fail despite high effort lowers observers' judgments of their own efficacy and undermines their efforts.

(Bandura, 1994, p. 73)

The impact of modeling on perceived self-efficacy is strongly influenced by perceived similarity to the models. The greater the assumed similarity, the more persuasive are the models' successes and failures. If people see the models as very different from themselves, their perceived self-efficacy is not much influenced by the model's behavior and the results it produces. Modeling influences do more than provide a social standard against which to judge one's own capabilities. People seek proficient models who possess the competencies to which they aspire. Through their behavior and expressed ways of thinking, competent models transmit knowledge and teach observers effective skills and strategies for managing environmental demands (Bandura, 1994).

Social persuasion is a third way of strengthening people's beliefs that they have what it takes to succeed. Individuals who are persuaded that they possess the skill set to

master given tasks are likely to put forth greater effort and sustain it than if they have self-doubts and dwell on personal weaknesses when problems arise. It is more difficult to instill high beliefs of personal efficacy by social persuasion alone than to undermine them. Individuals who have been persuaded that they lack capabilities tend to avoid tasks and give up easily as the tasks become more difficult (Bandura, 1994).

The fourth source of modifying self-beliefs of efficacy is to reduce people's stress reactions and alter their negative emotional proclivities and misinterpretations of their physical states. It is not the sheer intensity of emotional and physical reactions that is important but rather how they are perceived and interpreted. "People who have a high sense of efficacy are likely to view their state of affective arousal as an energizing facilitator of performance, whereas those who are beset by self-doubts regard their arousal as a debilitator" (Bandura, 1994, p. 73).

### **Continuum of Self-Efficacy**

"Self-efficacy holds significant implications for both learners and educators" (Bray & McClaskey, 2016, p. 54). Bray and McClaskey (2016) stated that the "most difficult and challenging learner to teach is the learner who believes he or she cannot succeed" (p. 54). These learners avoid complex skills and challenges. "If success does not come on the first attempt, these learners easily conclude that learning is not possible, and then abandon their efforts" (Bandura, 1994, p. 71). However, on the contrary, Wigfield and Wagner (2005) believed that learners with a strong sense of efficacy have a completely different approach (Bray & McClaskey, 2016).

Learners with a strong sense of self-efficacy approach complex and challenging learning tasks with a sense of confidence. If learners use good strategies, practice

smart persistence, and use the full range of resources available to them, they can and will succeed. (Bray & McClaskey, 2016, p. 56)

According to Bray and McClaskey (2016), learners move through a continuum of self-efficacy, which includes four stages. Learners in the first stage, or cautious stage, have a difficult time making decisions and lack belief in themselves. In this stage, learners may have difficulty taking action on any of the ideas they come up with. They may also be concerned about what others think of them and are not likely to take any learning risks (Bray & McClaskey, 2016, p. 55).

Learners in the self-esteem stage begin believing in themselves and slowly begin to become more comfortable with who they are as learners. It is during this stage that learners also begin reflecting on their relationships with their teachers, peers, family, and others in the world. As they receive positive feedback after sharing their thoughts, they feel better about themselves. This results in an improvement in their self-esteem (Bray & McClaskey, 2016, p. 55).

Learners in the self-confidence stage become confident in guiding their own thoughts, behaviors, and emotions in meeting their learning goals. During this stage, students begin to believe in their own ability to make good choices to support their learning. Students in this stage take ownership of the choices they make. They become intrinsically motivated at this point to voice any concerns and self-advocate about how they learn (Bray & McClaskey, 2016, p. 56).

Learners in the final stage, perseverance, learn to persist to solve a problem or embrace a challenge. While this is often referred to as “grit,” learners in this stage develop resilience for rigorous learning. Some students in this final stage may even

demonstrate a stubbornness and begin to approach failure as a learning opportunity.

They are risk-takers and excitedly go above and beyond to achieve goals they have set (Bray & McClaskey, 2016, p. 56).

According to Rickabaugh (2016),

Students who feel as though they own their learning also tend to take more responsibility for completing tasks and have a higher degree of confidence and pride in their success. They see how learning gives them greater influence over their environment, and they realize it is an asset that cannot be easily stolen, lost, or destroyed. (p. 66)

According to John Fletcher (2008), “When students take ownership of their learning rather than seeing it as something they do primarily to gain adult approval or avoid negative sanctions, it becomes more meaningful to them and they tend to retain it longer” (Rickabaugh, 2016, p. 66). When students experience a greater sense of efficacy, this also leads to a shift in the students’ mindsets. According to Dweck (2006), “learners with a strong sense of efficacy tend to blame poor strategy or effort rather than lack of ability when they do not succeed” (Rickabaugh, 2016, p. 66). Rickabaugh echoed this same sentiment:

These learners welcome challenges that stretch their capacity and build their skills. When success is not immediate, they examine their strategies to see if there are more effective approaches to employ. They see learning missteps and setbacks as lessons from which to learn rather than failure and a signal to abandon the struggle. (p 65)

According to Wigfield and Wagner (2005), when learners have a strong sense of self-

efficacy, they approach complex and challenging learning tasks with a sense of confidence (Bray & McClaskey, 2016). They believe that if they use good strategies, practice persistence, and utilize the full range of resources available to them, they can and will succeed (Bray & McClaskey, 2016). According to Angela Duckworth, “persistence associated with learner efficacy is an even stronger predictor of life success than intelligence” (Rickabaugh, 2016, p. 65).

**Teacher efficacy.** According to Bandura, self-efficacy is one's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments (Gavora, 2010). It exists in many domains of human functioning, including both professional and private behavior. In the context of education, teacher self-efficacy is the teacher's personal belief in his or her ability to plan instruction and accomplish instructional objectives. It is the conviction that the teacher has about his or her ability to teach students efficiently and effectively (Gavora, 2010).

Teacher self-efficacy should not be confused with “competence,” which is usually used to refer to only the teacher's professional knowledge and skills. Teacher self-efficacy is a broader concept, and high self-efficacy underlies and enables successful use of professional knowledge and skills. On the contrary, low self-efficacy inhibits effective use of professional knowledge and skills. Therefore, teacher self-efficacy is a strong self-regulatory characteristic that enables teachers to use their potential to enhance student learning. Teacher self-efficacy is related to “perseverance”; the stronger the self-efficacy, the greater the perseverance – and the greater the perseverance, the greater the likelihood that the teaching behaviors will be successful. Teacher self-efficacy is a construct that was developed within the context of Bandura's (1994) social cognitive

theory (Gavora, 2010). Bandura defined self-efficacy as the belief about one's own capabilities to organize and execute a certain task. Self-efficacy beliefs influence thought patterns and emotions, which in turn enable or inhibit actions. According to Bandura's theory, self-efficacy has two components: efficacy expectation and outcome expectancy. Efficacy expectation is the conviction that one has the ability, knowledge, and skills to successfully execute the behavior or actions required to produce the desired outcomes. Outcome expectancy is defined as a person's estimate of the likely consequences, or impact, of performing a task at the self-expected level of performance. More specifically, outcome expectancy is the belief that a given behavior or action will indeed lead to expected outcomes. To be successful, the teacher must have both high efficacy expectations and high outcome expectancy. If the teacher has the former and not the latter, it is unlikely that the teacher will be a successful teacher even if the teacher is professionally well qualified. According to Bandura's theory, four sources enhance development of high teacher self-efficacy: (a) mastery learning experiences, (b) vicarious experiences, (c) social persuasion, and (d) physiological and emotional states (Gavora, 2010, p. 17). Mastery teaching experiences are situations in which teachers demonstrate their own teaching success, thus proving that they are competent teachers.

According to Bandura, "Enacted mastery teaching experiences are the most influential source of [self-]efficacy information because they provide the most authentic evidence of whether one can muster whatever it takes to succeed" (Gavora, 2010, p.18). According to Bandura, success builds a robust belief in one's personal efficacy (Gavora, 2010). Whenever teachers engage in teaching activities, they interpret their results and use these interpretations to develop beliefs about their ability to engage in similar

activities. If these activities are consistently successful, they tend to increase self-efficacy. Contrarily, if these activities tend to produce failure, self-efficacy is likely to decrease. As a result, if a teacher initially has a low sense of efficacy, it will foster doubt about his or her abilities. Such doubt likely will result in failure in teaching and also reinforce low self-efficacy (Gavora, 2010).

According to Bandura, vicarious experience occurs when teachers learn from observation of the successes of other teachers (Gavora, 2010). Observing and modelling successful teachers may generate expectations that teachers can learn from the successes of colleagues which, in turn, can result in their own positive self-efficacy (Gavora, 2010).

Bandura also believed that social persuasion by colleagues and superiors that a teacher can teach successfully will enhance the teacher's self-efficacy (Gavora, 2010). For example, coaching and giving encouraging feedback are common actions that likely influence teacher self-efficacy positively (Gavora, 2010).

According to Bandura, physiological and emotional states of the teacher influence self-efficacy judgments (Gavora, 2010). For example, a teacher's excitement and enthusiasm can provide cues about anticipated teaching success. On the other hand, stress, anxiety, and other negative states can lead to negative judgments of teacher abilities and skills. This is what differentiates teacher self-efficacy from teacher confidence. A teacher who is professionally well qualified may not be a successful teacher if personal negative or inhibiting emotional factors come into play (Gavora, 2010).

The growing body of research on teacher self-efficacy suggests that it may account for individual differences in teacher effectiveness. For example, teacher self-

efficacy has been found to be consistently related to positive teaching behavior and strong pupil achievement. Students learn more from teachers who have high self-efficacy; and highly self-efficacious teachers are more likely to use open-ended questions, inquiry methods, or small group learning activities for students. They are also more persistent at a task, take more risks, and are more likely to use innovative elements in their teaching. According to studies performed by Brouwers and Tomic in 2003, Henson in 2001, and Ross and Bruce in 2007, teachers with high self-efficacy also are more open to new ideas and initiatives and are less likely to experience burnout, support pupils' autonomy to a greater extent, and are more attentive to low-ability students (Gavora, 2010). Additionally, according to researchers Megan Tschannen-Moran and Hoy, teachers with high self-efficacy also exhibit greater enthusiasm for teaching, have a greater commitment for teaching, and are more likely to remain in the teaching profession (Gavora, 2010).

**Measuring teacher self-efficacy.** Teacher self-efficacy has at least a 25-year history of research. The first attempt to measure teacher efficacy was by the RAND Foundation. RAND researchers inserted two "sense of self-efficacy" items in their questionnaire, first in a study in which success in reading programs was examined and then again in a second study in which effects of funding of educational programs were investigated. According to a study conducted by David Armor, teacher sense of self-efficacy proved to be an unexpected but important factor that had strong, positive relationships to student performance, achievement of program goals, and other positive educational outcomes (Gavora, 2010). Independent of the RAND research, Guskey (1981) investigated how teacher locus of control was related to teacher self-perceived

responsibility for student achievement (Gavora, 2010). To conduct the research, Guskey developed a measure to indicate how much teachers assume personal responsibility for student success or failure. Based on his findings, he concluded there were two distinct qualities underlying responsibility for student achievement, meaning that responsibility for student achievement was not a unitary dynamic (Gavora, 2010).

Research on the self-efficacy of teachers suggests that there are six components to the overall construct that act as a buffer between teaching stress and teacher burnout: (a) instruction, (b) adapting education to individual students' needs, (c) motivating students, (d) keeping discipline, (e) cooperating with colleagues and parents, and (f) coping with changes and challenges (Skaalvik & Skaalvik, 2007).

Generally, when teachers believe in their ability to effectively instruct students, adapt the lessons to individual student needs, etc., they have a high level of overall self-efficacy related to teaching. This six-factor construct has also been shown to correlate with burnout (i.e., greater self-efficacy leads to less burnout; Skaalvik & Skaalvik, 2007).

**Collective efficacy.** Balls et al. (2011) defined teacher efficacy as “teachers’ beliefs about their capability to impact students’ motivation and achievement” (p. 43). In turn, “collective self-efficacy focuses on individual and group contributions to the sustained learning experience supported by principles of empowerment and accountability” (Balls et al., 2011, p. 51). According to Balls et al., “There are too few opportunities for teachers to share practices and strengthen the profession with experiences aimed at impacting individual self-efficacy and collective efficacy within the structure of the school setting” (p. 24). To counteract this, Balls et al. developed a value-added assessment model. This model recommends considering new ways to gain insight

into teaching practices, examining their strengths and weaknesses, then new ways to develop teacher capacity, both individually and collectively. The five key variables of the model include teacher dispositions, professional experiences, organizational structures, degree of shared decision-making, and performance assessment skills (Balls et al., 2011, p. 25).

According to Goddard, Hoy and Hoy (2000), schools with strong cultures of collective efficacy have faculties who believe they can make a positive difference in learning for all students. If teachers believe they can have a positive effect on students, they are more likely to make choices that will result in increased student achievement, regardless of student characteristics (Goddard et al., 2000). There is a strong body of evidence that suggests that collective teacher efficacy is crucial to student achievement, despite student socioeconomic status and prior learning. Wayne K. Hoy, Professor Emeritus of the Ohio State University defined collective efficacy as “the shared perceptions of teachers in a school that the efforts of the faculty as a whole will have positive effects on students” (Goddard et al., 2000, p. 2).

Hattie (2010) developed a way of ranking various influences and effect sizes as they pertain to student achievement. Hattie then ranked the top 138 influences that are related to learning outcomes from very positive effects to very negative effects. Hattie found that the average effect size of all the interventions he studied was 0.40; therefore, he decided to judge the success of influences relative to this “hinge point” to find an answer to the question, “What works best in education?” Hattie studied six areas that contribute to learning: the student, the home, the school, the curricula, the teacher, and teaching and learning approaches; but Hattie did not only provide a list of the relative

effects of different influences on student achievement, he also provided an explanation as to why. He found that the key to making a difference was making teaching and learning visible. According to Hattie, this occurs when teachers see learning through the eyes of students and help them become their own teachers. In Hattie's study, he also found collective teacher efficacy to be the second most influential factor in student achievement. All other variables were three to six times less influential than teacher effectiveness. Recently, Hattie, after reviewing 1,200 meta-analyses of the effects of learning, ranked collective teacher efficacy as the number one factor among all the influences that impact student achievement (Visible Learning, 2015). Hattie revealed that collective efficacy had an effect size of 1.57, more than double that of feedback (Visible Learning, 2015). These findings are especially significant because efficacy is more likely to be able to change than other factors such as the social backgrounds of students.

**Personalized learning defined.** To date, there is no single definition of personalized learning; however, the research team at RAND developed a working definition.

Personalized learning prioritizes a clear understanding of the needs and goals of each individual student and the tailoring of instruction to address those needs and goals. These needs and goals, and progress toward meeting them, are highly visible and easily accessible to teachers as well as students and their families, are frequently discussed among these parties, and are updated accordingly. (Pane, Steiner, Baird, Hamilton, & Pane, 2017, para. 4)

Bray and McClaskey (2016) defined personalized learning:

Personalized learning starts with the learner. The teacher is the guide for the learners on their personal journeys. When learners have choices to interact with the content and discuss what they watched, read, and learned, they are actively participating in learning. Encouraging learner voice and choice is the key difference of differentiation and individualization. When learners have a voice in how they learn and choice in how they engage with content and express what they know, they are more motivated to want to learn and own their own learning. (p. 7)

iNACOL defined personalized learning as, “Tailoring learning for each student’s strengths, needs and interests—including enabling student voice and choice in what, how, when and where they learn—to provide flexibility and support to ensure mastery of the highest standards possible” (Abel, 2016, para. 4). In personalized learning environments, educators seek to meet each student within their zone of proximal development. According to iNACOL, “Without personalization, there is a gap between the individual student, their learning, and the support they need to succeed in a way that makes sense to his/her interests” (Abel, 2016, para. 4).

**Impacts of student data notebooks.** There are school leaders and teachers all across the nation who collect and analyze data to make instructional decisions for their students; however, in many schools, students are left out of the process of analyzing the data. That is not the case in “Leader in Me” schools. Teachers in “Leader in Me” schools utilize student data notebooks, called Leadership Notebooks, to keep track of where their students are in achieving learning objectives as well as where they need to be. These Leadership Notebooks are adopted from the work of Covey (2014). The

leadership notebooks capture data and progress on academic and personal goals and are used as a vehicle for students to truly own their learning. There are nearly 4,000 “Leader in Me” schools in the nation, and many more are adopting the student-owned data notebooks as a vehicle for students to gain ownership of their learning.

A key benefit of the data notebooks is that they provide students with an ongoing, timely source of feedback, which is a known key driver of student achievement.

It does not take long before it becomes clear that the child owns the data – and in most cases is quite proud of it. (Covey, 2014, p. 63)

Jackson (2009) stated, “Data notebooks provide a powerful way of getting students involved in collecting their own feedback about their learning and have been used with children as young as kindergarteners all the way up through seniors in high school” (p. 136). Jackson believed that master teachers must understand where students are, where they need to go, and what support they need along the way. “The person working hardest in the room is the only person learning” (Jackson, 2009, p. 136). Even the most dedicated teachers fall short if they do the work their students should be doing. Master teachers, by contrast, inspire students to do the important work on their own.

According to Marzano (2003), students of all levels can experience success when tracking their own data:

When success in the classroom is defined in terms of competitive status with others, only a few students can be successful. However, when individual growth is the criterion for success, then all students can experience success regardless of their comparative status. (p. 149)

Covey (2014) echoed the same thought: “Since the data notebooks represent only a single

student's work, students use it only to compare themselves individually against their own goals and previous scores, not someone else's" (p. 61).

Stiggins (2007) discussed the impact of students managing their own data:

Whether their score is high or low, students respond productively when they say, "I understand. I know what to do next. I can handle this. I choose to keep trying." From here on, the result will be more learning. The counterproductive response is, "I don't know what this means. I have no idea what to do next. I'm probably too dumb to learn this anyway. I give up." Here the learning stops. (p. 26)

According to Stiggins,

The students' role is to strive to understand what success looks like, to use feedback from each assessment to discover where they are now in relation to where they want to be, and to determine how to do better the next time. As they experience and understand their own improvement over time, learners begin to sense that success is within their reach if they keep trying. (p. 24)

Hattie (2010) identified that giving students a voice in their learning is one of the most influential factors in increasing student achievement. When data tracking involves students, as leadership notebooks do, it provides ownership, student voice, visible learning, and student empowerment. Similarly, Neihart (2008) stated, "When children feel excited and empowered to take charge of their learning and their lives, they become much more engaged in the learning process" (p. 7).

**Flexible learning time.** In "Paradigm of One," David Hood described how the current model of learning focuses on "one teacher, teaching one subject, to one class of

one age, using one textbook, at one pace, in one classroom, for one hour” (Frost et al., 2018, para. 2) and described this rut in which the traditional system is stuck. Hood also discussed how

in a time-based factory-model education system, students move through grade levels with varying amounts of learning with recorded grades of A-F without ensuring mastery. This all but guarantees that students will have significant gaps in core knowledge when they move from one grade level to the next. These disparities grow over time. When different levels of expectations are held for different students, the disparities grow larger, wider and deeper. (Frost et al., 2018, para. 2)

New personalized learning environments that are competency based and student centered help teachers identify the strengths of individual students and help meet kids where they are. They include assessments for learning with structured feedback to pupils, setting individual learning targets, planning to support individual needs, and using data to dialog and diagnose each student’s learning needs every day.

In order to personalize learning, many school districts are incorporating the use of “flex time.”

School is no longer defined merely as a physical space, classrooms lined with rows of desks and a teacher who lectures at the front of the room—nor does a student’s required curriculum have to involve a one-size-fits-all model that uses a single textbook. (Abel, 2016, para. 9)

At Sanborn Regional High School, a flexible grouping period has been built into the daily bell schedule. The flexible grouping period is called the “Focused Learning

Period,” and it consists of a 40-minute block where students are engaged in the following:

- Intervention: Small groups of students work with the teacher on content support, remediation, or proactive support.
- Extensions: Whole class groups in which the teacher extends the current curriculum beyond what is able to be completed during the class period.
- Enrichments: Above and beyond activities that go outside of the curriculum to expand the experiences of our students.

The flexible grouping period is monitored by teachers in their professional learning communities through a 60-minute collaborative planning time each day. During the collaborative planning time, the teachers share students so they can develop common performance assessments, analyze the data from those assessments together, and make changes and adjustments to their instruction and the curriculum as a result of what the data tell them about student learning. According to Principal Brian Stack (2014), “At our school, we have abandoned the traditional department structure of grouping teachers by their subject. At our school, teacher teams are grouped by grade level when possible so they share students and can have these important assessment discussions” (para. 6).

Principal Brian Stack (2014), the New Hampshire Secondary Principal of the Year, discussed the benefits of the flexible learning period:

For us, developing a flexible time each day to provide intervention and enrichment to our students has been a key to allowing us to provide all of our students with the differentiation and personalization that they need to be successful in our competency-based system. I challenge each of you to look at

the ways your school responds when students need that support or enrichment. Competency education doesn't create the need for differentiation. That has always existed. It does, however, highlight and expand upon the need for schools to be responding to all student learning needs on an ongoing and consistent basis. (para. 9)

Similarly, in the 2017-2018 school year, the Singapore American Middle School worked with Fielding Nair International, an educational architecture firm, to renovate their sixth grade A-side team space to create a more flexible learning environment. As Jacobs and Alkot noted, "The most fundamental structures in our schools are often inhibitors to progress: our schedules, our physical spaces, the grouping patterns of learners, and the configuration of the personnel" (Beingessner & Mehrbach, 2017, para. 1). Each grade level at Singapore American School has a block of time dedicated to their core program: English/language arts (ELA), math, science, social studies, and PE. Teams can reorganize that scheduled block in numerous ways to allow for different uses of the time. For example, they might revise the schedule, shortening classes, to create a block of time for a guest speaker or a home base activity. In sixth grade, they often use a schedule that shortens core blocks to create a flexible block of time after lunch. Students, with guidance from their teachers, identify what learning they want support in and sign up for specific workshops to reinforce those skills during this block. Sometimes, this might be remediation of a concept taught earlier in the day. Other times, it will be an extension activity for students who have already grasped the concept from earlier in the day. At times, these blocks of time are also used to make explicit connections between the disciplines. Students may use this time to work on unit projects that bring learning

from multiple subjects together. These flexible blocks help students personalize their learning path, make connections across disciplines, and give them voice and choice in their learning (Beingessner & Mehrbach, 2017).

Additionally, using flexible grouping and time allows students to be pushed further in their areas of strength and get additional time and support in areas of challenge. A study by the Rand Corporation indicated that

compared to their peers, students in schools using personalized learning practices are making greater progress over the course of two school years, and that students who started out behind are now catching up to perform at or above national averages. (Pane et al., 2015, p. 10)

**Flexible learning groups.** Just as many districts are implementing a “flex” learning time, they are also implementing flexible learning groups. According to NWEA, flexible grouping has many benefits to support student achievement. The first reason cited by NWEA is that flexible grouping enables students to build understanding from various perspectives. When students work in collaborative groups, they gain more than just peer support. Collaboration stimulates conversation and teamwork and provides the foundation for the development of Theory of Mind. The development of Theory of Mind impacts reading comprehension and critical conceptual knowledge that is necessary for the understanding and application of academic content. Theory of Mind has significant impacts on social interaction and background knowledge, both of which are critical for college and career preparation. Through work in flexible grouping, “students can broaden their schematic representation of the topic that they are discussing, thus formulate a broader lens from which they are able to analyze new material in novel

situations” (Williams, 2016, para. 2). This enables them to see the topic from not only their viewpoint, but also from the view of the others with whom they are learning. According to NWEA, this experience facilitates students developing a Theory of Mind, which allows them to increase their background knowledge regarding a given topic and thus, their ability to solve novel problems by thinking critically about that topic (Williams, 2016, para. 2).

Second, according to NWEA, flexible grouping promotes communication skills. When children work in collaborative groups, they learn to communicate effectively through both speaking and listening skills. By listening to and interacting with their peers, children begin to understand content from various perspectives; they understand how people with different experiences look at and solve different problems. Children who work in flexible collaborative groups build the foundation for moving from one zone of proximal development to another. They do this by incorporating the knowledge they gain from peer interaction into their own knowledge base (Williams, 2016, para. 3).

Flexible grouping also promotes the building of background knowledge. Having background knowledge means that children have a basic understanding of the large concepts that are contained within a set of academic skills. They may need a bit of scaffolding in order to put the knowledge they already have with new content, but they are ready to learn the new content. Without background knowledge, it is harder for students to build new knowledge and understanding. New knowledge obtained without the appropriate foundational skills is often knowledge that is not “useable.” In other words, the child cannot connect the new content to existing content, therefore they do not use the new knowledge for solving problems; they do not know how it fits the big

picture. When children work in collaborative groups, they are using “learned intelligence” they gain from their peers to add to their background knowledge. For example, children share stories from their experience about visiting or living on a farm during an activity that is designed to compare and contrast farm life with city life. Children who have never had a farm experience can now begin to assimilate this knowledge into their own background. This allows them to gain new skills more rapidly and more thoroughly; it allows them to integrate the new content with their existing knowledge. Working in the ZPD allows children to gain new knowledge they can effectively use to act on new and novel situations (Williams, 2016, para. 4).

Last, flexible grouping impacts success in the workforce. The ability to apply existing knowledge to new and novel situations is one of the key skills employers say they are looking for in their workforce; they want their employees to be able to think for themselves and solve problems when they arise. As children collaborate, they learn to work as a team. This means they are working with others to solve a common problem. They are thinking critically about the content they are exploring, and they are finding novel solutions to the problem. Teachers can use flexible collaborative groupings to help students learn content knowledge from their peers; and as they do so, they begin to learn how to learn on their own. Flexible collaborative groupings are therefore extremely powerful instructional tools (Williams, 2016, para. 5).

Flexible grouping is being implemented in many schools and districts across the country, and there is ongoing professional development that coincides with this implementation. In 2011, the DC Data Summit offered a workshop and materials on an approach to job-embedded data literacy development pioneered at Two Rivers Public

Charter School (Ariyawong, 2012, p. 15). The process, referred to as Data-Analysis-Strategy (DAS) Loop, organizes teachers into grade-level teams in which they engage in ongoing analysis of student assessment data and respond with personalized instruction (Ariyawong, 2012, p. 16). Assessment is the foundation of the DAS Loop. In the first step, the school's administration isolates a skill for which the general student body needs targeted instruction. Next, teachers pre-assess their classes and meet in groups to analyze the data and divide individual students into flexible groupings. Teachers then design three assignments that increase in level of difficulty and are differentiated for the flexible student groupings. Flexible groupings are "fluid and flexible" ability groupings used to deliver "the most effective interventions and instructional scenarios" for a specific learning target (Ariyawong, 2012, p. 16).

Traditionally, students are grouped together for a specific class at a specific time at the beginning of the year, and that grouping does not change. A student's classmates for ELA class, for example, remain static all year. However, this presumes that all students are the same and need the exact same learning opportunities at the exact same time. The teachers in this model work closely together to plan for instruction based on student need. If a group of students needs extra time on a certain math concept, they are given that extra time during a flexible block, regardless of which math class they are scheduled in. Teachers examine student formative work on a regular basis to identify what learning they need next. Students are then grouped and regrouped in response to that data. The research affirms this as well: "Using data to frequently adapt student grouping strategies to student needs is a key aspect of personalization; it is yet another way that instructors can be responsive to student needs and allow students to take various

paths through content” (Ariyawong, 2012, p. 12).

At Batesburg-Leesville Primary School in Batesburg-Leesville, South Carolina, teachers and students are also implementing flexible grouping. Second-grade teacher Michelle Maroney has been a teacher for more than 20 years and started the school year with 22 second graders reading on 11 different text levels. Maroney stated that in the past, “There was no possible way to meet the needs of all of the children” (Kuhlmann, 2019, para. 2). As her school district is implementing personalized learning this school year, flexible grouping seemed like the next best step to address the needs of guided reading. Maroney discussed the need to increase student achievement in the area of reading. “The other second grade teachers were on the same page. We had to address this need, and we knew guided reading was the answer, but that was the hard part” (Kuhlmann, 2019, para. 3).

To address this need, Maroney and her fellow teachers looked at their schedules and realized they had common times when all second-grade students would be working on independent reading. To meet the needs of all second-grade students, the team decided to group students with similar reading levels. This meant that each teacher on the second-grade team would potentially be serving students who were not necessarily in their homeroom. Through this model, each group would get the focused, guided reading instruction they needed. Maroney stated, “We need to work together as a team because we can’t do this on our own” (Kuhlmann, 2019, para. 5). Maroney acknowledged that some teachers were hesitant, due to the feeling that they were giving up “their kids” in order to implement the flexible grouping model (Kuhlmann, 2019, para. 5). But for Maroney, all the second graders of BLPS “are our kids” (Kuhlmann, 2019, para. 5). In

this model, the reading groups are constantly changing from day to day based on student needs and teacher data collection on fluency, accuracy, and comprehension (Kuhlmann, 2019, para. 8).

**Impacts of personalized learning on student achievement.** Since 2009, the Bill and Melinda Gates Foundation has committed \$300 million to support research and development around personalized learning. In 2015, Pane et al. undertook the field's most comprehensive study to date. The study focused on 62 public, charter, and district schools that were pursuing a variety of personalized learning practices and examined implementation details in 32 of those schools. Researchers obtained achievement data for personalized learning students and a matched comparison group of students attending other schools serving similar populations. They also collected and analyzed data from site visits, interviews, and surveys to create a broad picture of the schools' efforts to implement personalized learning and the perceptions of teachers and students. The achievement findings indicated that compared to peers, students in schools using personalized learning practices are making greater progress over the course of 2 school years and that those students who started out behind are catching up to perform at or above national averages. The study found that teachers at most schools were using data to understand student progress and make instructional decisions, all schools offered time for individual academic support, and the use of technology for personalization was widespread (Pane et al., 2015, para. 2).

The study found that 11,000 students trying personalized learning approaches made greater gains in math and reading than similar students at comparable schools. The longer the students experienced personalized learning, the greater their achievement

growth (Herold, 2016, para. 13).

Schools with the greatest achievement gains reported strong implementation of student grouping strategies driven by data and responsive to student needs, provision of data to students and including them in discussions of the data, and learning spaces that support personalized learning strategies.

**Drawbacks to personalized learning.** Despite the focus on personalized learning, problems still exist. Proponents have struggled to define personalized learning, let alone demonstrate its effectiveness.

In general, personalized-learning models seek to adapt the pace of learning and the instructional strategies being used to best fit each individual child's strengths, weaknesses, and interests. In the digital age, realizing these goals is often seen as dependent on technology—to help measure in real-time what each student knows; to develop ‘learner profiles’; and to help match each child with customized learning experiences and “playlists.” (Herold, 2018, para. 7)

According to some, personalized learning is a vague term used to describe everything from supplemental technology programs to whole-school redesigns. (Herold, 2018, para. 8)

Another drawback is the inundation of technology and programs that are now available for schools to purchase. Louis Gomez, an education professor at the University of California, studies the impacts of technology initiatives in schools.

Many schools purchase off-the-shelf software and call it "personalized learning," without being able to say what is supposed to change in the classroom. And even when schools do take a broader view, they often fail to recognize that success

depends largely on decisions that educators and administrators make on the ground. (Herold, 2018, para. 27)

Additionally, there is little research to support that personalized learning can work in all school environments. Although the RAND corporation study in 2015 showed positive student achievement results, Brad Bernatek, a senior program officer who oversees research for the Gates Foundation, was still hesitant to entirely endorse personalized learning. “The results were encouraging, promising, and academically meaningful for the students in these schools, but they were by no means definitive” (Herold, 2016, para. 16).

Some observers of the study noted that the study does not say much about whether the approach can work in typical K-12 environments. One reason for this is that the schools in the study employed a wide range of instructional practices, many which are also used at more traditional schools (such as grouping students based on performance data). Additionally, the schools in the study were mostly charter schools that won competitive grants. Questions have been posed as to the causes for the gains. “Did students gain academically because their schooling was personalized, or did they gain because they were in high-functioning schools that received extra resources” (Herold, 2016, para. 20).

Despite the criticism in regard to the implementation and effectiveness of personalized learning, the fact remains the same that the current education system has moved away from the traditional approach of *what* students need to learn and has shifted to *how* students need to learn. This shift is necessary to help students build skills necessary for the future workforce such as problem-solving, creativity, reasoning, and

adaptability (Herold, 2018, para. 2).

## **Chapter 3: Methodology**

### **Problem Statement**

Students are currently being prepared for future jobs that do not currently exist (Krueger, 2017, para. 6). This means the teaching and learning methods must change, and learning must subsequently become more personalized. Students must take ownership of their learning, and teachers must collectively take action in order to make this shift from a teacher-centered environment to a learner-centered environment.

The shift toward personalization changes the dynamic between the teacher and student. Educators take on new roles as mentors, coaches and facilitators, and power and control shifts to the students. By giving students ownership over their learning and grounding learning in their interests and passions, they feel valued, motivated and in control. (Abel, 2016, para. 7)

Teacher efficacy, both individually and collectively, must be high in order to successfully make this shift.

### **Rationale for the Study**

Many school districts have chosen to roll out a personalized learning initiative over the last few years. Personalized learning is a growing trend in education today. There are many studies that show the impact of personalized learning on student achievement in a general, broad sense, but there is little research on the specific components of personalized learning being implemented as well as on teacher perceptions and teacher efficacy as it pertains to the implementation of personalized learning. It is for this reason that the researcher chose to conduct a program evaluation. According to Mark, Henry, and Julnes, "Evaluation's primary purpose is to provide

useful information to those who have a stake in whatever is being evaluated (stakeholders), often helping them to make a judgment or decision” (Fitzpatrick et al., 2011, p. 7). A program evaluation is also appropriate because “ultimately, evaluation is intended to have some relatively immediate impact” (Fitzpatrick et al., 2011, p. 173). The evaluator seeks to give feedback to the overall effectiveness of the implementation of personalized learning in this district, as the district is seeking to expand upon its implementation in the other three remaining schools.

### **Research Site and Participants**

In this particular study, the evaluator focused on the implementation of personalized learning in a rural, Title I elementary school in South Carolina. The district has four schools total, including one primary school, one elementary school, one middle school, and one high school. The researcher focused specifically on the implementation of personalized learning in fifth grade at the elementary school and evaluated the effectiveness of the program, focusing specifically on student achievement in reading and math. There are eight teachers on the fifth-grade team, four teach reading and four teach math. There are 170 students in the fifth grade. The researcher also focused on the level of teacher efficacy and collective teacher efficacy among the eight fifth-grade teachers on the team as personalized learning was implemented.

In this particular school, the fifth-grade teachers are focusing primarily on two components of personalized learning. The first component they are focusing on is implementation of student data notebooks. The eight teachers on the fifth-grade team participated in training from the Office of Personalized Learning from the South Carolina Department of Education, and they developed a shared vision for what would be included

in the various sections of the student data notebooks. The sections of the binder include leadership, data, and celebrations. Students track their own data and reflect on academic progress as well as their growth as student leaders.

The second component the fifth-grade team implemented was flexible shared learning groups. The teachers implemented a “flex” time into their instructional day, which consisted of a 40-minute block for reading and a 40-minute block for math. After analyzing data from MAP, TE 21, and other common formative assessments, the teachers grouped students based on their current weaknesses, and students switched teachers during “flex” time. Teacher strengths were taken into consideration when determining which teacher would teach which group of students during flex time. This team of teachers continuously utilized the data team process to identify and group and then regroup students based on their areas of weakness in reading and math.

The evaluator focused on the above components of personalized learning and the impact of this implementation on student achievement, teacher efficacy, and collective efficacy through a program evaluation approach.

## **Methodology**

Creswell (2009) defined mixed methods research as an approach to inquiry that combines or associates both qualitative and quantitative forms. It involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study. Thus, it is more than simply collecting and analyzing both kinds of data; it also involves the use of both approaches in tandem so that the overall strength of the study is greater than either qualitative or quantitative research. (Fitzpatrick et al., 2011, p.

385)

This study used a mixed methods approach using both quantitative and qualitative measures. The use of mixed methods provided reliable results due to the range of approaches used and the triangulation of data that were required. These approaches included analysis of norm-referenced data, teacher surveys, and interviews with teachers and other key stakeholders. In this program evaluation, quantitative and qualitative measures worked together. Quantitative measures provided a structure in which to formally analyze standardized testing data, while qualitative measures provided a more in-depth look at the program through descriptions. The use of both quantitative and qualitative methods allowed for quality control of findings when the two approaches were integrated (Fitzpatrick et al., 2011, p. 385).

### **CIPP Evaluation Model**

Decision-oriented evaluation approaches were designed to address problems that evaluations encountered in the 1970s, which were often being ignored and had no impact. The decision-oriented approaches were developed to help administrators make good decisions in judging the impact of a program. “Evaluative information is an essential part of good decision making and the evaluator can be most effective by serving administrators, managers, policy makers, boards, program staff, and others who need evaluative information” (Fitzpatrick et al., 2011, p. 383).

In education, Daniel Stufflebeam has been a leader in developing an approach oriented to decisions. After realizing the shortcomings of available evaluation approaches, Stufflebeam developed an approach that would facilitate the evaluator working closely with the administrator in order to identify decisions that must be made

and then collecting the necessary data for each decision (Fitzpatrick et al., 2011).

The CIPP model, developed by Stufflebeam, is an acronym that stands for context evaluation, input evaluation, process evaluation, and product evaluation. Context evaluation is meant to facilitate planning decisions, such as determining what needs are to be addressed for a program. It concerns studying the context of a program to identify current needs of students, goals, and the intended outcomes of the program (Fitzpatrick et al., 2011).

The input evaluation is the second component of the CIPP model and is meant to facilitate structuring decisions. After the evaluator has defined the needs of the organization, using input evaluation helps managers to select a particular strategy to implement and also helps to determine how to implement it (Fitzpatrick et al., 2011).

Process evaluation helps to facilitate implementing decisions. Once the program has started, process evaluation helps to determine what may need to be modified in the program and what changes need to be made or to determine any barriers that are in the way of the implementation (Fitzpatrick et al., 2011).

The last evaluation component of the CIPP model is product evaluation. Product evaluation helps to serve “recycling” decisions, such as what should be done with the program after it has run its course, what needs to be revised, and/or what needs to be expanded.

The CIPP evaluation model was utilized for this program evaluation. This evaluation model includes in its uses the evaluation of programs within school districts. The CIPP evaluation model was chosen for this study because of its use for evaluating school-based programs and the potential uses for information discovered from the

evaluation. Additionally, methods for collecting data within this model were varied and included analysis of data as well as surveying and interviewing stakeholders. These methods of collecting data were consistent with a mixed methods study approach (Fitzpatrick et al., 2011).

The CIPP evaluation model is made up of four interconnected evaluations: context, input, process, and product. Context evaluation was used to identify the major elements of the program served as a program needs assessment. Input evaluation was used to assess the program to determine if it was the best plan based on other programs or research literature for meeting the needs of the intended group. This evaluation was used to identify processes, procedures, and strategies to meet target population needs. It was utilized to review the program's design to determine if it met identified needs. Process evaluation was used to review the implementation of the program to determine the degree to which program elements were effectively put into place and to identify any problems with implementation of the program. Product evaluation was used to determine if the program provided desired results. Product evaluation was combined with information gathered through context, input, and process evaluations to identify both intended and unintended outcomes. Information gathered through a product evaluation provided feedback to assist in determining program success (Fitzpatrick et al., 2011).

### **Research Questions**

Research questions were developed based on the four complementary evaluations within the CIPP evaluation model.

1. How does the use of student data notebooks and flexible grouping address the needs of all students as it relates to their zone of proximal development?

(input)

2. How do teachers who are implementing personalized learning characterize the process of using student data notebooks and flexible grouping to impact student learning and ensure that students meet the Profile of the South Carolina Graduate? (process)
3. How effective is the implementation of personalized learning as measured by student achievement and teacher efficacy? (product)

### **Instruments**

The researcher collected and analyzed both quantitative and qualitative data for this study including reading and math achievement test data, participant responses from interviews, and an efficacy survey administered to teachers.

Table 1

*Research Questions, Instruments, and Thresholds*

Research Question	Instruments Used for Data Collection	Specific Item Used to Measure Question	How the Data Were Analyzed	Threshold of Data Used to Determine Answer to Question
How does the use of student data notebooks and flexible grouping address the needs of all students as it relates to their zone of proximal development?	Teacher interviews	Interview Question 1: In the 2017-2018 school year, your grade level implemented flexible learning groups and student data notebooks. What do you feel were the strengths of implementing those two components?  Teacher Interview Question 3: How has the implementation of student data notebooks and flexible learning groups addressed the individual needs of your students?	Coding was used for all teacher interviews. The interviews were first recorded then transcribed. The researcher analyzed the responses in order to look for themes.	Coding was used for all teacher interviews. The interviews were first recorded then transcribed. The researcher analyzed the responses in order to look for themes.
How do teachers who are implementing personalized learning characterize the process of using student data notebooks and flexible grouping to impact student learning and ensure that students meet the Profile of the South Carolina Graduate?	Teacher interview questions, Teacher efficacy survey	All questions in teacher efficacy survey  Teacher Interview Question 1: In the 2017-2018 school year, your grade level implemented flexible learning groups and student data notebooks. What do you feel were the strengths of implementing those two components?  Teacher Interview Question 2: What challenges have you observed with the implementation of personalized learning, specifically with the implementation of flexible learning groups and student data notebooks?  Interview Question 4: What impact has the	A chi-square analysis was used to analyze the teacher survey responses  Coding was used for all teacher interviews. The interviews were first recorded then transcribed. The researcher analyzed the responses in order to look for themes.	A chi-square analysis will be used to analyze the results of the teacher survey. Responses will be analyzed in three categories. (1) It is worse now since the implementation of personalized learning, (2) There has been no change since the implementation of personalized learning, (3) It is better now since the implementation of personalized learning.  The expected  (continued)

Research Question	Instruments Used for Data Collection	Specific Item Used to Measure Question	How the Data Were Analyzed	Threshold of Data Used to Determine Answer to Question
		implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning groups, had on you as a teacher?		value of a cell will be 2.67...
How effective is the implementation of personalized learning as measured by student achievement and teacher efficacy?	Teacher interviews	<p>Interview Question 4: What impact has the implementation of personalized learning, specifically the implementation of student data notebooks and flexible learning groups, had on you as a teacher?</p> <p>Teacher Interview Question 2: What challenges have you observed with the implementation of personalized learning, specifically with the implementation of flexible learning groups and student data notebooks?</p> <p>Interview Question 3: How has the implementation of student data notebooks and flexible learning groups addressed the individual needs of your students?</p> <p>Interview Question 5: How effective would you say the implementation of personalized learning is based on the implementation of student data notebooks and flexible learning groups in the fifth grade?</p>		<p>Coding was used for all teacher interviews. The interviews were first recorded then transcribed. The researcher analyzed the responses in order to look for themes.</p> <p>To measure student achievement, historical data from NWEA MAP testing was analyzed. The researcher used data from the Spring 2017 administration, and the Spring 2018 administration. Both Reading and Math data from these two years were analyzed. The normal curve equivalent score was calculated to determine student achievement gains from the 2017 to 2018 school year. The standard deviation for a normal curve equivalent is</p>

(continued)

Research Question	Instruments Used for Data Collection	Specific Item Used to Measure Question	How the Data Were Analyzed	Threshold of Data Used to Determine Answer to Question
				21.06. The threshold for data used for this analysis was 1.65

### **Reading and Math Achievement – MAP**

In order to measure the impact of personalized learning on student achievement, MAP will be used as an instrument. In this particular district, MAP is administered to elementary students in the fall, winter, and spring in order to provide a clear picture of growth. MAP is a computer-adaptive assessment designed to measure student growth and assist teachers with curriculum development including instructional differentiation. It reveals how much growth has occurred between testing events and, when combined with our norms, shows projected proficiency. Educators can track growth through the school year and over multiple years (MAP Growth, 2019). For the purpose of this study, MAP data were compared from the spring 2017 administration to the spring 2018 administration in both reading and math. The researcher used a normal curve equivalent score to compare student percentile changes from 2017 to 2018. The standard deviation for a normal curve equivalent is 21.06. The threshold for data used in this analysis was 1.65.

### **Surveys**

In order to measure the impact of personalized learning on teacher efficacy, a survey was administered to all eight fifth-grade teachers. The survey (located in Appendix A) focused on teacher self-efficacy and used a 3-point Likert scale. The

survey was administered to teachers via a Google form sent to their school email address. This particular survey was developed by Tschannen-Moran and Woolfolk Hoy (2015) from William and Mary University. The researcher adapted the survey to focus on personalized learning and its impacts on teacher efficacy. Twelve questions, which had to do with behavior, were removed from the survey. This included questions 1, 3, 5, 8, 10, 13, 15, 16, 19, 21, 22, and 23 from the original survey. The modified survey (located in Appendix A) consists of 12 questions and is designed to measure teacher efficacy. Respondents read each item and chose one of the three responses: (a) It is worse now since the implementation of personalized learning; (b) There has been no change since the implementation of personalized learning; or (c) It is better now since the implementation of personalized learning. On the modified survey, items 1, 2, 3, 5, 7, and 8 measure efficacy in student engagement. Items 4, 6, 9, 10, 11, and 12 measure efficacy in instructional strategies. The researcher used chi-square to analyze survey data at three response levels: (a) It is worse now since the implementation of personalized learning; (b) There has been no change since the implementation of personalized learning; or (c) It is better now since the implementation of personalized learning. This determined the general level of efficacy for each teacher and collectively as a fifth-grade team since the implementation of personalized learning.

Below are the directions for scoring the Teachers' Sense of Efficacy Survey:

#### Directions for Scoring the Teachers' Sense of Efficacy Scale

Developers: Megan Tschannen-Moran, College of William and Mary Anita

Woolfolk Hoy, Ohio State University

Construct Validity

For information the construct validity of the Teachers' Sense of Teacher efficacy Scale, see:

Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783-805.

#### Factor Analysis

As we have used factor analysis to test this instrument, we have consistently found three moderately correlated factors: Efficacy in Student Engagement, Efficacy in Instructional Practices, and Efficacy in Classroom Management. At times, however, the makeup of the scales may vary slightly. With preservice teachers we recommend that the full scale (either 24-item or 12-item short form) be used, because the factor structure often is less distinct for these respondents.

#### Subscale Scores

To determine the Efficacy in Student Engagement, Efficacy in Instructional Practices, and Efficacy in Classroom Management subscale scores, we compute unweighted means of the items that load on each factor. Generally these groupings are:

##### Long Form

Efficacy in Student Engagement: Items 1, 2, 4, 6, 9, 12, 14, 22

Efficacy in Instructional Strategies: Items 7, 10, 11, 17, 18, 20, 23, 24

Efficacy in Classroom Management: Items 3, 5, 8, 13, 15, 16, 19, 21

#### Reliabilities

In the study reported in Tschannen-Moran & Woolfolk Hoy (2001) above, the following reliabilities were found: (Tschannen-Moran & Woolfolk Hoy, 2015,

para. 3)

Table 2

*Reliabilities in Tschannen-Moran and Woolfolk Hoy Survey*

	Mean	SD	Alpha
TSES	7.1	0.94	0.94
Engagement	7.3	1.1	0.87
Instruction	7.3	1.1	0.91
Management	6.7	1.1	0.90

### **Interviews**

Interviews are used to pursue the meanings of central themes in the world of their subjects. According to McNamara, the main task in interviewing is to understand the meaning of what the interviewees say (Quad, 2016). In order to aid the researcher in gaining background information that led to the district's decision to implement personalized learning, strengths of the implementation of the program, and challenges to the success of the program, interviews were conducted with all eight fifth-grade teachers in the school. All interviews were conducted one on one. All interview questions were open-ended in order to ensure validity. According to Creswell (2012) and McNamara (1999), open-ended questions are usually asked during interviews in hopes of obtaining impartial answers, while closed-ended questions may force participants to answer in a particular way (Quad, 2016). Since the researcher is the previous principal in the school where the program evaluation was conducted, a proxy was used to conduct the interviews. The researcher trained the proxy by reviewing interview questions with him and by reviewing common errors of interviewers (Fitzpatrick et al., 2011, p. 435). The

interviews were recorded by the proxy using a district-issued iPad. Audio recordings are utilized to allow for more consistent transcription. According to Creswell (2012), the researcher often transcribes and types the data into a computer file, in order to analyze it after interviewing (Quad, 2016). In this study, the researcher listened to the recordings and transcribed the interviews. Transcript-based analysis is considered the most rigorous mode of analyzing data (Onwuegbuzie, Dickinson, Leech, & Zoran, 2009). Responses were analyzed by coding and categorizing interview responses. The researcher first read through a hard copy of the interview transcript from beginning to end. The researcher then read through the transcript a second time in order to highlight text and then proceeded with assigning a code. Coding is the process of breaking down and organizing data by labeling segments of information with words or phrases known as codes. Codes enabled the researcher to analyze, summarize, and synthesize the data. During a third reading, the researcher reviewed the codes and grouped them into categories or themes (Saldaña, 2016). Themes were applied to the four components found in the CIPP evaluation model: context, input, process, and product. Interview data, as they pertain to the CIPP evaluation model, are presented in narrative form. A table was created to report common themes identified from interview responses.

Individual interviews were conducted with the eight fifth-grade teachers at the elementary school. These interviews aimed to gather information regarding implementation of personalized learning, strengths of the implementation of the program, and challenges to the success of the program. Questions for these interviews are located in Appendix B.

## **Chapter Summary**

The purpose of this study was to conduct a program evaluation, using the CIPP model, of the implementation of personalized learning in an elementary school in a rural school district in South Carolina. The study focused on eight fifth-grade teachers as they implemented personalized learning, specifically student data notebooks and flexible learning groups. The researcher sought to evaluate the overall effectiveness of the program, the impact on student achievement, and the impact on teacher efficacy. Data were collected through the analysis of reading and math MAP data, the use of interviews, and teacher efficacy surveys. Data were analyzed within the CIPP framework, and the results are reported in order to provide information as to strengths, weaknesses, and level of success of program implementation.

## Chapter 4: Results

### Introduction

Students are currently being prepared for future jobs that do not currently exist (Krueger, 2017, para. 6). As a result of this, it is essential that teaching and learning change. Learning must become as personalized as possible, and students must take ownership of their learning. Teachers must collectively take action in order to make this shift from a teacher-centered environment to a learner-centered environment.

The shift toward personalization changes the dynamic between the teacher and student. Educators take on new roles as mentors, coaches and facilitators, and power and control shifts to the students. By giving students ownership over their learning and grounding learning in their interests and passions, they feel valued, motivated and in control. (Abel, 2016, para. 7)

Teacher efficacy, both individually and collectively, must be high in order to successfully make this shift. This mixed methods research study was designed to conduct a program evaluation of the implementation of personalized learning in a rural elementary school in South Carolina. The CIPP evaluation model was used as the framework for this program evaluation because one of the uses of this model is to evaluate programs within school districts. The CIPP evaluation model gathered information through four interconnected evaluations – context, input, process, and product – in order to provide information as to strengths, weaknesses, and level of success of the implementation of personalized learning (Fitzpatrick et al., 2011). This program evaluation identified information to refine areas of strength and improve areas of weakness within the program in an effort to increase student achievement and student ownership and address the individual learning needs of all students.

## **Research Site and Participants**

In this particular study, the evaluator focused on the implementation of personalized learning in a rural elementary school in South Carolina. The district has four schools total, including one primary school, one elementary school, one middle school, and one high school. The researcher focused specifically on the implementation of personalized learning in fifth grade at the elementary school and evaluated the effectiveness of the program, focusing specifically on student achievement in reading and math. There are eight teachers on the fifth-grade team, four teach reading and four teach math. The fifth-grade teachers were the participants in this study.

## **Overview**

In this chapter, results from data gathered through the analysis of NWEA MAP data in the areas of math and reading, a teacher survey, and interviews with eight fifth-grade teachers were reviewed and analyzed as they related to the CIPP evaluation model: context, input, process, and product. Context evaluation was used to identify major elements of the program and served as a program needs assessment. Since the researcher is a former principal of the school, the context for the implementation was understood. Personalized learning was implemented in order to address the individual needs of students, provide them with as rigorous instruction as possible, and to ensure that students meet the Profile of the South Carolina Graduate. Input evaluation was used to assess the program to determine if it was the best plan for meeting the individual needs of the fifth-grade students. Process evaluation was utilized to review the implementation of the program to determine the degree to which program elements are effectively put into place and to identify implementation problems. Process evaluation allowed for the

discovery of how the participants involved interpreted the quality of the program. Product evaluation was used to combine information gathered through context, input, and process evaluations and identified intended and unintended outcomes. This information provided feedback to aid in determining program success (Fitzpatrick et al., 2011, p. 173).

### **Teacher Interviews**

All eight teachers on the fifth-grade team were interviewed individually. The teachers were asked to respond to five open-ended questions. Interview questions were designed and analyzed according to the CIPP model.

### **Input**

The researcher used responses from the first and third question to answer the input research question, “How does the use of student data notebooks and flexible grouping address the needs of all students as it relates to their zone of proximal development?” The questions were as follows:

1. In the 2017-2018 school year, your grade level implemented flexible learning groups and student data notebooks. What do you feel were the strengths of implementing those two components?
3. How has the implementation of student data notebooks and flexible learning groups addressed the individual needs of your students?

When asked the first question, pertaining to the strengths of implementing flexible learning groups and student data notebooks, some clear, common themes emerged. One common theme was an increase in student ownership. Of the eight teachers interviewed, seven referred to student ownership as a strength of implementing student data

notebooks. A second common theme was goal setting. Six of eight teachers interviewed indicated that their students now set goals since the implementation of student data notebooks and flexible learning groups. Last, five of eight teachers indicated that the implementation of student data notebooks and flexible learning groups provided a tracking system for both them and their students.

When asked the third interview question, pertaining to how the implementation of student data notebooks and flexible learning groups has addressed the individual needs of students, two common themes emerged. The first theme was that teachers feel that they are able to better pinpoint the needs of their students through the data notebooks and flexible learning groups and address their needs more specifically and intentionally. Five of eight teachers referenced this when answering this question. The remaining three teachers had a common response, in that they felt the students now have increased ownership of their learning since the implementation of data notebooks and flexible learning groups. They attributed this to students being able to work more at their own level and now are more cognizant of their needs.

### **Process**

In order to answer the second research question, “How do teachers who are implementing personalized learning characterize the process of using student data notebooks and flexible grouping to impact student learning,” the researcher used the first, second, and fourth questions from the teacher interview(s). These questions were as follows:

1. In the 2017-2018 school year, your grade level implemented flexible learning groups and student data notebooks. What do you feel were the strengths of

implementing those two components?

2. What challenges have you observed with the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning groups?
4. What impact has the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning, had on you as a teacher?

As stated above, when asked the first question, pertaining to the strengths of implementing flexible learning groups and student data notebooks, some clear, common themes emerged. One common theme was an increase in student ownership. Teacher B stated,

With the data notebooks, each student knew where they fell, what they needed, and where they needed to go. It's eye-opening for them to see "this is my data, this is my score, this is where I fall, and this is where I need to go." They have access to them all day, every day.

Teacher F stated, "I feel like the kids really bought into the data notebooks, they saw a purpose behind what they were doing, they were goal-oriented and able to track their own successes." Teacher H stated,

Students taking ownership of their learning was the biggest take-a-way for me. By the end of the year, they were invested in their learning path and they could talk to you and explain to you what they needed, what their strengths and weaknesses were and what they could do to meet those, and to me, that was the biggest strength.

Of the eight teachers interviewed, seven referred to student ownership as a strength of implementing student data notebooks.

A second common theme was goal setting. Teacher E stated, “Students became very responsible for their own learning. They set goals and were very happy when they met those goals.” Teacher B stated, “Data notebooks are really good because we track their behavior, MAP scores, and other grades. They can go back and see if they are on track toward their own personal goals.” Six of eight teachers interviewed indicated that their students now set goals since the implementation of student data notebooks and flexible learning groups.

Last, another common theme that emerged was that the implementation of student data notebooks and flexible learning groups provided a tracking system for both them and their students. Teacher C stated,

With the flexible learning groups, we were able to group our kids based on their needs and then with the data notebooks, students were able to take more ownership in their learning and set their own goals and track their own goals, test scores, or data just in general.

Teacher G stated,

I feel that through the notebooks, it allowed me to get a better feeling of the strengths and weaknesses of my students’ individual needs. I felt like I was able to gauge how quickly they were moving along, and it gave me a better system to track where they were.

Five of eight teachers indicated they now have a better tracking system since the implementation of student data notebooks and flexible grouping.

When teachers were asked to reflect on the challenges of implementing student data notebooks and flexible learning groups in the second interview question, one common theme with the student data notebooks was that it was difficult to relinquish the control of students managing and keeping up with the organization of their notebooks. Teacher C stated, “At the beginning of the year there is a lot involved with the data notebooks, with knowing how to organize their notebooks, but that leveled out by the end of the year.” Three of eight teachers cited this as a challenge.

Another challenge the teachers referenced with the implementation of the data notebooks was the time it takes to effectively implement them. Several teachers referenced that it takes time out of the day for the students to add something to their notebook or to reflect on their goals. Teacher D stated,

With the data notebooks, the hardest part is making sure we are keeping up with it. So many things go on within a day, so it is making sure we are saying “hey, get out your student data notebook, let’s put something in.” They know that when you say “get out your data notebook” that something specific is going to go in there so the biggest thing is just time management. We are not just putting a paper in; it’s for a reason.

Three of eight teachers identified time as a challenge.

There were also some common challenges that emerged with the implementation of the flexible grouping. Four of eight teachers interviewed discussed that one challenge for them was figuring out which data to use to group the students since they had so many sources of data they could use. Three of the four who cited this as a challenge discussed that they teach reading and that the ELA standards are so broad that they were unsure of

which direction to go with the grouping initially. Teacher B stated,

Flex grouping is a challenge with the ELA side. The reading standards are so broad that it's hard to zoom in on one personal thing to group your children. We didn't know which direction to head, because there were so many directions we could have gone. We decided to use the learning continuum for MAP now though, so that is our thing.

While the fourth ELA teacher did not specifically cite this as a challenge, she did indicate that grouping has gotten easier over time.

When answering the same question about the challenges with flexible grouping, four of eight teachers voiced that it is very time-consuming to continuously look at the data and group the students together with their team. Teacher E stated,

We didn't have as much time to implement and plan for the flexible grouping as we would like to. It was just finding the time to make sure it all works properly.

It works beautifully if we have time to do more. But it is really good for the kids.

Four teachers also mentioned that there is so much data to analyze, and it was difficult in the beginning to figure out which data to use for the grouping. However, some of the teachers also followed up by saying that it became easier to analyze the data for grouping once they determined which tool to use. Teacher G stated,

The flexible learning groups in the beginning were scarier than the notebooks.

There were so many children, and we were overwhelmed, we had so much data and we didn't know which data to use. Once we worked through it, we found that MAP data was our choice to use for flexible learning, and once we stuck to that it was smooth from there.

Two teachers voiced that grouping students into flexible groups is now much easier than it was with the initial implementation of personalized learning.

When teachers were asked the fourth interview question about how the implementation of student data notebooks and flexible learning groups has impacted them as teachers, one major theme emerged. Seven of eight teachers indicated that they now think more about students individually and teach mainly in small groups or individually. Teacher B stated,

As a teacher, it has made me much more aware of what each child needs. Instead of standing up and teaching everybody as a whole, it makes you very conscious about “I know this child struggles in this area and needs this kind of instruction, whereas this group can do it on their own and this group might need visualization or redirection,” it just makes you much more aware of what each child in your classroom needs, so you think about them individually all of the time instead of as a whole group all of the time.

Teacher G stated,

This has definitely changed the way I teach. This has taken me out of teaching my class whole group and has been something new and a learning experience for me to work on. I have enjoyed it and I am still learning in it.

Two of the seven teachers also said that their role in the classroom has now shifted from a teacher to more of a facilitator or coach. Teacher G stated,

It has made me think of my teaching differently. I feel I am more of a coach or facilitator during our panther time, which is when we spend most of our personalized learning. It has allowed me to build stronger relationships with my

students because we are more on a one-on-one level.

Another common theme was that the teachers said they now know their students better because they spend so much time with them one on one now. Two teachers mentioned that they now have better relationships with their students as a result, and one teacher mentioned specifically that she now looks at the “whole child” and what each student needs, not just academically, but emotionally and socially as well.

### **Product**

The researcher used questions 2, 3, 4, and 5 from the teacher interviews to answer the third question, “How effective is the implementation of personalized learning as measured by student achievement and teacher perceptions?” These questions were as follows:

2. What challenges have you observed with the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning groups?
3. How has the implementation of student data notebooks and flexible learning groups addressed the individual needs of your students?
4. What impact has the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning, had on you as a teacher?
5. How effective would you say the implementation of personalized learning is based on the implementation of student data notebooks and flexible learning groups?

When asked how effective they thought the implementation of personalized

learning is, based on the implementation of student data notebooks and flexible learning groups, seven of eight teachers said they found personalized learning to be very effective. Teacher H stated, “I have seen my kids grow more than they ever have before. If it is ever not the buzz word, I am still going to continue teaching this way because it works.” Teacher A stated, “The kids can almost teach themselves now. We are more of a facilitator because they now own their learning.” Four of eight teachers discussed the increase in student ownership when answering how effective the program is. Three of eight teachers discussed how the implementation of personalized learning meets the needs of the whole child. Teacher G stated, “It’s not just skimming across and making sure we are meeting the standard and checking it off, I feel it is more of what my students need to know and what they need to learn for the whole child.” While teacher F did not say it was ineffective, she indicated that it was overwhelming in the beginning but now it is operating very smoothly.

### **Teacher Efficacy Survey**

In order to help answer the researcher’s second question, “How do teachers who are implementing personalized learning characterize the process of using student data notebooks and flexible grouping to impact student learning,” the fifth-grade teachers were invited to complete an anonymous survey online via a Google form. The survey consisted of 12 questions. Participants responded using a 3-point Likert scale and had the opportunity to skip any question they did not choose to answer. Fifth-grade teachers were sent an email inviting them to participate in the survey. The teachers were informed that the survey was anonymous and part of a dissertation study. Since the survey was administered via a Google form, the researcher stated to the participants that their emails

would not be collected via their Google form responses. The researcher gave the participants a 2-week window in which the survey would remain open, although all eight participants completed the survey within 1 week.

The survey consisted of 12 questions. Participants responded by selecting “It is worse now since the implementation of personalized learning,” “There has been no change since the implementation of personalized learning,” or “It is better now since the implementation of personalized learning.” A chi-square test was initiated in order to determine the significance of the responses. Since there were eight teacher responses and three categories of possible response, the expected value for each response cell was 2.67. This was calculated by dividing eight by three to get the value of 2.67. The researcher first determined the weighted average for each question in order to gain an understanding of the overall responses and compared it to the expected value for each response cell. The weighted average was determined by multiplying the number of responses in each category by the value the teachers chose on the Likert scale for their response to each question. The values were then added together and divided by the total number of teachers who responded. The responses are in Table 3.

Table 3

*Overall Responses from Teacher Efficacy Survey*

Survey Question	Percentage of Participants Responding <i>It is Worse Now Since the Implementation of Personalized Learning</i> (1)	Percentage of Participants Responding <i>There has been no change since the implementation of personalized learning</i> (2)	Percentage of Participants Responding <i>It is better now since the implementation of personalized learning</i> (3)	Weighted Average Response
1. How much can you do to help your students think critically now that personalized learning has been implemented?	0	2 responses 25%	6 responses 75%	2.75
2. How much can you do to motivate students who show low interest in schoolwork now that personalized learning has been implemented?	0	1 response 12.5%	7 responses 87.5%	2.875
3. How much can you do to get students to believe they can do well in schoolwork now that you have implemented personalized learning?	0	1 response 12.5%	7 responses 87.5%	2.875
4. How well can you respond to difficult questions from your students now that personalized learning has been implemented?	0	3 responses 37.5%	5 responses 62.5%	2.625
5. Since the implementation of personalized learning, how much can you do to help your students value learning?	0	1 response 12.5%	7 response 87.5%	2.875
6. Since the implementation of personalized learning, to what extent can you craft good questions now?	0	3 responses 37.5%	5 responses 62.5%	2.625
7. How much can you do to foster student creativity now that personalized learning has been implemented?	0	5 responses 62.5%	3 responses 37.5%	2.375

(continued)

Survey Question	Percentage of Participants Responding <i>It is Worse Now Since the Implementation of Personalized Learning</i> (1)	Percentage of Participants Responding <i>There has been no change since the implementation of personalized learning</i> (2)	Percentage of Participants Responding <i>It is better now since the implementation of personalized learning</i> (3)	Weighted Average Response
8. How much can you do to improve the understanding of a student who is failing now that personalized learning has been implemented?	0	2 responses 25%	6 responses 75%	2.75
9. How much can you do to adjust your lessons to the proper level for individual students since personalized learning has been implemented?	0	3 responses 37.5%	5 responses 62.5%	2.625
10. Since the implementation of personalized learning, how much can you use a variety of assessment strategies?	0	3 responses 37.5%	5 responses 62.5%	2.625
11. To what extent can you provide an alternative explanation or example when students are confused now that personalized learning has been implemented?	0	2 response 25%	6 responses 75%	2.75
12. How well can you provide appropriate challenges for very capable students now that personalized learning has been implemented?	0	2 responses 25%	6 responses 75%	2.75

The weighted average for each question was calculated. Seven of the 12 questions asked had weighted averages that were above the expected value of a cell. The researcher then broke down the questions into two categories: those that measure efficacy in student engagement, and those that measure efficacy in instructional strategies. The results for questions and responses measuring efficacy in student engagement are listed in Table 4.

Table 4

*Teacher Efficacy in Student Engagement*

Survey Question	Percentage of Participants Responding <i>It is Worse Now Since the Implementation of Personalized Learning</i>	Percentage of Participants Responding <i>There has been no change since the implementation of personalized learning</i>	Percentage of Participants Responding <i>It is better now since the implementation of personalized learning</i>	Weighted Average Response
1. How much can you do to help your students think critically now that personalized learning has been implemented?	0	2 responses 25%	6 responses 75%	2.75
2. How much can you do to motivate students who show low interest in schoolwork now that personalized learning has been implemented?	0	1 response 12.5%	7 responses 87.5%	2.875
3. How much can you do to get students to believe they can do well in schoolwork now that you have implemented personalized learning?	0	1 response 12.5%	7 responses 87.5%	2.875
5. Since the implementation of personalized learning, how much can you do to help your students value learning?	0	1 response 12.5%	7 responses 87.5%	2.875
7. How much can you do to foster student creativity now that personalized learning has been implemented?	0	5 responses 62.5%	3 responses 37.5%	2.375
8. How much can you do to improve the understanding of a student who is failing now that personalized learning has been implemented?	0	2 responses 25%	6 responses 75%	2.75

Of the six questions measuring efficacy in student engagement, five responses (83%) had weighted averages that were above the expected value of a cell. This means that teachers have high levels of efficacy when it comes to knowing how to engage

students. The expected value of a cell was 2.67, and it is significant that five of six questions dealing with student engagement had weighted averages that were higher than this. Teachers have higher levels of efficacy in helping students think more critically, in motivating students who show low interest in learning, in getting students to believe they can do well in helping their students value learning, and in improving the understanding of failing students since the implementation of personalized learning. The one area of student engagement that was below the expected value of a cell was the seventh question, which measured efficacy in fostering student creativity.

The results for measuring efficacy in instructional strategies are listed in Table 5.

Table 5

*Teacher Efficacy in Instructional Strategies*

Survey Question	Percentage of Participants Responding <i>It is Worse Now Since the Implementation of Personalized Learning</i>	Percentage of Participants Responding <i>There has been no change since the implementation of personalized learning</i>	Percentage of Participants Responding <i>It is better now since the implementation of personalized learning</i>	Weighted Average Response
4. How well can you respond to difficult questions from your students now that personalized learning has been implemented?	0	3 responses 37.5%	5 responses 62.5%	2.625
6. Since the implementation of personalized learning, to what extent can you craft good questions now?	0	3 responses 37.5%	5 responses 62.5%	2.625
9. How much can you do to adjust your lessons to the proper level for individual students since personalized learning has been implemented?	0	3 responses 37.5%	5 responses 62.5%	2.625
10. Since the implementation of personalized learning, how much can you use a variety of assessment strategies?	0	3 responses 37.5%	5 responses 62.5%	2.625
11. To what extent can you provide an alternative explanation or example when students are confused now that personalized learning has been implemented?	0	2 responses 25%	6 responses 75%	2.75
12. How well can you provide appropriate challenges for very capable students now that personalized learning has been implemented?	0	2 responses 25%	6 responses 75%	2.75

Of the six questions measuring efficacy in instructional strategies, two responses had weighted averages that were above the expected value of 2.67. The remaining four

questions were slightly below the expected value, with an average weighted response of 2.63. Teachers have higher levels of efficacy in providing alternative examples when students are confused and in appropriately challenging capable students since the implementation of personalized learning.

The researcher then used a chi-square analysis in order to determine the relationship between teacher efficacy and the implementation of personalized learning. The null hypothesis was that there is no association between the implementation of personalized learning and teacher efficacy in student engagement. An alternative hypothesis was that there is an association between the implementation of personalized learning and teacher efficacy. The researcher broke the chi-square analysis into two categories since there are two clear categories that were part of the survey, items measuring teacher efficacy in student engagement and items measuring teacher efficacy in instructional strategies. The researcher determined the confidence level to be 95%, making the probability value 0.05. This was calculated by subtracting 95 from 100. The researcher then determined the degree of freedom. The degree of freedom was calculated by multiplying the number of rows minus one by the number of columns minus one. Since the table for this survey has six rows and three columns, the researcher subtracted one row and one column. The researcher then multiplied five times two to determine that the degree of freedom is 10. The researcher determined that 18.31 was the critical value for this test. This was determined by using the table of critical values. When there is a degree of freedom equaling 10 and the probability value is 0.05, the critical value is 18.31. The researcher then compared the results of the chi-square analysis to the critical values of 18.31 to draw conclusions about the survey results as they relate to teacher

efficacy. The results of the chi-square analysis for teacher efficacy in student engagement are listed in Table 6.

Table 6

*Chi-Square Analysis for Teacher Efficacy in Student Engagement*

	Observed	Expected	Observed - Expected	(Observed - Expected) <sup>2</sup>	(o-E) <sup>2</sup> /E
Question 1 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 2 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 3 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 5 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 7 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 8 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 1 Responses for <i>There has been no change since the implementation of personalized learning</i>	2	2.67	-0.67	0.4489	0.17
Question 2 Responses for <i>There has been no change since the implementation of personalized learning</i>	1	2.67	-1.67	2.7889	1.04
Question 3 Responses for <i>There has been no change since the implementation of personalized learning</i>	1	2.67	-1.67	2.7889	1.04
Question 5 Responses for <i>There has been no change since the implementation of personalized learning</i>	1	2.67	-1.67	2.7889	1.04

(continued)

	Observed	Expected	Observed - Expected	(Observed - Expected) <sup>2</sup>	(o-E) <sup>2</sup> /E
Question 7 Responses for <i>There has been no change since the implementation of personalized learning</i>	5	2.67	2.33	5.4289	2.03
Question 8 Responses for <i>There has been no change since the implementation of personalized learning</i>	2	2.67	-0.67	0.4489	0.17
Question 1 Responses for <i>It is better now since the implementation of personalized learning</i>	6	2.67	3.33	11.0889	4.15
Question 2 Responses for <i>It is better now since the implementation of personalized learning</i>	7	2.67	4.33	18.7489	7.02
Question 3 Responses for <i>It is better now since the implementation of personalized learning</i>	7	2.67	4.33	18.7489	7.02
Question 5 Responses for <i>It is better now since the implementation of personalized learning</i>	7	2.67	4.33	18.7489	7.02
Question 7 Responses for <i>It is better now since the implementation of personalized learning</i>	3	2.67	0.33	0.1089	0.04
Question 8 Responses for <i>It is better now since the implementation of personalized learning</i>	6	2.67	3.33	11.0889	4.15
					Result of Chi- square Analysis: 50.94

As noted in Table 6, the chi-square analysis resulted in 50.94 for teacher efficacy in student engagement. This is well above the critical value of 18.31. This indicates that teachers now have very high levels of efficacy in knowing how to engage their students since the implementation of personalized learning; thus, personalized learning has a significant impact on teacher efficacy in the area of student engagement.

Table 7

*Chi-Square Analysis for Teacher Efficacy in Instructional Strategies*

	Observed	Expected	Observed - Expected	(Observed - Expected) <sup>2</sup>	(o-E) <sup>2</sup> /E
Question 4 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 6 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 9 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 10 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 11 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 12 Responses for <i>It is Worse Now Since the Implementation of Personalized Learning</i>	0	2.67	-2.67	7.1289	2.67
Question 4 Responses for <i>There has been no change since the implementation of personalized learning</i>	3	2.67	0.33	0.1089	0.04
Question 6 Responses for <i>There has been no change since the implementation of personalized learning</i>	3	2.67	0.33	0.1089	0.04
Question 9 Responses for <i>There has been no change since the implementation of personalized learning</i>	3	2.67	0.33	0.1089	0.04
Question 10 Responses for <i>There has been no change since the implementation of personalized learning</i>	3	2.67	0.33	0.1089	0.04

(cont.)

	Observed	Expected	Observed - Expected	(Observed - Expected) <sup>2</sup>	(o-E) <sup>2</sup> /E
Question 11 Responses for <i>There has been no change since the implementation of personalized learning</i>	2	2.67	-0.67	0.4489	0.17
Question 12 Responses for <i>There has been no change since the implementation of personalized learning</i>	2	2.67	-0.67	0.4489	0.17
Question 4 Responses for <i>It is better now since the implementation of personalized learning</i>	5	2.67	2.33	5.4289	2.03
Question 6 Responses for <i>It is better now since the implementation of personalized learning</i>	5	2.67	2.33	5.4289	2.03
Question 9 Responses for <i>It is better now since the implementation of personalized learning</i>	5	2.67	2.33	5.4289	2.03
Question 10 Responses for <i>It is better now since the implementation of personalized learning</i>	5	2.67	2.33	5.4289	2.03
Question 11 Responses for <i>It is better now since the implementation of personalized learning</i>	6	2.67	3.33	11.0889	4.15
Question 12 Responses for <i>It is better now since the implementation of personalized learning</i>	6	2.67	3.33	11.0889	4.15
					Result of Chi-square Analysis: 32.96

As noted in Table 7, the chi-square analysis for items measuring teacher efficacy in instructional strategies yielded a result of 32.96. While this is still significant as compared to the critical value of 18.31, this result was not as high as items measuring teacher efficacy in instructional strategies; however, the result of the chi-square analysis does indicate that the implementation of personalized learning did impact teacher

efficacy in instructional strategies.

### **NWEA MAP**

In order to help answer the third research question, “How effective is the implementation of personalized learning as measured by student achievement and teacher perceptions,” results from the NWEA MAP math and reading assessments were analyzed from the spring administration in 2017 to the spring administration in 2018 in order to measure the student achievement component of this question. The researcher analyzed the same cohort of students to compare their academic growth before the implementation of personalized learning and then after the implementation of personalized learning. The researcher used a normal curve equivalent score to compare student percentile changes from 2017 to 2018. The overall results for the math MAP are listed in Table 8.

Table 8

#### *NWEA Math MAP Overall Results*

Average Math Percentile in 2017	Average Math Percentile in 2018	Average Change in Math Percentile Rank from 2017 to 2018	Average Math NCE in 2017	Average Math NCE in 2018	Change in Math NCE from 2017 to 2018
53.5	53.6	0.1	51.96	51.8	-0.16

The average change of the normal curve equivalent from 2017 to 2018 based on math MAP scores was -0.16. Students’ average percentile stayed the same at the 53rd percentile. Of the 145 students who were assessed, 71 students showed an increase in their percentile and NCE, 69 students showed a decrease in their percentile and NCE, and five students had no change in percentile and NCE.

The researcher also analyzed the data by gender, and the data are included in Table 9.

Table 9

*NWEA Math MAP Results by Gender*

	Average Math Percentile in 2017	Average Math Percentile in 2018	Average Change in Math Percentile Rank from 2017 to 2018	Change in Math NCE from 2017 to 2018
Female	53.2	52.18	-1.02	-0.59
Male	53.9	54.6	0.7	0.19

The female subgroup showed a slight decrease in math percentile rank from the 53rd to the 52nd percentile and a decrease of 0.59 in their math NCE. The male subgroup showed an increase from the 53rd percentile to the 54th percentile and an increase of 0.19 in their math NCE.

The researcher analyzed the data by race and ethnicity, and the data are included in Table 10.

Table 10

*NWEA Math MAP Results by Race and Ethnicity*

	Average Math Percentile in 2017	Average Math Percentile in 2018	Average Change in Math Percentile Rank from 2017 to 2018	Math NCE 2017	Math NCE 2018	Change in Math NCE from 2017 to 2018
African American	45.3	40.54	-4.76	46.34	43.76	-2.58
Hispanic	50.6	50.6	1.58	52.18	52.09	-0.09
More Than One Race	52.5	47.25	-5.25	51.1	47.88	-3.22
White	57.78	72.08	14.3	54.91	56.125	1.22

The White subgroup increased by 1.22 points in their math NCE, and the Hispanic subgroup had a slight decrease of 0.09. The African American subgroup and the more than one race subgroup also showed decreases of 2.58 and 3.22 points

respectively.

The researcher also analyzed the reading MAP scores, and the overall results are listed in Table 11.

Table 11

*NWEA Reading Result MAP Overall Results*

Average Reading Percentile in 2017	Average Reading Percentile in 2018	Average Reading Change in Percentile Rank from 2017 to 2018	Average Reading NCE in 2017	Average Reading NCE in 2018	Change in Reading NCE from 2017 to 2018
50	52	2.0	48.7	49.1	0.4

The average change of the normal curve equivalent from 2017 to 2018 based on reading MAP scores was 0.4. Students' average percentile increased from the 50th percentile to the 52nd percentile. Of the 148 students assessed on the NWEA MAP reading test, 75 students had an increase in percentile and NCE, 68 students had a decrease in percentile and NCE, and five students showed no change in percentile or NCE.

The researcher also analyzed the data by gender, and the data are included in Table 12.

Table 12

*NWEA Reading MAP Results by Gender*

	Average Reading Percentile in 2017	Average Reading Percentile in 2018	Average Change in Reading Percentile Rank from 2017 to 2018	Change in Reading NCE from 2017 to 2018
Female	50.78	49.38	-1.4	-0.82
Male	46.6	49.6	3.0	1.82

As indicated in the table above, the female subgroup decreased in their reading percentile from the 50th percentile to the 49th percentile. The female subgroup also had a decrease of 0.82 points in their NCE. The male subgroup, however, showed an increase from the 46th percentile to the 49th percentile and had an increase of 1.82 in their reading NCE. The researcher analyzed the data by subgroups, and the data is included in Table 13.

Table 13

*NWEA Reading MAP Results by Subgroup*

	Average Reading Percentile in 2017	Average Reading Percentile in 2018	Average Change in Reading Percentile Rank from 2017 to 2018	Average Reading NCE in 2017	Average Reading NCE in 2018	Change in Reading NCE from 2017 to 2018
African American	38	37	-1.0	42.2	41.1	-1.1
Hispanic	56	54	-2.0	52.5	51	-1.5
More Than One Race	40	51	11	43.5	50.5	7.0
White	54	55	1.0	52.4	53.0	0.6

As indicated in Table 13, the African American and Hispanic subgroups showed a decrease in their NCE scores, while the more than one race and the White subgroups showed an increase in their reading NCE scores. The African American subgroup showed a decrease of 1.1 in their reading NCE from 2017 to 2018. The Hispanic subgroup also showed a decrease of 1.5 in their NCE reading score. Students who are more than one race increased 7 points in their NCE score, and the White subgroup increased 0.47 in their reading NCE.

**Chapter Summary**

The purpose of this study was to conduct a program evaluation of the implementation of personalized learning in a rural elementary school in South Carolina. The researcher chose to use the CIPP method for this study and used a mixed methodology for the research. Quantitative data were analyzed via the NWEA MAP math and reading data and through the electronic teacher efficacy survey. Qualitative data were gathered and analyzed via the teacher interviews. Math and reading achievement scores were analyzed using a normal curve equivalent, and teacher efficacy surveys were analyzed using a chi-square analysis. The researcher then triangulated the data to determine the overall effectiveness of the program. Triangulation is the process of increasing study strength through the use of multiple data collection methods and data sources. Triangulation reduces bias and increases the validity of a study (Gall, Gall, & Borg, 2005). Quantitative data from NWEA MAP math and reading administrations indicated that students made a negative growth of -0.16 in math and a positive growth of 0.4 in reading. This means that while some students showed growth in the area of math, it was not enough, on average, to equate to a year of expected growth. However, in the area of reading, students collectively made more than a year of growth.

Quantitative data from the teacher efficacy survey indicated that teachers now have higher levels of efficacy since personalized learning has been implemented. Items measuring teacher efficacy in student engagement yielded a score of 50.94 from the chi-square analysis. This result was significantly higher than the threshold of 18.307, which was the critical value for the test. This means that teachers have higher levels of efficacy in student engagement since the implementation of personalized learning. For the items measuring teacher efficacy in instructional strategies, the chi-square analysis yielded a

score of 32.96. While this result was not as high as the items measuring efficacy in student engagement, it is still significantly higher than the critical value of 18.307. This indicates that teacher efficacy levels in the category of instructional strategies have been impacted by the implementation of personalized learning.

Qualitative data from the teacher interviews revealed that overall, while some weaknesses do exist, there are many strengths of the implementation of student data notebooks and flexible learning in personalized learning. Seven of the eight teachers interviewed strongly voiced that personalized learning is effective for their students, and all eight teachers voiced that they have seen a great increase in their students taking ownership of their learning through the implementation of student data notebooks and flexible grouping.

## **Chapter 5: Summary and Conclusion**

### **Introduction**

In this chapter, the researcher summarizes results and findings of a CIPP program evaluation of the implementation of a personalized program in a rural elementary school in South Carolina. Additionally, the researcher discusses the implications of four interrelated evaluations within the CIPP model (context, input, process, and product) in relation to the implementation of personalized learning in order to make recommendations based on identified program strengths and weaknesses. Limitations and delimitations, as well as suggestions for future research, are also included in this chapter.

### **Restatement of the Problem**

The purpose of this study was to conduct a CIPP program evaluation of the implementation of personalized learning in a rural elementary school. The CIPP model was selected because of its use for evaluating school-based educational programs (Fitzpatrick et al., 2011). The school in which this study focused implemented personalized learning in the 2017-2018 school year with the fifth-grade students. Because the program was relatively new to the district, the researcher sought to discover the overall effectiveness of implementation of personalized learning by determining how personalized learning addresses the individual needs of students, how teachers characterize the process of the implementation of personalized learning, and impact of personalized learning on student achievement and teacher efficacy. This study employed a mixed methods approach with quantitative and qualitative data gathered and analyzed. Data gathered for this study included NWEA MAP math and reading data from 2 years,

participant responses from eight teacher interviews, and an electronic teacher efficacy survey.

### **Summary of Findings**

Findings are discussed and organized by each CIPP model evaluation component and corresponding research question. Data gathered from teacher interviews were analyzed in order to look for common themes. Quantitative and qualitative data are presented under the appropriate evaluation and research question.

### **Data Collection**

The researcher used interviews with eight fifth-grade teachers, a teacher efficacy survey, and NWEA MAP scores to gather data for this study. The teacher survey required participants to respond to 12 efficacy questions based on the implementation of personalized learning and used a Likert scale for teachers to respond to the questions. The expected value of a cell was 2.6. A chi-square analysis was used to analyze the data, and these results indicated that teachers now have higher levels of efficacy as it relates to student engagement. The survey also indicated that teachers do not have a significant change in efficacy as it pertains to instructional strategies. In order to analyze NWEA MAP math and reading data, the researcher used a normal curve equivalent score to compare student percentile changes from 2017 to 2018.

### **Input Evaluation Results**

Input evaluation was used to assess program design in order to determine if the program was the best plan for meeting the needs of the target population and identifying processes, procedures, and strategies to meet target population needs (Fitzpatrick et al., 2011). The researcher used interviews with eight fifth-grade teachers in order to gather

data for input evaluation.

### **Research Question 1**

**How does the use of student data notebooks and flexible grouping address the needs of all students as it relates to their zone of proximal development? (Input)**

Two questions from the teacher interviews were used to determine the answer to this question. The first question teachers were asked was, “In the 2017-2018 school year, your grade level implemented flexible learning groups and student data notebooks. What do you feel were the strengths of implementing those two components?” Responses to this question indicated that there are several strengths of implementing flexible learning groups and student data notebooks. The teachers involved in this study have noted a drastic increase in student ownership. Through focusing on their own data, students are now able to set their own goals, track their progress towards these goals, and take charge of their learning overall. Teacher D stated,

With data notebooks, the students really like knowing their grades and where they are going. They can now see “this is what I am working on today, this is what I am achieving,” and are now really proud of their accomplishments.

Teacher E stated, “Students became very responsible for their own learning. They set goals and were very happy when they met those goals.”

The third interview question teachers were asked was, “How has the implementation of student data notebooks and flexible learning groups addressed the individual needs of your students?” The teachers believed that as a result of this implementation, they are now able to better pinpoint what each student needs and proceed with greater intentionality in teaching to these needs. Teacher A stated,

It's definitely helped to pinpoint what some challenges are that they have and I'm now able to assess their needs on a one on one basis. If one child is at 50, and another is at a 30, they can still be learning the same thing, but at their own level. It's helped me to address their individual needs and figure out where they need to be throughout the year.

Overall, since the implementation of personalized learning, teachers are now more tuned in to where their students stand academically. They have become much more aware of their individual needs through analysis of the data and through continuously grouping students according to these needs. As a result, they are able to support students in their respective zones of proximal development. Students are also more aware of their own strengths and weaknesses through the process of implementing student data notebooks and are therefore more engaged in their own learning.

### **Process Evaluation Results**

Process evaluation was used to review implementation of the program, the degree to which program elements were effectively implemented, and implementation concerns. Process evaluation was also used to discover how those involved interpreted the quality of the program (Fitzpatrick et al., 2011).

### **Research Question 2**

**How do teachers who are implementing personalized learning characterize the process of using student data notebooks and flexible grouping to impact student learning and ensure that students meet the Profile of the South Carolina Graduate?**

The researcher used three questions from the teacher interviews and all questions from an electronic teacher efficacy survey to collect process evaluation data. The first question

teachers were asked was, “In the 2017-2018 school year, your grade level implemented flexible learning groups and student data notebooks. What do you feel were the strengths of implementing those two components?” As mentioned above, responses from the first question indicated that there are several strengths of implementing flexible learning groups and student data notebooks, such as an increase in student ownership, students now being able to set their own goals and learning targets, and students now being able to track their own progress. According to the Profile of the South Carolina Graduate, students must have a world class knowledge and must experience rigorous standards in language arts and math for career and college readiness (South Carolina Council on Competitiveness, 2017, para. 2).

According to the Profile of the South Carolina Graduate, students must also demonstrate world class skills (South Carolina Council on Competitiveness, 2017, para. 2).

In order to meet this tenet, students must know how they learn best. Through tracking their progress and through setting their own goals, students are taking charge of their learning and learning about how they learn best. They are also showing self-direction, which is a part of the “life and skill characteristics” that students must demonstrate in order to meet the Profile of the South Carolina Graduate (South Carolina Council on Competitiveness, 2017, para. 2).

The second interview question, “What challenges how you observed with the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning groups,” yielded responses indicating that the overall organization and time that data notebooks took out of the instructional day was a

challenge. In terms of challenges with flexible grouping, teachers indicated that knowing which data to use to group the students was a challenge initially. The teachers also voiced that continuously looking at data and regrouping students was an ongoing challenge.

The fourth interview question, “What impact has the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning groups, had on you as a teacher,” yielded very positive responses. The majority of teachers indicated that they think about their students on a more individual basis now and teach more in small groups or individually as a result. A few teachers commented that their role as a teacher has shifted due to the implementation of personalized learning and that they now see themselves more as a “facilitator” or “coach.” Additionally, teachers also commented that they know their students better now, not just academically but as a “whole child” and have been able to form stronger relationships with their students through the implementation.

Responses from the teacher efficacy survey were also used to answer the second research question. Overall findings indicate that teachers have an increase in efficacy in both categories the survey measured, student engagement and instructional strategies, since the implementation of personalized learning. The researcher analyzed the data in the two categories of the survey. Results from the chi-square analysis for teacher efficacy in student engagement indicate there is a significant relationship between the implementation of personalized learning and teacher efficacy in student engagement. Of the six questions on the survey measuring efficacy in student engagement, five of the questions had weighted average responses that were above the expected value of a cell.

Seven of eight teachers indicated that since the implementation of personalized learning, they now can motivate students more, get students to believe they can do well in school, and help students value learning more. Six of eight teachers said they now can get their students to think more critically and now more than before the implementation of personalized learning can improve the understanding of a student who is failing. There was one outlier in the survey pertaining to student engagement, however. When asked the question, “How much can you do to foster student creativity now that personalized learning has been implemented,” five of eight teachers said there has been no change since the implementation of personalized learning, and only two teachers said that it is better now. The Profile of the South Carolina Graduate calls for students to have “world class skills” (South Carolina Council on Competitiveness, 2017, para. 2).

In order to meet this tenet, students must be creative and innovative and possess critical thinking and problem-solving skills. The results of the teacher efficacy survey indicate that teachers have high levels of efficacy in getting their students to think critically but low levels of efficacy in getting students to be creative and innovative.

Results of the survey also indicate that teachers have high levels of efficacy pertaining to instructional strategies since the implementation of personalized learning. While the results of the chi-square analysis were not as significant in this category, there is still evidence of a strong relationship between the implementation of personalized learning and teacher efficacy in instructional strategies. While there was no teacher who indicated, “It is worse now since the implementation of personalized learning” on any instructional efficacy item, three teachers indicated, “There has been no change since the implementation of personalized learning,” when asked how well they can respond to

difficult questions from students, to what extent they can craft good questions now, and to what extent they can use a variety of assessment strategies now since the implementation of personalized learning. However, six of eight teachers did respond that they can now provide an alternative explanation when students are confused and can now appropriately challenge “very capable students” since the implementation of personalized learning.

Overall, the teachers involved in this study perceived the process of implementing personalized learning in a positive manner. While they recognize that the process had its challenges, they celebrate many positive outcomes for both their students and their own professional growth. According to the survey, they now have higher levels of efficacy in student engagement and instructional strategies since the implementation of personalized learning.

### **Product Evaluation Results**

Product evaluation was used to combine information gathered through context, input, and process evaluations to identify intended and unintended outcomes. This information provided feedback to aid in determining program success (Fitzpatrick et al., 2011). The researcher used four interview questions with eight fifth-grade teachers and analysis of NWEA MAP math and reading data to gather product evaluation results.

### **Research Question 3**

**How effective is the implementation of personalized learning as measured by student achievement and teacher perceptions?** The researcher used quantitative data from the NWEA MAP math and NWEA MAP reading tests from the spring administration of the 2017 and 2018 school years in order to measure the impact of

personalized learning on student achievement. The results indicated that the implementation of personalized learning yielded more growth in the area of reading than in math, with the average change of the normal curve equivalent being 0.47. This means that, on average, students made more than 1 year of growth in reading once personalized learning was implemented. In the area of math, the average normal curve equivalent was -0.31. This means that while the student may have made gains with some skills, the average growth was less than a year.

The researcher also used responses from four of the teacher interview questions to determine the answer to the third research question. The questions were used for this were as follows:

2. What challenges have you observed with the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning groups?
3. How has the implementation of student data notebooks and flexible learning groups addressed the individual needs of your students?
4. What impact has the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning, had on you as a teacher?
5. How effective would you say the implementation of personalized learning is based on the implementation of student data notebooks and flexible learning groups?

Based on the teachers' interview responses, they are confident that personalized learning is addressing the individual needs of their students. While they voiced a few

challenges in the time it took to implement both student data notebooks and flexible learning groups, they believed they are now better able to pinpoint their students' needs and address those needs in small groups and through one-on-one instruction. The majority of the teachers discussed how they spend most of their day teaching in small groups rather than a whole group, as a result. They also feel more confident to be able to do so since the implementation of personalized learning. Last, the teachers also notice a marked increase in student ownership since the implementation of personalized learning.

### **Recommendations**

While the implementation of personalized learning is only in the beginning stages in the fifth grade at the elementary school in which the study was conducted, it is clear that the structures of student data notebooks and flexible learning groups are in place. During the interviews, teachers indicated that through the implementation of student data notebooks, their students have learned to analyze their own data, reflect on their data, and set goals for their success. It was also clear through the teacher interviews that they are consistently collaborating as a team to analyze their students' data, group their students, and determine the next steps for their instruction. Teachers seemed to be somewhat overwhelmed with the data analysis part in the beginning but now seem to have a grasp of which data they should analyze to best determine flexible grouping in order to serve student needs. Results from the teacher efficacy survey indicate that teachers have much higher levels of efficacy in student engagement since the implementation of personalized learning. This is significant because there is a growing body of research on teacher self-efficacy that suggests that it may account for individual differences in teacher effectiveness, meaning that there is a correlation between teachers' level of efficacy and

their overall performance in the classroom. Additionally, teacher self-efficacy has been found to be consistently related to strong pupil achievement. Students learn more from teachers who have high self-efficacy; and highly self-efficacious teachers are more likely to use open-ended questions, inquiry methods, or small group learning activities for students. They are also more persistent at a task, take more risks, and are more likely to use innovative elements in their teaching. Teacher self-efficacy is also a strong self-regulatory characteristic that enables teachers to use their potential to enhance student learning. Teacher self-efficacy is related to “perseverance”; the stronger the self-efficacy, the greater the perseverance – and the greater the perseverance, the greater the likelihood that the teaching behaviors will be successful (Gavora, 2010). Schools with strong cultures of collective efficacy have faculties who believe they can make a positive difference in learning for all students. According to Goddard, if teachers believe they can have a positive effect on students, they are more likely to make choices that will result in increased student achievement, regardless of student characteristics (Cantrell & Hughes, 2008). While there were not significant changes in the area of student achievement in this study, the teachers have high levels of efficacy and through their responses during the individual teacher interview, they believe that the implementation of personalized learning is making a difference. As the implementation of personalized learning continues, it is the hope that student achievement will increase as a result of the teachers’ growing levels of efficacy. According to Goddard, Hoy and Hoy (2000), schools with strong cultures of collective efficacy have faculties who believe they can make a positive difference in learning for all students. If teachers believe they can have a positive effect on students, they are more likely to make choices that will result in increased student

achievement, regardless of student characteristics (Goddard et al., 2000). There is a strong body of evidence that suggests that collective teacher efficacy is crucial to student achievement, despite student socioeconomic status and prior learning. (Goddard et al., 2000, p. 2).

Continuing to build collective teacher efficacy, both within the school and through collaboration with teachers in other districts, would be particularly helpful since the district in which the program evaluation was conducted only has one elementary school.

One of the findings from the teacher survey was that teachers do not have as high of levels of efficacy when it comes to instructional strategies, although they have very high levels of efficacy in knowing how to engage their students. While some teachers stated there has been some growth for them in the area of instructional strategies since the implementation of personalized learning, others indicated there has been no change. Since teaching methods should continue to become stronger as teachers continue with the implementation of personalized learning, it is recommended that further conversations and professional development are initiated to discover the teachers' specific needs and to craft professional development sessions around their needs with instructional strategies. This will, in turn, help facilitate teachers' abilities to scaffold instruction and meet students in their zone of proximal development. Educators need to be able to scaffold instruction at the appropriate level as well as offer the supports and resources depending on student needs when delivering instruction (Abel, 2016, para. 5). As teachers scaffold instruction, it is important they have a broad toolkit of instructional strategies to address the unique needs of their learners.

Another finding from the teacher efficacy survey was that teachers do not have high levels of efficacy when it comes to getting students to think more creatively since the implementation of personalized learning. Since the Profile of the South Carolina Graduate calls for students to be creative and innovative, this may be a component that needs to be addressed more in the planning for the flexible grouping. Bray and McClaskey (2016) discussed the importance of learners having voice, choice, and the freedom to decide how they would like to learn:

When learners have choices to interact with the content and discuss what they watched, read, and learned, they are actively participating in learning.

Encouraging learner voice and choice is the key difference of differentiation and individualization. When learners have a voice in how they learn and choice in how they engage with content and express what they know, they are more motivated to want to learn and own their own learning. (p. 7)

It is for this reason that personalized learning was implemented at a rural elementary school in South Carolina.

One final recommendation is that schools should continue to implement personalized learning even if the results do not immediately show up in the data as it relates to student achievement. According to Michael Fullan, there are four broad phases of change in the change process: initiation, implementation, continuation, and outcome. During the implementation phase, Fullan refers to a drop in performance as the “implementation dip” (Burnside, 2018, para. 3). This is defined as the “phenomenon that occurs as one encounters an innovation that requires new skills and new understandings” (Burnside, 2018, para. 3). While some areas of student achievement

results during this program evaluation showed a slight dip, this could be attributed to the implementation dip. With continuation of the program, it is the hope that student achievement will increase. Fullan also identifies six secrets of change: 1) love your employees, 2) connect peers with purpose, 3) capacity building prevails, 4) learning is the work, 5) transparency rules, and 6) systems learn (Fullan, 2008). The third secret, capacity building prevails, focuses on the capacity building of all teachers and administration and its direct impact on instructional strategies that achieve student results (Fullan, 2008). Capacity building is defined as “any strategy that increases the collective effectiveness of a group to raise the bar and close the gap of student learning” (Fullan, 2006, p.9). Capacity building helps to develop individual and collective knowledge and competencies, resources, and motivation (Fullan, 2006). According to Fullan, the more an individual invests in capacity building, the more one has the right to expect greater performance (Fullan, 2006). This program evaluation indicated that teacher efficacy increased as a result of the implementation of personalized learning, so as the implementation continues, student achievement should therefore increase as a result of the teachers’ efficacy levels.

This study aimed to provide a CIPP program evaluation of the implementation of personalized learning, focusing specifically on the implementation of student data notebooks and flexible learning groups, and to provide feedback on strengths and weaknesses of the program. One noticeable strength was clear implementation of student data notebooks and flexible grouping. Teachers have worked diligently to get these structures into place and are doing so with a purposeful urgency. The teachers involved in this study have “buy-in” with the implementation of personalized learning, and they

unanimously commented on how personalized learning has impacted them as teachers during the individual teacher interviews. Another strength of the program is the collaboration that is happening among teachers. This is occurring through their continual data analysis and grouping of students. Through the data analysis and strategic flexible grouping, teachers feel they are better able to address the individual needs of their students and provide them with rigorous instruction on their level. A third strength of the program is that teachers now have higher levels of efficacy when it comes to knowing how to engage and motivate their students with purposeful learning since the implementation of personalized learning. An area of focus for continued success within the program would be for teachers to intentionally plan for student innovation and creativity within the implementation of personalized learning. According to Bandura (1994), teacher self-efficacy is a strong self-regulatory characteristic that enables teachers to use their potential to enhance student learning (Gavora, 2010). Teacher self-efficacy is related to “perseverance;” the stronger the self-efficacy, the greater the perseverance -- and the greater the perseverance, the greater the likelihood that the teaching behaviors will be successful. Teacher self-efficacy is a construct that was developed within the context of Bandura’s social cognitive theory (Gavora, 2010). Additionally, teacher self-efficacy has been found to be consistently related to positive teaching behavior and strong pupil achievement. Students learn more from teachers who have high self-efficacy, and highly self-efficacious teachers are more likely to use open-ended questions, inquiry methods, or small group learning activities for students. They are also more persistent at a task, take more risks, and are more likely to use innovative elements in their teaching. Teachers with high self-efficacy also are more open to new

ideas and initiatives and are less likely to experience burnout, support pupils' autonomy to a greater extent, and are more attentive to low-ability students (Gavora, 2010).

### **Recommendations for Further Research**

The purpose of this study was to conduct a CIPP program evaluation on the recent implementation of personalized learning. The researcher used math and reading achievement data, responses from interviews, and a teacher efficacy survey to conduct this evaluation. The following are recommendations for further research based on data and outcomes collected during this study:

- While this study focused on teacher efficacy, a future study could be initiated to determine the impacts of personalized learning on student efficacy.

According to Wigfield and Wagner (2005), when learners have a strong sense of self-efficacy, they approach complex and challenging learning tasks with a sense of confidence (Bray & McClaskey, 2016). They believe that if they use good strategies, practice persistence, and utilize the full range of resources available to them, they can and will succeed (Bray & McClaskey, 2016).

Duckworth stated that "Persistence associated with learner efficacy is an even stronger predictor of life success than intelligence" (Rickabaugh, 2016, p. 65).

A future study could help to measure the impact of personalized learning on student efficacy.

- While this study measured individual teacher efficacy, a future study could focus on collective teacher efficacy. In Hattie's (2010) study on the most influential factors on student achievement, he found collective teacher efficacy to be the second most influential factor on student achievement. All

other variables were three to six times less influential than teacher effectiveness. Recently, Hattie, after reviewing 1,200 meta-analyses of the effects of learning, ranked collective teacher efficacy as the number one factor among all the influences that impact student achievement (Visible Learning, 2015, para. 4). Hattie revealed that collective efficacy had an effect size of 1.57, more than double that of feedback (Visible Learning, 2015).

- While this program evaluation focused on student data notebooks and flexible learning groups primarily, a future study could focus on the impact of technology on personalized learning. Louis Gomez, an education professor at the University of California, studied the impacts of technology initiatives in schools. “Many schools purchase off-the-shelf software and call it ‘personalized learning,’ without being able to say what is supposed to change in the classroom” (Herold, 2018, para. 27). A future study could measure the effectiveness of certain personalized programs or just the overall role that technology plays in facilitating a personalized learning experience for students.
- While this study briefly compared the impacts of personalized learning on student achievement in math and reading, a future study could take a closer look at if there are differences in student achievement across various contents as personalized learning is implemented and why. The literature available pertaining to personalized learning focuses primarily on math and reading, and a future study could measure the impact of personalized learning on student achievement in other academic areas, such as science or social studies.

- This program evaluation was conducted very early on in the implementation of personalized learning, so a follow-up study could be conducted to determine the effectiveness of the program in future years of implementation. A study by the RAND Corporation indicated that 11,000 students trying out personalized learning approaches made greater gains in math and reading than similar students at comparable schools. The longer the students experienced personalized learning, the greater their achievement growth (Herold, 2016, para. 13).
- This program evaluation revealed that teachers had higher levels of efficacy in regard to student engagement but not as high of levels pertaining to their efficacy with instructional strategies. A future study could focus on teacher efficacy with instructional strategies.

### **Limitations**

Limitations are possible weaknesses in a study that are beyond the researcher's control. At this particular school, personalized learning was in the first year of implementation, and personalized learning was also only being implemented with fifth-grade students, so that became the focus of this study. As a result of the small sample size, it may be difficult to make generalizations as a whole about personalized learning and teacher efficacy.

**Delimitations**

Delimitations were boundaries set by the researcher to focus the study and were within the researcher's control. This study was based on the CIPP evaluation model's interrelated evaluations of context, input, process, and product with regard to the implementation of personalized learning. The researcher chose to focus on impacts of personalized learning in the areas of math and reading only. The researcher also chose to focus on teacher efficacy and not student efficacy.

**Conclusions**

According to Friedman (2006), "The world is flat" (p. 5). Globalization has "flattened" the world, shifting the workforce and replacing jobs that were once paid positions with a computer, a robot, or some other technological advance. As a result of this, we must prepare students for anything and everything. Friedman stated, "Today's workers need to approach the workplace much like athletes preparing for the Olympics, with one difference. They have to prepare like someone who is training for the Olympics but doesn't know what sport they are going to enter" (p. 294). Students must take charge of their learning, show self-direction, and have personalized instruction that meets their individual needs.

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Appendix A  
Teacher Efficacy Survey

Directions: Please indicate your opinion about each of the questions below by marking any one of the three responses in the columns on the right side, ranging from (1) It is worse now since the implementation of personalized learning, (2) There has been no change since the implementation of personalized learning, (3) It is better now since the implementation of personalized learning. Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.

#### Teacher Efficacy Survey

1. How much can you do to help your students think critically now that personalized learning has been implemented?
2. How much can you do to motivate students who show low interest in schoolwork now that personalized learning has been implemented?
3. How much can you do to get students to believe they can do well in schoolwork now that you have implemented personalized learning?
4. How well can you respond to difficult questions from your students now that personalized learning has been implemented?
5. Since the implementation of personalized learning, how much can you do to help your students value learning?
6. Since the implementation of personalized learning, to what extent can you craft good questions now?
7. How much can you do to foster student creativity now that personalized learning has been implemented?

8. How much can you do to improve the understanding of a student who is failing now that personalized learning has been implemented?
9. How much can you do to adjust your lessons to the proper level for individual students since personalized learning has been implemented?
10. Since the implementation of personalized learning, how much can you use a variety of assessment strategies?
11. To what extent can you provide an alternative explanation or example when students are confused now that personalized learning has been implemented?
12. How well can you provide appropriate challenges for very capable students now that personalized learning has been implemented?

Appendix B  
Teacher Interview Questions

## Fifth Grade Team

1. In the 2017-2018 school year, your grade level implemented flexible learning groups and student data notebooks. What do you feel were the strengths of implementing those two components?
2. What challenges have you observed with the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning groups?
3. How has the implementation of student data notebooks and flexible learning groups addressed the individual needs of your students?
4. What impact has the implementation of personalized learning, specifically with the implementation of student data notebooks and flexible learning, had on you as a teacher?
5. How effective would you say the implementation of personalized learning is based on the implementation of student data notebooks and flexible learning groups?