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Teachers' Challenges in Implementing Personalized Learning in Content Areas

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This is to certify that the doctoral study by

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Walden University
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Abstract

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Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Curriculum, Instruction, and Assessment

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Abstract

Despite the national trend of assessments for gauging student mastery of prescribed curriculum standards which has placed assessment preparation at the forefront of classroom practices, teachers at a midwestern school promoting personalized learning for students, demonstrated inconsistency in implementation among content areas. An explanatory sequential mixed-methods study based on expectancy-value theory was used to define the challenges that arise as teachers implemented personalized learning in their content area. The research questions addressed the implementation of 5 personalized learning elements in secondary content areas, how teachers implement each element, and teachers' challenges in implementing personalized learning in their classroom. The quantitative research component utilized ANOVA and Tukey post hoc tests to analyze 182 secondary teacher responses to a strategic plan survey regarding the frequency at which personalized learning elements were used in instruction. Statistically significant differences were found for 3 elements: knowing your learners, student voice and choice, and technology integration. A maximum variation sample was used to select 8 participants from diverse content areas for the qualitative data collection. Emerging themes on personalized learning implementation were extracted from classroom observation and interview data using descriptive coding, and then validated through member checking. Results indicated that teachers seek more training on personalized learning elements, content area learning, and time to plan personalized instruction. If teachers' ability to deliver personalized learning in their content areas improved, students would receive higher quality instruction resulting in increased academic achievement.

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Dedication

This work is dedicated to my loving family for without them this would only be a dream. My parents, John and Susann, thank you for always supporting me during my academic pursuits and being my biggest cheerleaders in all that I do. Melissa, my sister and role model, you have taught me to never give up on a challenge. My dearest husband, Lance, I would be lost without your motivation, love, and support throughout this doctoral journey. Erin and John, my wonderful children, you are my inspiration for doing my part to make the world a brighter place for your future.

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Section 1: The Problem

Introduction

Personalized learning promotes student individuality throughout the learning process; however, it is not easily implemented across all curricular areas (Basham, Hall, Carter, & Stahl, 2016). A midwestern urban school district that integrated personalized learning across the curriculum was the focus of this research. An explanatory sequential mixed-methods design was used to investigate the challenges that arise when secondary teachers implement a personalized learning environment in their content area.

The era of high-stakes testing and dictated learning standards has created an education system where students are primarily offered learning opportunities that are influenced by political movements (Bingham, Pane, Steiner, & Hamilton, 2016; Rutledge, Cohen-Vogel, Osborne-Lampkin, & Roberts, 2015). Student learning has become micro-managed and reaching the needs of the average ability learner has become the norm in education while the interests of struggling and high ability learners are often ignored (Gillard, Gillard, & Pratt, 2015). The Every Student Succeeds Act (ESSA) constitutes a conscious effort to provide equal educational opportunities for all students while holding all students to high academic standards (U. S. Department of Education, 2016).

Through the analysis of ACT, SAT, and college remediation rates, Childress and Benson (2014) found that only 37% of students are prepared to succeed in college (p. 33-34). With the diverse student demographics in the public school setting and the responsibility of educators to help all students succeed, there is a need for school systems

to implement an instructional program that integrates students' voice into curricular decisions and personalizes learning to maximize educational opportunities for them all (Busher, 2012; Childress & Benson, 2014; Deed et al., 2014a). Personalized learning creates a learning atmosphere that is more engaging to students since it is tailored to their individual needs and thus is relevant to each student (U. S. Department of Education, 2016a). Implementation of this mode of instruction generates challenges in the teachers' preparation of daily instruction. Bingham et al. (2016) stated that the implementation of a personalized learning model "requires some significant changes in teacher practice . . . teachers had to learn new teaching methods" (p. 21). Although personalized learning has the potential to increase student achievement, it also changes the course of instruction provided by classroom teachers.

The Local Problem

The problem addressed in this study was the challenge secondary teachers across content areas have when implementing personalized learning opportunities for students. In this study, I investigated the differences in secondary teachers' efforts to implement personalized learning in their content area, secondary teachers' perceived value of personalized learning, and the challenges teachers encountered in the implementation process.

The subject of this study, a midwestern urban public school district with a history of commitment to excellence, innovative practices, and community support, sought to maintain a curricular structure that prepared students to be internationally competitive. The focus on the district's strategic plan was continued work on innovative instructional

practices (AdvancED, 2016). In recent years, this district has experienced increased student enrollment, changing student demographics and budget shortfalls. Each of which greatly affected the district, including class size and curricular program options.

Personalized learning emphasizes students' voice and choice to increase their engagement in the learning process. Based upon informal conversations with teachers in multiple content areas at this midwestern urban public school district, the implementation of personalized learning has been a challenge, due to a lack of school infrastructure, ineffective use of available data, a lack of teacher preparation and buy in, and student assessment practices (Abbott & Wren, 2016; Basham et al., 2016; & Bingham et al., 2016). Teacher and student raw data from the district's strategic plan survey, illustrated varied implementation efforts of the core characteristics of personalized learning amongst departments.

In 2014 while updating its strategic plan, this midwestern urban public school district, conducted focus groups led by administrative leadership with district stakeholders in order to research and discuss what education could and should look like (Westside Community Schools, 2014). The school district's superintendent stated

> It is my sense that public education is at a crossroads nationally and is in flux in the Metro area. Our challenge is to create student-driven learning environments. Our goal is to prepare our next generation of learners to confront a rapidly changing global society. Our work is to create a vision for the future and to develop a set of policy recommendations and implementation strategies to accomplish our goal. (McCann, 2013, p. 3)

The focus group results directed the school district towards a personalized learning concept where students and teachers examine learner profiles and collaboratively design educational opportunities tailored to the students' strengths and interests (McCann, 2016).

The essential elements of personalized learning adopted by this school district consist of knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration. To start the integration process, cohorts of K-12 teachers were invited to participate in a yearlong professional learning experience centered on personalized learning. Three yearlong cohorts, starting in the fall of 2014, have completed the process. Some of the district's professional learning communities set personalized learning goals and teachers had opportunities to attend additional professional learning experiences throughout the year (personal communication, Assistant Superintendent of Curriculum, Instruction, and Assessment, September, 19, 2016). However, there is more work to be done.

According to the 2015-2016 Strategic Plan Teacher and Student Survey, which was administered to district students and teachers, implementation of personalized learning elements was not consistently implemented (Westside Community Schools, 2016). For instance, student surveys reported that 39% of students in Grades 7-8, and 46% of students in Grades 9-12 disagreed or strongly disagreed that they had choices in their learning. The majority of Grades 7-12 teachers reported the following elements are integrated into instructional practices less than five days in a typical 10-day period: 62% of teachers incorporated student voice and choice, 63% of teachers included flexible

grouping in classroom settings, 68% of teachers made data-informed instructional decisions, 32% of teachers integrated technology, and 50% of teachers related instruction to what they knew about their students. These data illustrated low implementation of personalized learning elements in the secondary grade levels. As the school district continues to advocate for personalized learning opportunities for students, it is essential to understand the reasoning for low implementation efforts amongst secondary teachers. This will allow the school district to provide appropriate resources to help teachers overcome implementation challenges specific to the teachers' content area.

Peeters, De Backer, Kindekens, Triquet, and Lombaerts (2016) stated in their research on teacher differences on student-regulated learning that teachers were concerned about meeting the needs of all students during personalized instruction; such as: ensuring high ability students remained challenged and providing enough support for struggling students. They were also concerned that students were responsible enough to handle this mode of instruction (2016, p. 91). Such concerns could influence the expectancies and values that teachers hold of personalized learning as an effective instructional tool. A closer examination of secondary teacher raw data, showed that implementation varied by department as well. Allison (2013) stated that "robust self-efficacy" in teachers would lead to meaningful change in classroom dynamics; however, this could only happen when teachers' learning experiences connect content knowledge and instructional practice (2013, p. 181). The counseling, engineering and technology, mathematics, music, and science departments implement each of the four essential elements less than five days in a typical 10-school-day period. Flexible grouping and

space and data-informed instructional decisions are the least implemented amongst these departments. Secondary teachers in the mathematics and music department reported the least amount of implementation overall. Secondary teachers in the business, language arts, and social science departments reported the highest implementation of personalized learning elements; student voice and choice had the highest implementation. (Westside Community Schools, 2016). The survey results demonstrated differences amongst the Grades 7-12 curricular departments, which poses the question: What is causing poor implementation of personalized learning in some departments and higher implementation in other departments? During conversations with secondary teachers who visited a high school in a nearby state that has implemented personalized learning, multiple concerns were shared. One teacher reported that unless the district planned to purchase software to individualize instruction then personalization was near impossible; another reported that most examples were shown in English classrooms and there were few examples in other content areas to examine (personal communication, secondary teacher, July 2016). These concerns showed devalued personalized learning as a meaningful learning opportunity across curricular areas. Teachers with higher "task value beliefs" of learning experiences that focus on student voice are more likely to offer opportunities for personalized instruction (Peeters, De Backer, Kindekens, Triquet, & Lombaerts, 2016, p. 92).

The continued district focus on personalized learning is supported by the school improvement priority, as stated in the 2016 AdvancED External Review Exit Report from Indicator 3.3: "implement and monitor use of a district wide instructional process in all classrooms … to provide all students with engaging, challenging, and personalized

learning experiences that ensure achievement of learning expectations" (Assistant High School Principal, personal communication, May 4, 2016). The comparison of the Effective Learning Environments Observation Tool (ELEOT) to the AdvancEd network (AEN) scores supported this statement. The school district's ELEOT scores were lower across the board when compared to the AEN average, which surprised the external review committee due to the district's strategic plan and reputation (AdvancEd, April 27, 2016). The expectation of Indicator 3.3, that personalized learning will be embedded in classroom instruction, will require teachers to modify current instructional practices. The school district's strategic plan data, the AdvancED priority statement, and personal communications with district staff members supported the need to research teachers' challenges in implementing personalized learning along with instructional support needed to overcome these challenges so that classroom practices provide opportunities for increased student achievement.

Rationale

Even though personalized learning offers potential for student-focused learning and meeting the needs of individual learners, there is limited knowledge of its application in the educational environment (Basham et al., 2016, p. 126). The local problem illustrated the desire of a school district to implement the innovative instructional practice of personalized learning to increase student achievement. Initial data pointed to inconsistent implementation amongst secondary teachers in the five elements of personalized learning: knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration. For the

purpose of this study, I investigated the challenges faced by secondary teachers in implementing a personalized learning environment in their content area. As a result of this research, potential solutions to eliminate the inconsistent implementation practices amongst content areas may be designed.

Definition of Terms

Data-informed instruction: Instructional decisions based on ongoing, transparent, and actionable use of student data (Basham et al., 2016, p. 133)

Content areas: The domain of knowledge that creates a set of standards students are expected to learn and master (U. S. Department of Education, 2008). For the purpose of this study, the content areas are language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business).

e-Learning: The use of technology, such as: computers, tablets, or hand-held devices, to enhance learning experiences beyond the classroom (Delgado et al., 2015; Sahin & Kisla, 2016).

Flexible grouping: Learning spaces are created based on the needs of the student for the current learning task, including individual and group work opportunities (Deed et al., 2014a; Deed et al., 2014b).

Knowing your learners: Examining students' strengths and weaknesses and designing learning to help students grow as individual learners based on the level of content mastery (Basham et al., 2016; Bingham et al., 2016).

Online learning: Online learning, also referred to as distance education or web-based learning, provides students with access to content not available at their school site. This learning platform may include courses made available at other educational sites that are accessible using the Internet and software programs designed to meet individual student needs. Although, online learning provides additional learning experiences for students little, if any, face-to-face contact is provided throughout the learning process (Delgado et al., 2015; Mitchell et al.,2016).

Personalized learning: Personalized learning places students' interests, needs, and strengths at the center of classroom instruction allowing students to take ownership of their learning experiences. This mode of instruction utilizes flexibility and learner voice to support student achievement (Basham et al., 2016; Childress & Benson, 2014).

Professional development: Learning experiences for educators to strengthen connections between a teacher's pedagogy and their discipline (Allison, 2013).

Professional learning network (PLN): Professional learning networks consist of learning experiences to promote professional growth. Learning experiences may include: district orchestrated sessions, peer observations and discussions, conferences, and online networking. Teachers participating in PLNs have opportunities to search for personalized learning experiences to meet professional goals (Krutka, Carpenter, & Trust, 2017).

Student engagement: Student participation in the learning process. Active participation throughout the learning process is the result of peer and teacher interactions, value of the learning task, relevance of learning standards to the student, and level of

student effort (Harbour, Evanovich, Sweigart, & Hughes, 2015; Reeve & Lee, 2014; Tlhoaele, Hofman, Winnips, & Beetsma, 2014).

Student voice and choice: Multiple options for engagement in learning are provided to empower students in the educational process including demonstrating mastery of learning concepts in multiple ways (Basham et al., 2016; Busher, 2012).

Technology integration: Using technology to enhance instruction for students. Technology integration may include learner profiles and online learning environments (Basham et al., 2016; Bingham et al., 2016; Chen, Huang, Shih, & Chang, 2016).

Significance of the Study

This study investigated the challenges secondary teachers encounter in creating a personalized learning classroom environment in their content areas. The results of this research is expected to provide valuable feedback on personalized learning instructional delivery, which can improve overall student achievement. As a midwestern urban public school district implemented personalized learning programming in its schools, I used a mixed-methods approach to investigate the current challenges of implementing personalized learning and interpret the results to determine the resources necessary to meet the district's strategic goal of maximizing student engagement and achievement.

This research promotes positive social change through the study of an innovative instructional modality, personalized learning, which places the learner at the center of the education process, thus making education student-focused. Technological resources have changed education for 21st learners by placing information at students' fingertips. Teachers can no longer be the delivery agents of knowledge. Instead, it is vital to charge

students with the initiative to take ownership of their learning (Gillard, Gillard, & Pratt, 2015, p. 3). If a personalized learning program is successfully implemented, such that it increases student achievement, the program may provide a means to create lifelong learners after high school.

Research Questions

In this study, I examined the challenges that arise as midwestern urban public school secondary content area teachers implemented personalized learning in their classroom environments: knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration. In this study, I investigated the instructional support that secondary teachers perceived would help them overcome the challenges in personalized learning implementation across content areas.

The quantitative research question was used to analyze the reported use of the five elements of personalized learning by secondary teachers from the following content area departments: language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business). Thus, Research Question 1 was broken into five subquestions based on the essential elements of personalized learning.

RQ1 (Quantitative): How does the implementation of each of the personalized learning essential elements differ between content area departments?

RQ1(a): How does the implementation of the personalized learning essential element, knowing your learners, differ between content area departments?

RQ1(b): How does the implementation of the personalized learning essential element, student voice and choice, differ between content area departments?

RQ1(c): How does the implementation of the personalized learning essential element, flexible groupings and space, differ between content area departments?

RQ1(d): How does the implementation of the personalized learning essential element, data-informed instruction, differ between content area departments?

RQ1(e): How does the implementation of the personalized learning essential element, technology integration, differ between content area departments?

For the quantitative component of this study, a null and a nondirectional alternative hypothesis was generated:

H_0: There is no significant difference in the implementation of personalized learning essential elements amongst secondary content area departments in a midwestern urban school district.

H_0(a): There is no significant difference in the implementation of the personalized learning element, knowing your learners, amongst secondary content area departments in a midwestern urban school district.

H_0(b): There is no significant difference in the implementation of the personalized learning element, student voice and choice, amongst secondary content area departments in a midwestern urban school district.

H_0(c): There is no significant difference in the implementation of the personalized learning element, flexible grouping and space, amongst secondary content area departments in a midwestern urban school district.

H_0(d): There is no significant difference in the implementation of the personalized learning element, data-informed instruction, amongst secondary content area departments in a midwestern urban school district.

H_0(e): There is no significant difference in the implementation of the personalized learning element, technology integration, amongst secondary content area departments in a midwestern urban school district.

H_A: There is a difference in the implementation of personalized learning essential elements amongst secondary content area departments in a midwestern urban school district.

H_A(a): There is a difference in the implementation of the personalized learning element, knowing your learners, amongst secondary content area departments in a midwestern urban school district

H_A(b): There is a difference in the implementation of the personalized learning element, student voice and choice, amongst secondary content area departments in a midwestern urban school district.

H_A(c): There is a difference in the implementation of the personalized learning element, flexible grouping and space, amongst secondary content area departments in a midwestern urban school district.

H_A(d): There is a difference in the implementation of the personalized learning element, data-informed instruction, amongst secondary content area departments in a midwestern urban school district.

H_A(e): There is a difference in the implementation of the personalized learning element, technology integration, amongst secondary content area departments in a midwestern urban school district.

Two research questions focused on the qualitative component of this research. Classroom observations and interviews with secondary teacher participants were conducted to gather qualitative data.

RQ2 (Qualitative): How do teachers demonstrate the implementation of personalized learning elements in their content area?

RQ3 (Qualitative): What do teachers describe as challenges in implementing a personalized learning environment in their content area?

Research Question 2 was answered using data collected from classroom observations while Research Question 3 was addressed during teacher interviews.

Review of the Literature

The review of the literature was conducted using multiple databases: Education Source, ERIC, Google Scholar, ProQuest Central, and SAGE Journals. The following phrases were used: *instructional practices, instructional technology, K-12 technology integration, personalized learning, student engagement, student motivation, and teacher professional development.*

Theoretical Framework

Expectancy-value theory is the theoretical framework for this study investigating teachers' challenges in implementing personalized learning in their specific content area. Wigfield, Allan, Tonks, and Lutz (2009) defined expectancies and values as beliefs that are "task-specific" including competence, difficulty level, personal goals, experiences related to the task, and achievement (p. 56). Expectancies and values influence individual choices through performance, effort, and persistence (Atkinson, & Reitman, 1956; Wigfield, Allan, Tonks, & Lutz, 2009; Wigfield & Eccles, 2000). Teacher expectancies and values of personalized learning will influence the success of classroom implementation and overall student achievement. Atkinson and Reitman (1956) stated

> If more than one of an individual's motives are engaged by expectancies that the same act will lead to several different goals, the total motivation for performance of that act will be the sum of the contributions made by the particular motives which have been engaged. (p. 361)

Expectancies and values of personalized learning as seen by teachers has the potential to influence teacher success on identified goals, such as curriculum design and planning

classroom instruction. Wiggins and Eccles (1999) stated that expectancies and values have a direct influence on achievement choices (p. 69). The value a teacher places on the effectiveness of personalized learning in their content area has the potential to motivate teachers to overcome challenges in its implementation.

Expectancy-value theory integrates individual values and beliefs and how they mold future outcomes. Utility value focuses on personal goals and future plans while building intrinsic motivation to reach a goal (Wigfield, Allan, Tonks, & Lutz, 2009; Wigfield & Eccles, 2000). Ability beliefs are defined by the competence an individual has regarding a specific task and influence future success (Wigfield & Eccles, 2000, p. 70). When teachers implement personalized learning in their content areas, their value and beliefs of this instructional mode will define the teachers' ability to refine learning opportunities throughout instruction and overall student achievement. As challenges arise during implementation efforts, the teacher's values and beliefs may decrease and deter the teacher from integrating personalized learning opportunities in their content area. Atkinson and Reitman (1956) explained that expectancies are aroused when the "performance of an act is instrumental to the attainment of the goal of the motive" (p. 366). If teachers believe that personalized learning will increase student engagement in learning their content, then personalized learning will be considered as a valuable means of instruction.

Expectancy-value theory supports the purpose of this research and informs the research questions by relating teachers' values and beliefs of personalized learning to how successful they are able to integrate personalized learning experiences in their

content areas. The data analysis following the investigation of the quantitative research question will show if different secondary content area departments have higher expectancies of the essential elements of personalized learning (knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration) through the frequency of the departments' use of each element. The two qualitative research questions will provide more in depth information regarding individual secondary teachers' value of personalized learning and the challenges that arise during implementation efforts along with the teachers' response to challenges.

Personalized Learning Defined

The innovative instructional practice called personalized learning places the individual student as the focus of all instructional design. The definition varies from author to author; however, each definition includes student and teacher responsibilities to orchestrate this mode of classroom instruction. According to the United States Department of Education (2016b), personalized learning is defined as

> instruction in which the pace of learning and the instructional approach are optimized for the needs of each leaner. Learning objectives, instructional approaches, and instructional content (and its sequencing) all may vary based on learner needs. In addition, learning activities are meaningful and relevant to learners, driven by their interests, and often self-initiated.

If learning is personalized for students it will provide an engaging curriculum that meets the unique needs of each individual student; thus, intrinsically motivating students to take greater ownership in their learning while providing a foundation for success in college

and career experiences (Childress and Benson, 2014; Pane, et al., 2015; Prain, et al., 2013; U. S. Department of Education, 2016a).

Content area teachers have an integral role in a personalized learning classroom by designing a productive and learning focused environment, assisting students with goal setting, leading multiple instructional approaches, providing student support and guidance throughout the learning process, and providing timely feedback to students (Childress & Benson, 2014; Deed, et al., 2014a; Pane, et al., 2015; Prain, et al., 2013; Waldrop, et al., 2014). These responsibilities along with the personal investment of students and teachers will generate a classroom that becomes an adaptive learning community that provides a responsive, flexible curricular program while offering individual freedom for students to grow as learners (Deed, et al., 2014a; Waldrip et al., 2014). Rutledge, Cohen-Vogel, Osborne-Lampkin, and Roberts (2015) found that personalized learning schools gain higher achievement, when all adults in the school exhibit a socio-emotional responsibility to knowing students' interests, learning about student backgrounds, and investing in building a cohesive community that values student voice (p. 1069).

Student voice is the element of personalized learning that empowers students to take responsibility for their learning (Busher, 2012; Childress & Benson, 2014; Garn & Jolly, 2014; Gillard, Gillard, & Pratt, 2015; Hopkins, 2014). A democratic learning space, where teachers and students negotiate on learning space and instruction modes, is created in a personalized learning environment (Deed et al., 2014b, p. 370). Learning becomes a mutual responsibility of both the students and the teachers. Teachers are responsible for

facilitation of the learning while students develop the ability to become independent learners. For example, student voice allows students to make instructional choices to best supports students' learning styles such as: which groups to work with or the mode of instruction that is most effective for that student (Basham et al., 2016, p. 134). Self-regulating is an essential student characteristic in personalized learning environments (Basham et al., 2016, p. 128). Student and teacher collaboration is essential in a personalized learning classroom to successfully increase student motivation and achievement (Deed, et al., 2014a; Prain, et al., 2013; Sahin & Kisla, 2016).

Purpose of Personalized Learning

Student motivation is key when maximizing learning to achieve greater results. Pink argues that what motivates individuals is not created through compliance, but that intrinsic motivation must be embraced to drive individuals towards success (Pink, 2009). The future of education does not include learning more information and educators must move beyond being "facilitators of learning" and move towards becoming "motivators of purpose" (Gillard, Gillard, & Pratt, 2015, p. 3). Personalization has been a component of higher achieving schools and found in the school design, initiatives, and serves as an integral component of the school language (Rutledge, Cohen-Vogel, Osborne-Lampkin, and Roberts, 2015). In their comparative case study, Rutledge, Cohen-Vogel, Osborne-Lampkin, and Roberts (2015) found that commonalities of highly successful urban schools include the orchestrated effort to build a community focused on relationships with students, both culturally and academically (p. 1078). Administrators along with teachers prioritized the personalized environment and believed it was a key element of

their success. Self-efficacy in school leaders and teachers influences culture in the classroom as it provides a means for adults to role model what it means to be a dynamic learner for students (Alison, 2013; Rutledge, Cohen-Vogel, Osborne-Lampkin, and Roberts, 2015).

Teachers are challenged with the problem of teaching a variety of learners in the same classroom. Deci argued that this micromanagement of students creates a trend in education to focus on average-ability students while leaving high-ability and low-ability students underserved (Deci, 1972). In their research, Garn and Jolly (2014) focused on the definition of motivation according to high ability students. Two major themes emerged through their data analysis: the "fun factor of learning" and "rewards and pressure of good grades" (Garn & Jolly, 2014, p. 15-17). The fun factor of learning includes personalization and empowering student choice, which provides "optimal" learning motivation. The research found that motivation was at its peak when learning was personalized to meet student interests, built real world connections to student goals, and provided conditions of choice in presentation and products (Garn & Jolly, 2014, p. 15-16). Rewards and the pressure of good grades were found as external motivators for high-achieving students, which emphasized the effect of positive and negative motivators in the learning process; the researchers deemed that this claim desired additional research to have a clear understanding it their influence on learning (Garn & Jolly, 2014, p. 16-20). Personalized learning also has the potential to greatly impact learning experiences for students with disabilities. Deschler (2015) determined that using data to provide students with disabilities with a personalized education has great potential in increasing

academic achievement. Academic data points based on student mastery of learning standards would allow teachers to individualize learning to match the educational needs of the individual student. To meet the specific needs of individual learners, available data must include learner variability, learning outcomes, performance measures, resources, and instruction (Deschler, 2015, p. 74-75). Personalized instruction is created through the dissection, then synthesis of student interests, academic data, and content standards. Only through this process will the needs of low, average, and high ability learners in a single classroom be met.

Student Engagement

Engagement can be defined as the action taken by students "to advance from not knowing, not understanding, not having skill and not achieving to knowing, understanding, having skills and achieving" (Reeve, 2013, p. 580). Student engagement can be divided into three distinct types: behavioral, emotional, and cognitive (Harbour et al., 2015; Reeve & Lee, 2014). Behavioral student engagement is the actions students exhibit during the learning process. Emotional student engagement is the result of students' reactions to the learning standards and delivery of instruction. Cognitive student engagement is the amount of effort and level of investment students have in the learning. Together these types of student engagement can promote or distract from overall student achievement (Harbour et al., 2015). School district visions focus on the individual learner and how the prescribed educational program will lead the students to high academic achievement. Personalized learning has the potential to transform student behavior to

develop higher levels of student engagement and academic growth that is not evident in other instructional modalities (Basham et al., 2016).

Behavioral student engagement is measured by the actions taken by the learner throughout the learning process. Reeve (2013) described behavioral engagement as the attention to learning and persistence throughout the learning process. “Interactive engagement” is defined as the ongoing process of immediate feedback provided to the learner from teachers and peers and encourages active participation between all parties involved in the learning process (Tlhoaele et al., 2014). Research conducted by Tlhoaele et al. (2014) found that behavioral engagement components such as active participation and self-assessment activities promote higher levels of student achievement (p. 1029). In Busher’s (2012) analysis of three studies on students’ perspectives of education, his findings include that teacher support such as asking if there is anything that needs to be discussed, helping with specific content, and positive praise along with feedback creates a classroom culture of engagement according to students (p. 115-6).

Research conducted by Tlhoaele et al. (2014) illustrated that high achievement is the result of learning tasks given to students that connect to real-world and possible future careers. Thus, learning that shares a personal connection to student interests inspires higher greater student engagement in the task. Emotional engagement focuses on the positive emotions exhibited during the learning task (Reeve & Lee, 2014). Personal connections to learning can only be constructed when teachers are able to build relationships with students, igniting the emotional level of student engagement.

> Connecting content to a student's life required knowing something about the students, of course. This knowledge requires creating a relationship with each of them. When we ask the right questions, treat them with respect, show empathy (and sometimes sympathy) for their concerns, then can we create a bond that will allow us to almost intuitively know how to make each of our lessons relevant to our students' lives. (Nordgren, 2013, p. 9)

Effort and investment in the learning, cognitive student engagement, can be influenced by the amount of confidence students have in their ability to successfully complete the assigned task along with the value of the task (Tlhoaele et al., 2014). Reeve (2013) defined cognitive engagement as sophisticated strategic thinking instead of commonly practiced learning strategies (p. 581). Nordgren (2013) iterates the importance of challenging students to attain "high levels of understanding and application can change their beliefs about themselves, leading to a self-fulfilling prophecy of success" (p. 9).

Reeve (2013) stated the existence of a fourth type of student engagement called agentic engagement. A student initiated pathway to learning is exhibited when students ask questions; express likes and dislikes; share interests, preferences, and opinions; and offer suggestions (Reeve, 2013, p. 591). This mode of engagement is the result of self-regulating behavior that is essential in personalized learning environments. Students that show agentic engagement provoke an "ongoing series of dialectical transactions between student and teacher" (Reeve, 2013, p. 580). Characteristics of agentic engagement include students that are proactive, reflective, seek to personalize, and contribute to the flow of classroom instruction (Reeve & Lee, 2014). When teachers offer a classroom that

promotes self-regulation, such as personalized learning environments, all four types of engagement (behavioral, emotional, cognitive, and agentic) come together to increase student academic growth and achievement (Reeve, 2013; Reeve & Lee, 2014).

Teacher Implementation

To increase student achievement and personalize learning, teachers must design instruction to spark student curiosity, build confidence and provide learning opportunities to share learning with peers (Tlhoaele et al., 2014, p. 1031). Personalized learning requires teachers to become "designers or engineers of learning" and integrate unique methods of instruction and assessment (Basham et al., 2016, p. 134). Personalized learning focuses on the individual learner versus teaching to the average student (Basham et al., 2016, p. 127). Basham et al. (2016) defined necessary characteristics of operational personalized learning that must be implemented by teachers to generate student success in the classroom. Essential characteristics include a highly self-regulated environment; transparent, continual, and actionable data; continual feedback and weekly meetings; integrating student voice; and multiple means of demonstrating mastery of learning standards (Basham et al., 2016).

In a highly self-regulated environment, students are active participants in the decision-making process and assume responsibility for their learning. The teacher's role is to design the learning environment by providing resources and scaffolds learning to support self-regulation. Teachers also utilize student data along with student voice and choice to design pathways for learning (Basham et al., 2016, p. 130). "Planning for variability" is evident in the opportunities for multiple learning pathways available in this

environment (Basham et al., 2016). Instructional modeling is a strong proponent of a self-regulated learning environment. Harbour et al. (2015) found that when teachers use instructional modeling to demonstrate a skill or behavior it builds student confidence engaging the learner influencing him or her to attempt higher order tasks (p. 6-8). Instructional modeling produces the highest levels of student engagement when teachers model their thought process by describing the decision-making process (Harbour et al., 2015). Student self-regulation is supported through continual feedback from both teachers and students (Basham et al., 2016; Harbour et al., 2015). The amount of feedback correlates to the level of student behavior, academic performance, and time on task; feedback is most effective when it is frequently given to students and promotes one-on-one teaching opportunities with students (Harbour et al., 2015, p. 9-10). Student self-reflection is also an effective component of self-regulating behavior. The use of exit tickets is an example of integrating student reflection; students can use the exit ticket to measure their progress and success on learning tasks (Basham et al., 2016, p. 133).

Transparent, continual, and actionable data is an essential component in a successful personalized learning environment. Data can be extracted from national and state standardized assessments, school district created performance tasks, teacher created formative and summative classroom assessments, and digital programming (Abbott & Wren, 2016; Lin et al., 2013; Shapiro & Wardrip, 2015). These data are used to analyze the effectiveness of school-wide frameworks, spark conversations between school faculty about areas for improvement, make instructional decisions based on learner progress, and maximize opportunities for personalized learning (Abbott & Wren, 2016; Basham et al.,

2016; Lin et al., 2013). Shapiro and Wardrip (2015) described the purpose of data as a means to "know what students know" (p. 128). Students and teachers are able to make actionable decisions based on data from student progress and effort (Basham et al., 2016). According to Abbott and Wren (2016) data driven decision-making has not been universally successful since there is often lack of preparation of how to use the data by administrators and teachers along with an unclear vision for its use (p. 38). For data analysis in the instructional setting to contribute to student learning, a culture based on clearly outlined learning standards, scoring consensus, and identifying strengths and weaknesses for individual students must be embedded in the analysis (Abbott & Wren, 2016, p. 40). Shapiro and Wardrip (2015) stated in their research that teachers must design conditions for data collection and then use the data for future instructional planning (p. 146). Successful use of data requires expertise in data mining by all stakeholders in the learning environment at the building and central office levels (Abbott & Wren, 2016, p. 42-43).

When student voice is an integral part of classroom design, it influences the level of student engagement. Basham et al. (2016) found that allowing students to demonstrate mastery in multiple ways, especially if they have some choice, provides for higher levels of engagement and more authentic and meaningful learning (p. 134). Utilizing the power of student voice in the class changes lesson design. Students participate in writing goals and choosing how evidence of content mastery will be shown while teachers become learning coaches and find resources (technology, reading materials, experts) to provoke student thought and curiosity (Basham et al., 2016, p. 130). In this classroom, teachers

must accept that they may no longer know more than the students in terms of learning content as students are able to direct their learning; however, the benefit of this environment is that teacher time is freed to support students that may need more one-on-one support (Deed, et al., 2014a).

Learning Spaces

The design of the classroom can influence the learning that will take place. Although whole class instruction is important when introducing new learning or when addressing the entire class is necessary, classrooms that utilize an open flow concept and include areas for small group work, individual work, and a variety of seating options allows students to learn in their preferred environment (Basham et al., 2014; Deed et al., 2014a; Deed et al., 2014b). Basham et al., (2014) emphasized the need for teachers to be innovative in the design of learning spaces and test different designs to support increased student achievement (p. 131). In a personalized environment, learning is active and complex to support learner growth. Cooperative student grouping and skills based groupings are complete the flexible learning design of classroom space (Basham et al., 2016, p. 127).

Technology

Technology has changed the face of K-12 education and integrating technology into instructional design provides opportunities for increased student engagement throughout the learning process (Delgado, Wardlow, McKnight, & O'Malley, 2015; Mitchell, Wohleb, & Skinner, 2016). In their research, Mitchell et al. (2016) studied teacher perceptions on how technology can be utilized to improve instruction, including

the availability of web-based learning (p. 15). However, technology integration is not a simple task and requires training in order to be effective. Technology is changing at such a rapid pace that without training teachers are at a disadvantage when during the implementation process (Yu & Okojie, 2017, p. 61-62). Mitchell et al. (2016) found that teachers require diverse trainings matched to their level of teaching and technology experience. As newer teachers are more aware of technology, they are able to utilize technology more effectively in the classroom (p. 14). Not only does the amount of teacher experience with technology influence effective classroom use, but teachers must also be confident with how technology interacts with pedagogy. Yu and Okojie (2017) stated in their research on the relationship between pedagogy and technology integration that "the relationship between technology infusion and pedagogical knowledge represents the foundation and a road map through which technology integration can be successfully implemented" (p. 62). K-12 teacher training needs to include not only how to use technology as a learning tool, but also how it is effectively used for meaningful learning opportunities in specific content area (Mitchell et al., 2016, p. 17)**.** School systems must also play a supportive role in integrating technology, such as providing resources, equipment, and training meeting the needs of individual teachers (Delgado et al., 2015; Mitchell et al., 2016, p. 14).

The "Net Generation" student is internet literate and connected to the newest technologies; she or he uses the internet as a tool for self-expression (Mitchell et al., 2016, p. 14). The endless possibilities these tools have to influence student learning makes technology an ideal pathway for personalized learning. Online learning has made

it possible for high school students to take courses not offered at their school, complete coursework for credit recovery, and pursue college courses (Delgado et al., 2015, p. 398). Computer based instruction has been used to attempt to personalize learning in the classroom; however, it has been questioned if e-learning can facilitate a learning environment that supports the needs of all learners (Delgado et al., 2015; Sahin & Kisla, 2016). Any web-based learning system must meet the needs of human participants including gender; learning styles, characteristics, and needs; and individual preferences to successfully personalize learning for students (Chen et al., 2016). Digital personalized learning not only lacks hands-on problem solving, but also neglects the socio-emotional development of learners (Basham et al., 2016, p. 128). If computer-based programs for personalized learning cannot support the variety of needs of all learners, then potentially a blended approach should be considered. A blended learning approach requires a balance between teacher-direction and alternative learning resources; both modes of instruction are needed to refine pedagogical practices (Deed et al., 2014b, p. 382). However, teacher skillsets and beliefs about personalized learning instruction, along with perceptions of student grouping, inhibits successful employment of the approach (Prain et al., 2013, p. 658).

Challenges in Implementing Personalizing Learning

Personalized learning requires educators to attain a new instructional skillset if it is to be successfully implemented (Bingham et al., 2016; Busher, 2012; Deschler, 2015; Prain et al., 2013). The creation of a flexible curriculum centered on student interests, academic data, available resources, and preferred learning styles that aims to meet desired

content standards is a difficult and time consuming process that is not easily attained. It is essential that research-based guidance is utilized in the implementation of personalized learning to prevent haphazard instruction that eventually becomes an "unrealistic fad in education" (Basham et al., 2016, p. 127). Prain et al. (2013) stated that if teachers are expected to provide personalized learning opportunities to students they need "expertise, time, resources, and teamwork to develop a flexible curriculum that is adequately structured in content, learning tasks, and adaptable classroom practices to engage all learners and address contrasting learner needs" (p. 660). Even if teachers are given the resources and support necessary, another challenge arises as students question the "degree of control and choice" being offered and if the learning experience is indeed personalized for individual students (Prain et al., 2013, p. 668).

The lack of availability of exemplar personalized learning models provides a barrier in the implementation of this instructional mode by classroom teachers (Basham et al., 2016; Bingham et al., 2016; Waldrip et al., 2014). There is a lack of understanding of what it actually means to personalize. Similar to students, teachers need examples to drawn from to aide and promote instructional design. Personalized learning requires educators that are proficient in different perspectives of learning, data analysis, and student grouping (Busher, 2012). The role of the teacher changes in a personalized learning environment. Deschler's (2015) research on personalized learning environments for students with disabilities, found a need to re-define the roles of the classroom teacher and the special education teacher to define learning for students with special needs (p. 75). Along with the potential strain in the instructional design process, time demands

throughout personalized learning design deters teachers from implementation. Pane et al. (2015) stated in their research that one-half to two-thirds of teachers studied mentioned time demands as problematic in personalized instruction; furthermore, the pressure to meet learning objectives for assessments was reported as a minor or major obstacle by 40% of teachers in their study (p. 27). Complications also arise from the amount and type of student data teachers receive to plan for all students, along with the management of incoming data throughout the learning process (Bingham et al., 2016; Deschler, 2015).

Professional Development

Professional development is instrumental to the successful implementation of any change in school culture if teachers are to operate and grow in a new learning environment (Alison, 2013). Professional development may occur in different formats: face-to-face learning opportunities (district sessions, peer observations, conversations with building colleagues, conferences, Edcamps) and using technology such as social media and blogging (Krutka, Carpenter, & Trust, 2017, p. 247). Krutka et al. (2017) focused on frameworks that promoted teachers creating a personal learning network (PLN) that allowed teachers to concentrate on personal and professional learning goals (p. 247). Just as a personalized learning environment focuses on students' interests and academic needs, PLNs allow teachers to personalize their own learning endeavors. PLNs engage teachers by allowing them to form their learning experiences based personal needs and promote lifelong learning experiences for professional growth (Krutka, Carpenter, & Trust, 2017, p. 248). This personalized engagement can also be directed towards secondary teachers' content area. Just as student engagement is vital to academic

achievement, teacher engagement in their content area is essential throughout professional development sessions to benefit student learning (Alison, 2013).

The delivery of professional development has evolved along with the use of technology to promote learning (Krutka et al., 2017; Seifert & Bar-Tal, 2017). Seifert and Bar-Tal (2017) stated that "educators need settings for frequent sharing of knowledge, construction of knowledge, continual professionalization, updating, regular advice and support, and to introduce innovative pedagogical challenges" (p. 22). Their research found that educators have a thirst for professional discourse and have multiple motivations for participating in online professional networks such as meeting colleagues, being part of a thinking team, research, fields of interest, discussing educational issues, seeking professional information, and building social relationships (Seifert & Bar-Tal, 2017, p. 27). However, the recognition of online professional learning has yet to be recognized as an effective means of professional growth. "Connected educators who are innovative, inspired, or early adopters may find themselves working for institutions whose professional development policies do not honor their dedication to growing into their craft through social media and other relatively new interactions" (Krutka et al., 2017, p. 251).

Personalized learning environments require teachers to multi-task throughout instruction to promote student voice in learning. Rowan and Townend (2016) studied teacher perceptions of working with diverse student populations including students with disabilities and gifted students. Their findings stated that teacher behavior is connected to teacher self-efficacy and that teachers feel they are underprepared to work with diverse

learners since there is not a one-size-fits-all instructional approach (Rowan & Townend, 2016). Their collected data serves as a reminder that professional development must continually address instructional strategies for working in a diverse classroom so all students, no matter their ability, can achieve (Rowan & Townend, 2016, p. 20). Just as student learning does not happen in a one-size-fits-all classroom, teacher professional development cannot be prescribed as a one-size-fits-all program for teacher growth.

Personalized Learning versus Content Standards

Personalized learning emphasizes student voice and choice throughout the learning process. However, this becomes a concern when teachers have a dictated list of standards that must be taught and assessed throughout the school year. Teachers are concerned that personalized learning environments prohibit them from meeting curriculum requirements and assessments standards. Questions also arise on if students have the ability to make suitable content related decisions regarding their learning (Prain et al., 2013, p. 668). Thus, where does the balance lie between personalized learning philosophy and national and state testing on academic content standards? As states continue to implement state assessments, teachers have to meet the expectation of preparing students for standardized tests instead of allowing for student choice and self-pacing (Johnsen, 2016, p. 73). Constraints due to testing expectations create conflict between school measures of student success versus outside expectations (Bingham et al., 2016; Johnsen, 2016). These constraints are not only due to mandated assessments, but are also created by expectations of community stakeholders and post-secondary institutions (Bingham et al., 2016, p. 26).

Implications

Personalized learning has the potential to increase gains in student achievement by implementing the student voice in curricular decisions, flexible groupings, data-based decision-making, and technology integration (Basham et al., 2016; Busher, 2012; Childress & Benson, 2014; Garn & Jolly, 2014; Gillard, Gillard, & Pratt, 2015; Hopkins, 2014). The five essential elements of personalized learning were the focus of this study to target strengths and weaknesses within content areas to enable the creation of personalized solutions to promote teacher growth with this mode of instruction and engage students in their learning. Along with the essential elements, teachers' expectancies and value of personalized learning in the instructional environment were analyzed to determine measures that can be taken by school district leadership to support teachers in implementing personalized learning and, in turn, increase overall student achievement.

Summary

By utilizing innovative instructional methods such as personalized learning to increase student engagement, teachers are better able to design learning opportunities for students that not only emphasize current learning, but also solicit interests in college and potential career goals (Nordgren, 2013; Reeve, 2013; Tlhoaele et al., 2014). However, according to the research, teacher implementation of personalized learning brings about challenges in effective curricular design: teachers lack of training in instructional methods, in meaningful use of student data, in technology integration and in successful personalized teaching models to reference (Abbott & Wren, 2016; Bingham et al., 2016;

Busher, 2012; Deschler, 2015; Prain, et al., 2013; Shapiro & Wardrip, 2015; Yu & Okojie, 2017). These challenges support the need to investigate the challenges secondary teachers have in implementing a personalized learning environment in their content area. In this study, the research questions drove the investigation so that inconsistencies amongst personalized learning implementation across content areas were discovered using quantitative means and further analyzed using qualitative research.

A mixed-methods research study was conducted to define the challenges faced by teachers while implementing a personalized learning environment in their content area. Data collected from teacher interviews, classroom observation, and archival district survey data on the essential elements of personalized learning (knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration) were analyzed to gain insights into the strengths and weaknesses of personalized learning implementation across content areas. Section 1 outlined the benefits of a personalized learning environment and how that environment influences student achievement. The problem, however, illustrated the lack of personalized learning implementation across content areas.

The literature review examined how the implementation of a personalized learning environment increases student engagement and achievement. Previous research also illustrated challenges in successful implementation of personalized learning including the balance between teacher and student responsibilities, lack of exemplary models, available resources, and integrating content standards. The discussion of prior

research supports this study on the challenges of teacher implementation of personalized learning across content areas.

The methodology presented in Section 2 will outline the mixed-methods approach for this study. Archival survey data from the school district on the implementation of each of the five personalized learning essential elements across content areas directed the qualitative component of this research. Teacher interviews and classroom observations provided an individual perspective on the challenges of implementing a personalized learning environment. The data provided the overall picture of implementing personalized learning: challenges, interventions, and successes. This information provided the starting point for designing professional development to better support the implementation of personalized learning in individual content areas in secondary classrooms.

Section 2: The Methodology

Research Design and Approach

A mixed-methods research study was conducted to better understand the challenges secondary teachers have when implementing a personalized learning environment in their content area. Creswell (2012) stated that mixed methods should be used to build upon the strengths of both qualitative and quantitative research to gain a better understanding of the phenomena being studied. An explanatory sequential mixed-methods design allowed for the collection and analysis of the quantitative data to inform the qualitative portion of the research, which elaborated upon the quantitative results (Creswell, 2012; Creswell & Plano Clark, 2007). The quantitative component was archival district survey data that described the implementation of each of the five essential elements of personalized learning: knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration. Two qualitative data components were used in this study: classroom observation data and interview transcripts.

Participants

This research included teacher participants from a midwestern urban public school district. I worked with the participating school district to recruit participants that meet the criteria necessary for this study. The quantitative component of the research included secondary teachers (Grades 7-12) who completed the school district's 2017 strategic plan survey. This survey was completed by 475 K-12 staff members. Among secondary teachers, there were 182 responses out of a sample size of 216. For this

research, data from departments with at least 10 staff members were used. Departments meeting this criterion included the following: language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business).

For the qualitative component of this study, eight participants were selected, using purposeful sampling techniques. Participants targeted through purposeful sampling techniques can offer descriptive and detailed data (Creswell, 2012; Lodico, Spaulding, & Voegtle, 2010; Merriam, 2009). The goal for purposeful sampling techniques was to ensure the selection of secondary teachers (Grades 9-12) from each of the following groups: language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business). These participants may or may not have completed the 2017 strategic plan survey; however, their department was represented in the quantitative data. Using a maximum variation sample provided a diverse participant group that represented multiple content areas to provide the broadest possible range of experiences (Lodico, Spaulding, & Voegtle, 2010; Merriam, 2009).

Researcher-Participant Relationship

It was essential that the researcher's and participants' roles in this research study were clearly established. Each participant in the qualitative component of this study received a clear and concise explanation of the purpose of the research (Creswell, 2012; Merriam, 2009). By participating in this study, participants contributed their perspectives on the challenges of implementing personalized learning in their content areas which

aided in the design of potential future professional development offerings. Participants had the opportunity to partake in member checks to ensure internal validity (Merriam, 2009) after initial coding. I provided the participant with an interview transcript and a list of emerging themes from qualitative data to examine to ensure that no misinterpretation occurred throughout the data collection and analysis process.

Protection of Participants

It is the responsibility of the researcher to guarantee the protection of researcher study participants (Lodico, Spaulding, & Voegtle, 2010). In the quantitative phase of this study, all survey respondents' names were removed from the data provided by the research site. The data provided included overall building responses and responses by secondary content area teachers. For the qualitative component of this study, an informed consent form was provided to participants explaining the expectations of participants, ensuring the confidentiality of data collected from the participant, and outlining the security of their information (Lodico, Spaulding, & Voegtle, 2010; Merriam, 2009). Participating teachers were given a pseudonym that reflected only their content area and grade level.

Role of the Researcher

It is the responsibility of the researcher to provide a clear purpose of the research to the participating school district and qualitative participants. I ensured confidentiality for all parties involved throughout the data collection process. During the quantitative component, I collaborated with school district leadership to collect all available survey data. Throughout the qualitative research process, I conducted classroom observations.

During the observation process I used an observational protocol to record field notes without becoming a distraction to the learning environment (Creswell, 2012; Lodico, Spaulding, & Voegtle, 2010). Before interviews were conducted, I provided the teacher participants with a copy of the interview questions. The interviews were recorded to aide in the transcription of interview data. Since I, the researcher, am an employee of the research site school district, it was essential that I did not have an evaluative professional role over any participants to protect all rights of willing participants.

Data Collection

Quantitative Data Collection

The quantitative component consisted of archival data from a 2017 district administered survey regarding the implementation of each of the five essential elements of personalized learning. The Assistant Superintendent of Curriculum, Instruction, and Assessment of the participating school district granted access to the 2017 strategic plan data. The school district used an independent research firm to collect the strategic plan survey data and organize the results by building, grade level, and secondary content departments. This independent firm created a Likert-scale survey using questions written by district stakeholders to collect strategic plan data. Although data was collected from staff, students, and parents regarding the use of personalized learning, technology, and literacy standards across the school district only the staff results were utilized for the purpose of this study. The quantitative data was gathered from five questions focused on the use of personalized learning in the classroom. The strategic plan survey questions utilized for this research asks teachers to identity the number of times each of the five

essential elements of personalized learning (knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration) was used in the classroom in a 10-day period. The survey questions that were analyzed to answer the quantitative research question are provided in Appendix B. The survey data provided the frequency that each of the five essential elements of personalized learning was implemented in a 10-day period by teachers in each content area department. Data from the various departments was analyzed to declare strengths and weaknesses in overall personalized learning implementation.

Qualitative Data Collection

Classroom observations were scheduled to begin the qualitative research process. Each observation was scheduled for a time where the participant planned to implement personalized learning opportunities in the lesson design. An observational protocol checklist, which can be found in Appendix D, was used to gather classroom data during personalized learning opportunities from teacher participants. The use of an observational protocol document including questions and space for field notes was used to focus the observation on the needs of the study. (Lodico, Spaulding, & Voegtle, 2010, p. 116-119). According to Merriam (2009) observations include the following elements: physical setting, participants, activities and interactions, and conversations (p. 120-121). Data on each of the five personalized learning essential elements (knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration) was collected by recording the frequency that each element was used in the lesson: never (not evident in the lesson), seldom (seen once or twice in the

lesson), often (used multiple times during the lesson), and consistently (fully integrated into lesson). Space was available for additional notes on the integration of each component. The observational protocol used for this research was adapted from an observation tool created by the participating school district and the district's 2016-2017 Strategic Plan. The data collected from the observational protocol built upon the quantitative data from the teacher participant's content area department.

A semi-structured interview was conducted after the classroom observation with the participating teacher which lasted 15-30 minutes. The purpose of a semi-structured interview was to allow for follow up questions throughout the interview process based on the participants' responses (Lodico, Spaulding, & Voegtle, 2010, p. 124). The interview provided more in depth information regarding lesson design used in the observed class, expectancies and values of personalized learning, along with teachers' perspectives on the challenges of implementing personalized learning in their classroom. The interview protocol (Appendix E) for each participant initially consisted of the same questions and was adjusted to attain more details based on activities and events seen during the observation of the participant's classroom. The quantitative data from the participant's content area department was included in the interview questions to gain a better understanding of strengths and weaknesses in implementing personalized learning for that specific content area. To ensure the validity of the interview data, participants were given a transcript following the interview to review and ensure their responses have been accurately recorded prior to the start of data analysis.

Data Analysis

Quantitative Data Analysis

Statistical testing was conducted to analyze the use of personalized learning elements by secondary teachers. In 2017, 216 secondary staff members were given the strategic plan survey and 182 responses were collected. Percentages regarding the use of each of the five essential elements were provided in the following categories: Grades K-12, elementary (Grades K-6) teachers, middle school (Grades 7-8) teachers, and high school (Grades 9-12). The 2017 data was further broken down by content area for secondary teachers (Grades 7-12). Only the data for middle school and high school teachers was utilized for the purposes of this study. Content areas in the data set include language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business). The data was analyzed by content area groupings using an analysis of variance test (ANOVA) which allowed for the examination of the extent of implementation of personalized learning by content area (language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business)) at the secondary level. G*Power software was used to determine that the sample size was adequate for ANOVA testing. ANOVA testing informed the researcher if any significant differences arose amongst content area groups. If a significant difference was evident in the quantitative data, a

Tukey post hoc test was conducted to search for statistical significance between content areas.

The analysis of the quantitative data informed the qualitative research components. The quantitative data was used in the interview process to better understand teachers' expectancies on why specific elements of personalized learning are use the least and the most for specific content areas. Expectancy–value theory states that an individual's choices are tied to their value of the task (Atkinson & Reitman, 1956). For the purpose of this research, the task is the implementation of personalized learning. Thus, teachers' expectancies and values of personalized learning would influence their survey responses. The quantitative data analysis provided a focus to both qualitative components: classroom observations and interviews. Whereas the quantitative data showed which personalized learning essential elements are most valued (more frequently used) versus which essential elements are least valued (less frequently used), the qualitative research component provided a better understanding of teachers' expectancies and values of each of the five personalized learning essential elements. The qualitative research components provided a means to observe elements implemented into instruction and an opportunity for participants to elaborate on their experiences with personalized learning and state their point of view on their department's quantitative data.

Two types of qualitative data were collected from each individual study participant: a single classroom observation and a semi-structured interview taking place shortly after the observation. The research of Basham et al. (2016) focused on the development of an operational understanding of personalized learning, researchers first

conducted observations to develop initial themes for their research. After the development of personalized learning themes, researchers then conducted interviews and additional observations to support their initial findings (p. 129). Similar to the work of Basham et al. (2016), the qualitative component of this research first consisted of a classroom observation noting the use of each of the five personalized learning essential elements.

Qualitative Data Analysis

Merriam (2009) stated that data analysis begins looking for data that is "responsive to the purpose of the research" (p. 185). Research Question 2 was answered through the observational data collection process. To prepare for the data analysis, the observational protocol checklist was designed to separate each personalized element (knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration). Using each personalized learning element as category for qualitative data supported the need for categories to be mutually exclusive, sensitizing, and conceptually congruent (Merriam, 2009). Themes were generated from each category using the coded data from the observation. Lodico, Spaulding, and Voegtle (2010) stated the development of themes will create an organizational framework providing a more in depth understanding of the data (p. 185). The observation data guided interview questions three and four which asked the participant to elaborate on the planning and implementation of personalized learning during the observed lesson. The developed themes instilled a focus for the direction of the interview, where the participant was able to express their expectancies of the

effectiveness of personalized learning and the value of each component as it pertained to student learning in their specific content area.

Interview transcripts from all participants were analyzed using an open coding process to determine initial themes. Merriam (2009) described open coding as a process where the researcher searches for qualitative data that may assist with the answers to research questions. During the open coding process, I took notes regarding data that may be useful in answering the research questions. Using an analytical coding procedure, these initial codes were grouped into categories to look for emerging themes within the qualitative data (Merriam, 2009, p. 180). Once the data analysis was completed and the finding were prepared, participants had the opportunity to participate in member checks. Merriam (2009) referred to member checks as means for internal validity (or credibility) and called this process respondent validation (p. 217). This allowed for participants to respond to the findings of the study and offer comments.

Throughout the qualitative data analysis process, triangulation of the multiple sources of data was used to compare collected data. Triangulation of data increases research credibility as multiple measures of data are compared (Lodico, Spaulding, & Voegtle, 2010; Merriam, 2009). The quantitative and qualitative research data materialized to provide results for the three research questions to better understand teacher challenges in implementing personalized learning for their content area based on teacher expectancies and values. Research Question 1 was addressed in the quantitative data collection while Research Questions 2 and 3 were answered using qualitative methods.

Results

This mixed-methods study on teachers' challenges in implementing personalized learning in content areas focuses on personalized learning practices of secondary teachers (Grades 7-12). The qualitative portion of this study utilizes the 2017 strategic plan data from the participating school district. Classroom observations and teacher interviews comprise the qualitative component.

The data collected for this study was taken from a population of 165 secondary teachers currently teaching in the selected content areas. The 2017 strategic plan data for the qualitative component of this study included responses from the 138 survey participants in the identified content areas: language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business). The population and sample size is reported in Table 1.

Table 1

Population and Sample Size

Group name	Population	*N*	%
Language arts & world language	46	46	100
Mathematics & engineering	32	27	84.38
Performing & visual arts	17	10	58.82
Science & health	36	33	91.67
Social science & business	34	22	64.71
Total	165	138	83.64

Quantitative Data Analysis

The quantitative data was used to analyze the reported use of personalized learning elements by secondary content teachers in each of the content area groupings:

language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business) which answers the quantitative research question. A null hypothesis and non-directional alternate hypothesis was also identified for this research.

> RQ1 (Quantitative): How does the implementation of each of the personalized learning essential elements differ between content area departments?
>
> H_0: There is no significant difference in the implementation of personalized learning essential elements amongst secondary content area departments in a midwestern urban school district.
>
> H_A: There is a difference in the implementation of personalized learning essential elements amongst secondary content area departments in a midwestern urban school district.

The quantitative research question was divided into five subquestions to allow analysis of each personalized learning element: knowing your learners, student voice and choice, flexible grouping and space, data-informed instruction, and technology integration.

Knowing Your Learners

The personalized learning element, knowing your learners, is defined as the actions taken by teachers to gather information about each learner and how instruction is planned to meet the needs of the learner. Examples of actions taken by teachers to know their learners may include student inventories and formative assessments (Rutledge, Cohen-Vogel, Osborne-Lampkin, and Roberts, 2015; The Institute for Personalized

Learning, 2015). The research question, null hypothesis, and non-directional alternate hypothesis for the personalized learning element knowing your learners are as follows:

RQ1(a): How does the implementation of the personalized learning essential element, knowing your learners, differ between content area departments?

H_0(a): There is no significant difference in the implementation of the personalized learning element, knowing your learners, amongst secondary content area departments in a midwestern urban school district.

H_A(a): There is a difference in the implementation of the personalized learning element, knowing your learners, amongst secondary content area departments in a midwestern urban school district.

The following 2017 strategic plan survey question focused on knowing your learners, Thinking of the last 10 school days combined, how many days did you do an activity to get to know your students, or intentionally make a classroom decision based on information you have learned about your students? Table 2 summarizes data collected from the responses to this question. The mean represents the average number of days (out of a 10-day period) knowing your learners was implemented by each curricular group. The table illustrates each content area grouping's use of knowing your learners in classroom instruction from largest to smallest mean. The percent that *N* is of the entire sample is also provided.

Table 2

Personalized Learning Element: Knowing Your Learners

	Mean	*N*	%	Standard deviation
Social science & business	5.64	22	15.94	3.874
Language arts & world language	4.83	46	33.33	2.984
Mathematics & engineering	4.70	27	19.56	3.698
Performing & visual art	4.30	10	7.25	3.561
Science & health	2.94	33	29.91	2.783
Total	4.44	138		3.361

According to the mean, in 2017 the social science and business content area has the highest reported days of implementation of the knowing your learners, whereas, the science and health content area have the least number of days of implementation of the same personalized learning essential element.

Table 3

One-Way Analysis of Variance of Knowing Your Learners by Content Area Departments

Knowing your Learners	Sum of squares	*df*	Mean square	*F*	Sig.
Between groups	114.728	4	28.682	2.661	.035
Within groups	1433.308	133	10.777		
Total	1548.036	137			

There exists a significant effect on the implementation of knowing your learners in instruction according to teachers [$F(4, 133) = 2.661$, $p = 0.035$]. The significance value of the F test is less than 0.05 (or 5%), which rejects the null hypothesis, H_0(a), and accepts the alternate hypothesis, H_A(a). Thus, there is a significant difference between the days of implementation of the personalized learning element of knowing your learners amongst content areas.

Post hoc comparisons using the Tukey test was conducted to look for significance between content area groupings. Table 4 summarizes the results of the Tukey test the personalized learning element knowing your learners. Content area departments were assigned the following codes: 1 – language arts (including world language), 2 – mathematics (including engineering and technology, 3 – performing and visual arts, 4 – science (including health and physical education, 5 – social science (including business). The comparison of science (including health and physical education) and social science (including business), groups 4 and 5 has a p-value less than 0.05 ($p = 0.027$) which notes a significance in how these content areas implementation of knowing your learners. Thus, the social science content area subgroup implements knowing your learners statistically significantly more frequently in a 10-day period than the science content area subgroup.

Table 4

Multiple Comparisons Content Area Department Implementation of Knowing Your Learners (Tukey Post Hoc)

Department (I)	Department (J)	Mean difference (I-J)	Std. error	Sig.	95% Confidence level Lower bound	95% Confidence level Upper bound
1	2	.122	.796	1.000	-2.08	2.32
	3	.526	1.145	.991	-2.64	3.69
	4	1.887	.749	.092	-.18	3.96
	5	-.810	.851	.876	-3.16	1.54
2	3	.404	1.215	.997	-2.96	3.76
	4	1.764	.852	.239	-.59	4.12
	5	-.933	.943	.860	-3.54	1.67
3	4	1.361	1.185	.781	-1.92	4.64
	5	-1.336	1.252	.823	-4.80	2.13
4	5	-2.697[a]	.904	.027	-5.20	-.20

[a]The mean difference is significance at the 0.05 level.

Student Voice and Choice

Student voice and choice refers to the opportunities given to students to make decisions regarding their personal learning paths. Examples of student voice and choice includes allowing students to alter assignments to make them more meaningful, as well as, providing encouragement for students to take learning risks (Basham et al., 2016; Busher, 2012; Childress & Benson, 2014; Garn & Jolly, 2014; Gillard, Gillard, & Pratt, 2015; Hopkins, 2014; The Institute for Personalized Learning, 2015). The research question, null hypothesis, and non-directional alternate hypothesis for the personalized learning element student voice and choice are as follows:

RQ1(b): How does the implementation of the personalized learning essential element, student voice and choice, differ between content area departments?

H_0(b): There is no significant difference in the implementation of the personalized learning element, student voice and choice, amongst secondary content area departments in a midwestern urban school district.

H_A(b): There is a difference in the implementation of the personalized learning element, student voice and choice, amongst secondary content area departments in a midwestern urban school district.

The following 2017 strategic plan survey question focused on student voice and choice, Thinking of all your preps combined, in a typical school day period, how many days did you implement voice and choice in student assignments/activities in your classroom? Table 5 summarizes data collected from the responses to this question. The mean represents the average number of days that student voice and choice was implemented by

each curricular group. The table illustrates each content area grouping's use of student voice and choice in classroom instruction from largest to smallest mean calculated out of a 10-day period along with the percent that *N* is of the entire sample.

Table 5

Personalized Learning Element: Student Voice and Choice

	Mean	*N*	%	Standard deviation
Language arts & world language	5.37	46	33.33	2.969
Performing & visual art	5.00	10	7.25	4.028
Social science & business	4.68	22	15.94	3.138
Mathematics & engineering	3.19	27	19.56	2.760
Science & health	2.61	33	29.91	2.536
Total	4.14	138		3.126

According to the mean, in 2017 the language arts and world language content area has the highest reported days of implementation of the student voice and choice, whereas, the science and health content area has the least number of days of implementation of the same personalized learning essential element.

Table 6

One-Way Analysis of Variance of Student Voice and Choice by Content Area Departments

Student voice and choice	Sum of squares	*df*	Mean square	*F*	Sig.
Between groups	185.658	4	46.415	5.352	.001
Within groups	1153.443	133	8.673		
Total	1339.101	137			

There exists a significant effect on the implementation of student voice and choice in instruction according to teachers [$F(4, 133) = 5.352$, $p = 0.001$]. The significance value of the *F* test is less than 0.05 (or 5%), which rejects the null hypothesis, H_0(a), and accepts the alternate hypothesis, H_A(a). Thus, there is a statistically significant difference between

the days of implementation of the personalized learning element of voice and choice amongst content areas.

Post hoc comparisons using the Tukey test was conducted to look for significance between content area groupings. Table 7 summarizes the results of the Tukey test for student voice and choice. The comparison between language arts (including world language) and mathematics (including engineering and technology), groups 1 and 2 has a p-value less than 0.05 ($p = 0.022$) which notes a statistically significant difference in how much the teachers in these content areas implement student voice and choice. In addition, language arts (including world language) and science (including health and physical education), groups 1 and 4 have a p-value less than 0.05 ($p = 0.001$) which also notes a statistically significant difference in how much these two content areas implement student voice and choice. Thus, the language arts content area subgroup implements student voice and choice statistically significantly more frequently in a 10-day period than the mathematics and science content area subgroups.

Table 7

Multiple Comparisons of Content Area Department Implementation of Student Voice and Choice (Tukey Post Hoc)

Department (I)	Department (J)	Mean difference (I-J)	Std. error	Sig.	95% Confidence level Lower bound	95% Confidence level Upper bound
1	2	2.184[a]	.714	.022	.21	4.16
	3	.370	1.028	.996	-2.47	3.21
	4	2.764[a]	.672	.001	.91	4.62
	5	.688	.763	.896	-1.42	2.80
2	3	-1.815	1.090	.459	-4.83	1.20
	4	.579	.764	.942	-1.53	2.69
	5	-1.497	.846	.396	-3.84	.84
3	4	2.394	1.063	.167	-.55	5.33
	5	.318	1.123	.999	-2.79	3.42
4	5	-2.076	.811	.084	-4.32	.17

[a]The mean difference is significance at the 0.05 level.

Flexible Groupings and Space

The personalized learning element, flexible groupings and space, focuses on the use of classroom space and student groupings. This includes modifications teachers make to the learning environment for instructional activities and decisions that are made when assigning student groups for learning (Basham et al., 2014; Deed et al., 2014a; Deed et al., 2014b; The Institute for Personalized Learning, 2015). The research question, null hypothesis, and nondirectional alternate hypothesis for the personalized learning element flexible groupings and space are as follows:

RQ1(c): How does the implementation of the personalized learning essential element, flexible groupings and space, differ between content area departments?

H_0(c): There is no significant difference in the implementation of the personalized learning element, flexible grouping and space, amongst secondary content area departments in a midwestern urban school district.

H_A(c): There is a difference in the implementation of the personalized learning element, flexible grouping and space, amongst secondary content area departments in a midwestern urban school district.

The following 2017 strategic plan survey question focused on flexible groupings and space, Thinking of all your preps combined, in a typical 10 school day period, how many days did you implement activities with flexible student groupings or flexible classroom space? Table 8 summarizes data collected from the responses to this question. The mean represents the average number of days that flexible groupings and space was implemented by each curricular group out of a 10-day period. The table illustrates each content area grouping's use of flexible groupings and space in classroom instruction from largest to smallest mean along with the percent that *N* is of the entire sample.

Table 8

Personalized Learning Element: Flexible Groupings and Space

	Mean	*N*	%	Standard deviation
Language arts & world language	4.89	46	33.33	3.328
Social science & business	4.41	22	15.94	3.712
Performing & visual art	3.90	10	7.25	3.725
Mathematics & engineering	3.52	27	19.56	3.412
Science & health	3.36	33	29.91	3.131
Total	4.11	138		3.404

According to the mean, in 2017 the language arts and world language content area has the highest reported days of implementation of the flexible groupings and space, whereas, the

science and health content area has the least number of days of implementation of the same personalized learning essential element.

Table 9

One-Way Analysis of Variance of Flexible Groupings and Space by Content Area Departments

Flexible groupings and space	Sum of squares	*df*	Mean square	*F*	Sig.
Between groups	58.318	4	14.579	1.268	.286
Within groups	1529.052	133	11.497		
Total	1587.370	137			

There does not exist a significant effect on the implementation of flexible groupings and space in instruction according to teachers [$F(4, 133) = 1.268$, $p = 0.286$]. The significance value of the F test is greater than 0.05 (or 5%), which accepts the null hypothesis, H_0(a), and rejects the alternate hypothesis, H_A(a). Thus, there is no statistically significant difference between the days of implementation of the personalized learning element of flexible groupings and space amongst content areas.

Data-Informed Instruction

Data-informed instruction is defined at the ongoing actions by teachers to assess student learning and adjust instruction based on the assessment. This element may be implemented through formative assessment throughout a lesson or pre-assessments to help determine student groupings by ability or interests (Abbott & Wren, 2016; Deschler, 2015; Lin et al., 2013; Shapiro & Wardrip, 2015; The Institute for Personalized Learning, 2015). The research question, null hypothesis, and non-directional alternate hypothesis for the personalized learning element data-informed instruction are as follows:

RQ1(d): How does the implementation of the personalized learning essential element, data-informed instruction, differ between content area departments?

H_0(d): There is no significant difference in the implementation of the personalized learning element, data-informed instruction, amongst secondary content area departments in a midwestern urban school district.

H_A(d): There is a difference in the implementation of the personalized learning element, data-informed instruction, amongst secondary content area departments in a midwestern urban school district.

The following 2017 strategic plan survey question focused on data-informed instruction, Thinking of all your preps combined, in a typical 10 school day period, how many days did you implement data informed activities? Table 10 summarizes data collected from the responses to this question. The mean represents the average number of days that data-informed instruction was implemented by each curricular group. The table illustrates each content area grouping's use of data-informed instruction in classroom instruction from largest to smallest mean out of a total of 10 days. The percent that *N* is of the entire sample is also provided.

Table 10

Personalized Learning Element: Data-Informed Instruction

	Mean	*N*	%	Standard deviation
Social science & business	4.91	22	15.94	3.741
Language arts & world language	3.65	46	33.33	2.643
Performing & visual art	3.60	10	7.25	2.989
Mathematics & engineering	3.48	27	19.56	3.203
Science & health	2.88	33	29.91	2.870
Total	3.63	138		3.050

According to the mean, in 2017 the social science and business content area has the highest reported days of implementation of data informed activities, whereas, the science and health content area has the least number of days of implementation of the same personalized learning essential element.

Table 11

One-Way Analysis of Variance of Data-Informed Instruction by Content Area Departments

Data Informed Activities	Sum of squares	*df*	Mean square	*F*	Sig.
Between groups	55.243	4	13.811	1.507	.204
Within groups	1218.909	133	9.165		
Total	1274.152	137			

There does not exist a significant effect on the implementation of data-informed instruction according to teachers [$F(4, 133) = 1.507$, $p = 0.204$]. The significance value of the F test is greater than 0.05 (or 5%), which accepts the null hypothesis, H_0(a), and rejects the alternate hypothesis, H_A(a). Thus, there is no statistically significant difference between the days of implementation of the personalized learning element of data informed activities amongst content areas.

Technology Integration

The personalized learning element of technology integration refers to the utilization of technology to make learning more meaningful to students. Technology integration includes the type of technology used along with how the technology enhances student learning. Examples of technology includes the incorporation of learning software to practice specific content skills, using technology to model phenomena, or the use of technology by students to create and present their learning (Delgado et al., 2015: Mitchell

et al.,2016; The Institute for Personalized Learning, 2015). The research question, null hypothesis, and non-directional alternate hypothesis for the personalized learning element technology integration are as follows:

RQ1(e): How does the implementation of the personalized learning essential element, technology integration, differ between content area departments?

H_0(e): There is no significant difference in the implementation of the personalized learning element, technology integration, amongst secondary content area departments in a midwestern urban school district.

H_A(e): There is a difference in the implementation of the personalized learning element, technology integration, amongst secondary content area departments in a midwestern urban school district.

The 2017 strategic Plan survey question focused on knowing your learner, Thinking of all your preps combined, in a typical 10 school day period, how many days did you integrate technology into your lessons*?* Table 12 summarizes data collected from the responses to this question along with the percent that *N* is of the entire sample is also provided. The mean represents the average number of days out of 10 that technology integration was implemented by each curricular group.

Table 12

Personalized Learning Element: Technology Integration

	Mean	*N*	%	Standard deviation
Social science & business	7.68	22	15.94	2.801
Language arts & world language	6.93	46	33.3	2.847
Mathematics & engineering	5.96	27	19.56	3.546
Performing & visual art	4.40	10	7.25	3.340
Science & health	4.09	33	29.91	2.754
Total	6.00	138		3.251

According to the mean, in 2017 social science and business content area has the highest reported days of implementation of the technology integration, whereas, the science and health content area has the least number of days of implementation of the same personalized learning essential element. The table illustrates each content area grouping's use of student voice and choice in classroom instruction from largest to smallest mean.

Table 13

One-Way Analysis of Variance of Technology Integration by Content Area Departments

Technology integration	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between groups	248.333	4	62.083	6.883	.000
Within groups	1199.667	133	9.020		
Total	1448.000	137			

There exists a significant effect on the implementation of technology integration in instruction according to teachers [$F(4, 133) = 6.883$, $p = 0.000$]. The significance value of the F test is less than 0.05 (or 5%), which rejects the null hypothesis, H_0(a), and accepts the alternate hypothesis, H_A(a). Thus, there is a statistically significant difference between the days of implementation of the personalized learning element of integrating technology amongst content areas. Social science and business had the highest

implementation of technology in a 10-day period while science and health reported the least number of days implementing the same element.

Post hoc comparisons using the Tukey test was conducted to look for statistical significance between content area groupings. Table 14 summarizes the results of the Tukey test for technology integration. For technology integration three content area comparisons have a p-value less than 0.05. Thus, there exists a statistically significant difference in how often technology is integrated into instruction in a 10-day period: language arts and science (groups 1 and 4) has a p-value of 0.001, performing and visual arts and social science (groups 3 and 5) has a p-value of 0.038, and science and social science (groups 4 and 5) has a p-value of 0.000. Thus, the language arts content area subgroup implements the personalized element of technology integration statistically significantly more frequently in a 10-day period than the science content area subgroup. The data also supports that the social science content area subgroup integrates technology statistically significantly more frequently in a 10-day period than the science and arts content area subgroup.

Table 14

Multiple Comparisons of Content Area Department Implementation of Technology Integration (Tukey Post Hoc)

Department (I)	Department (J)	Mean difference (I-J)	Std. error	Sig.	95% Confidence level Lower bound	95% Confidence level Upper bound
1	2	.972	.728	.670	-1.04	2.99
	3	2.535	1.048	.117	-.36	5.43
	4	2.844[a]	.685	.001	.95	4.74
	5	-.747	.779	.873	-2.90	1.41
2	3	1.563	1.112	.625	-1.51	4.64
	4	1.872	.779	.121	-.28	4.03
	5	-1.719	.863	.275	-4.10	.67
3	4	.309	1.084	.999	-2.69	3.31
	5	-3.282[a]	1.145	.038	-6.45	-.11
4	5	-3.591[a]	.827	.000	-5.88	-1.30

[a] The mean difference is significance at the 0.05 level.

Qualitative Data Analysis

Two qualitative research questions were used to investigate teachers' expectancies, values, and challenges as they pertain to the implementation of personalized learning across content areas. The qualitative research questions are as follows:

> RQ2 (Qualitative): How do teachers' expectancies and value of personalized learning influence the extent to which they implement personalized learning essential elements (knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology support) in their content areas?
>
> RQ3 (Qualitative): What do teachers perceive as challenges in implementing a personalized learning environment in their content area?

Classroom observations and interviews were used in the qualitative research process.

Participants in the qualitative component of this study represent each of the following content area groupings: language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business). I worked with the cooperating school district to gain access to a list of potential study participants. Twenty-one invitations to participate were sent to potential teacher participants. Twelve teachers responded to the invitation and eight teachers volunteered to participate in the qualitative portion of this study. There was at least one volunteer participant for each content area grouping. Each participant allowed the researcher to observe one class. The length of each class varied from 40-80 minutes depending on the structure of the course. Within 48 hours after the classroom observation, the teacher partook in a 10-question interview with the researcher.

After the initial coding, the observation and interview coded data was sorted into each of the five personalized learning elements: knowing your learner, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration. Within each element the data was further sorted to answer each of the two qualitative research questions.

Knowing Your Learners

Knowing your learners represents the actions teachers take to understand the needs of each learner. Essential to knowing your learners is building relationships with student. In all eight observed lessons, teachers checked in on students during independent

or small group work time using the teacher-student relationship to promote learning. During the interviews one teacher from each of the following categories: language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, and science (including health and physical education) mentioned that the amount of help that is offered to students is determined by the student skill level on the lesson objectives. Two of the eight teachers also mentioned that in their courses students are grouped by skill level; these teachers were in the science (including health and physical education) and the mathematics (including engineering and technology) content areas.

Focusing on RQ2, all eight teacher participants expressed high expectancies and values on this personalized learning element and its power to influence student achievement. During the interviews, four of the eight participants described knowing your learner as the means that teachers identify where students are in terms of content knowledge and to help students move forward. Both teacher participants in the mathematics (including engineering and technology) subgroup explained that when teachers tailor curriculum to individual students' needs to meet how students learn best increases student engagement and investment in learning. One teacher in this subgroup further explained during the interview that teachers must have an awareness of which students need additional help, time, and resources including knowledge of individualized educational plans (IEPs) and accommodations for students. Other implementation efforts mentioned in this interview include understanding class dynamics and planning instruction accordingly, and assigning learning tasks based on students' skills and

strengths. Table 15 summarizes teacher implementation efforts (RQ2) that were either observed during the lesson or mentioned during the interview for the personalized learning element knowing your learners.

Table 15

Content Area Implementation of Knowing Your Learners

Content area	Total participants	Implementation of personalized learning element (number of mentions)
Language arts (including world language)	1	• Use of student skills from previous learning (1) • Assistance provided to students based on skill level (1)
Mathematics (including engineering and technology)	2	• Course set by student skill level (1) • Lesson design based on class dynamics (1) • Awareness of student individualized education plans (1) • Assistance provided to students based on skill level (1)
Performing and visual arts	2	• Teacher chooses performance task for students (1) • Assistance provided to students based on skill level (1) • Teacher-student conversations (1)
Science (including health and physical education)	2	• Course set by student skill level (1) • Assistance provided to students based on skill level (1) • Teacher-student conversations (1)
Social science (including business)	1	• Resources given to students to assist in research efforts (1) • Assistance provided to students based on skill level (1)

RQ3 investigates challenges as perceived by teachers when implementing personalized learning within their content area. During the observed lessons, little evidence was collected where teachers gathered data on student learning needs for that specific lesson. Only in one lesson from the science (including health and physical

education subgroup) did the teacher ask students about their preferred learning mode for the day's learning. However, casual conversations between teachers and students during lesson transitions along with learning checks-in throughout student work time were observed in every lesson. In the interview, a participant from the performing and visual arts subgroup stated that "knowing your learner requires a lot of human management." One participant in the science (including health and physical education) subgroup felt that this element needed further clarification: does it focus on students' interests or how students learn best?

Time for adequate lesson preparation, grading, and data analysis was another concern with knowing your learners. All eight teachers shared concerns of meeting the needs of students that learn differently and have different needs. The same participant in the science (including health and physical education), as well as, a teacher in the language arts (including world language) subgroup voiced the concern that with high student caseloads of 130 or more students, it takes time to get to know about all students. This teacher found it difficult to address the needs of so many students while making sure students do not "fly under the radar." Some students demand more teacher attention during the learning process while other students do not seek teacher guidance or ask questions during class. With limited class time, it is a challenge to work with all students individually and allocate time to help everyone grow as a learner.

Student Voice and Choice

Student voice and choice emphasizes student empowerment to take ownership on their learning experiences. During the interviews, one participant stated that student voice

and choice encourages "students take risks throughout the learning process." Teachers illustrated student voice and choice in multiples forms during the eight observed lessons such as providing students different ways to learn the content, allowing students to pick partners or topics to study, promoting student creativity, and how to show mastery of content. During the observations, two of the eight teachers allowed students to choose their mode of learning; these teachers were from the language arts (including world languages) and science (including health and physical education) content areas. A teacher from the science (including health and physical education) content area grouping provided three options for learning during the observed lesson. Students were able to choose a short lecture from the teacher, an online learning activity, or conduct an experiment to meet the lesson objective. Both teachers in the performing and visual arts content area shared in the interview that student voice and choice is the focus of promoting student creativity. One of these teachers stated "voice and choice promotes creative expression and decision making throughout learning" which encourages students to interpret assigned and add a personal touch. During the observation of a teacher from the social sciences subgroup, students were to choose from a given list of topics and create a presentation on that topic. Students were also allowed to advocate for a topic of their own choosing. A teacher in the mathematics subgroup mentioned during the interview she offers choice by encouraging students to attempt challenging problems and allowing students to investigate topics that would support multiple ways to solve the same problem. Table 16 summarizes teacher implementation efforts (RQ2) that were

either observed during the lesson or mentioned during the interview for the personalized learning element student voice and choice.

Table 16

Content Area Implementation of Student Voice and Choice

Content area	Total participants	Implementation of personalized learning element (number of mentions)
Language arts (including world language)	1	• Student choice in writing focus (1) • Options for presentation of final work (1) • Encourage students to take risks in a safe environment (1) • Student choice in how to record data (1)
Mathematics (including engineering and technology)	2	• Daily goal setting for project work (1) • Students encouraged to take risks on assigned problem (1) • Students encouraged to attempt additional problems as time allows (2) • Resources available for student use (2)
Performing and visual arts	2	• Student input on tasks and projects (2) • Student self-expression and creativity encouraged (2) • Student development of personal artistic style (2) • Student interpretation of performance (voice, emotion, blocking) (1)
Science (including health and physical education)	2	• Students given choice of what skills to practice (1) • Students given options of learning mode with options to change mode, if necessary (1)
Social science (including business)	1	• Students allowed to choose topic to research (1) • Students allowed to choose the mode of project presentation (1)

Although teachers expressed value in incorporating voice and choice in their classroom (RQ2), responses to teacher perceptions of challenges in implementing personalized learning (RQ3) determined that this element is difficult to incorporate for

multiple reasons. A teacher in the science (include health and physical education) subgroup questioned how you get students to authentically make the choice that is best for him or her without letting peer influence get in the way. The need to follow course standards was a concern of five of the eight participants. How do you allow student choice when there is a specific curriculum sequence that needs to be followed? Questions similar to this were mentioned by teachers in the language arts (including world languages), mathematics (including engineering and technology), science (including health and physical education) subgroups. The same concern was mentioned pertaining to advanced placement (AP) course standards along with dual enrollment coursework standards written by local universities. In the mathematics and engineering group, teachers stated that it is essential to build a foundation of basic content skills which is why the allotment of student choice is difficult to implement. Seven of the eight participants stated that time to create meaningful options for students, write multiple fair assessments, and manage student progress is essential to effective implementation of student voice and choice. A participant in the social science (including business) subgroup mentioned the challenge concerning the assessment process and having a fair assessment for students that have different tasks, roles, and responsibilities. In addition to the creation of a fair assessment process, this participant stated that the management of keeping track of students working on a variety of tasks was expressed to be as equally challenging for teachers. These concerns are part of a larger challenge--time.

Flexible Groupings and Space

Flexible groupings and space promotes manipulation of the classroom environment that support student learning. A teacher in the language arts (including world languages) subgroup described flexible groupings and space as "providing a safe environment that allows students to take risks and have opportunities to engage in authentic, real-world learning experiences." Use of this personalized learning element was observed in seven of the eight observed classrooms supporting high teacher expectancies (RQ2) in the usefulness of flexible groupings and space for instructional purposes; the classroom that did not utilize this element during the observation was in the performing and visual arts content area grouping. One teacher participant from the following content areas (five of the eight teachers in total): language arts (including world languages), mathematics (including engineering and technology), science (including health and physical education), and social sciences (including business) allowed students to choose how to work (individually, with a partner, or small group) at some point during the class period. Students in six of the observed classrooms (one participant from language arts (including world languages), one participant from mathematics (including engineering and technology), both participants from science (including health and physical education), one participant from performing and visual arts, and one participant from the social sciences (including business) content area grouping) were permitted to choose the location that learning would take place. Locations included different areas in the classroom, hallways, and visiting another classroom to gather data. A teacher in the science (including health and physical education) subgroup

had the classroom divided into areas for whole class lectures, small group work, and lab activity space. This classroom showed the highest implementation of flexible groupings and space out of all observed classrooms. The classroom that did not utilize flexible groupings and space was in the performing and visual arts subgroup and the observed lesson was an introduction to the next unit of study. However, during the interview this teacher did report that flexible groupings and space would be utilized in future lessons. Table 17 summarizes teacher implementation efforts (RQ2) that were either observed during the lesson or mentioned during the interview for the personalized learning element flexible groupings and space.

Table 17

Content Area Implementation of Flexible Grouping and Space

Content area	Total participants	Implementation of personalized learning element (number of mentions)
Language arts (including world language)	1	• Students allowed choice of where to sit in classroom (1) • Students allowed to select partners (1) • Visited another classroom for in school field trip (1)
Mathematics (including engineering and technology)	2	• Student may choose partners or small groups for projects (1)
Performing and visual arts	2	• Students allowed choice of where to sit in classroom (1) • Students spread out in classroom and hallway to prepare their performance (1) • Students allowed to use classroom throughout the day as it fits in their schedule to complete work (1)
Science (including health and physical education)	2	• Students allowed choice of where to work in classroom (2) • Students may choose partners or small groups for learning tasks (2) • Large and small group learning opportunities (2)
Social science (including business)	1	• Students allowed choice of where to sit in classroom (1) • Students may choose partners or small groups for projects (1)

Even though flexible groupings and space was utilized in most observed classrooms, responses to RQ3 during teacher interviews provided multiple challenges with this personalized learning element. When asked why his content area reported flexible groupings and space to be the lowest implemented personalized learning element in the quantitative data, a participant in the social studies (including business) subgroup stated “Teachers may be scared to give up the level of control to allow for flexible

groupings and space. It is easier to avoid the unknowns." Five of the eight teachers reported that available learning space and classroom size was a constraint in the implementation of this element; these teachers were from the following content area groupings: language arts (including world languages), mathematics (including engineering and technology), science (including health and physical education), and performing and visual arts. A participant in the social science (including business) subgroup stated that in order to implement flexible groupings and space it would require a redesign of the classroom environment to include a variety of student seating options that would support group work. A teacher in the mathematics (including engineering and technology) subgroup reported challenges due to the design of the class structure: students were regrouped each day so group tasks could not be continued into the next class period and short class periods (35 minute classes). Even though one teacher in science (including health and physical education) showed high implementation of flexible groupings and space, another teacher in the same subgroup shared a concern regarding class size when it came to this element. This teacher stated that a large class size made it difficult to monitor students working in different spaces or multiple small groups. A teacher in the language arts (including world languages) subgroup explained that with more funding field trip experiences would allow for student learning outside the confines of a single classroom.

Data-Informed Instruction

Data-informed instruction provides teacher insight into student understanding of content so instruction can be adjusted to increase achievement. In seven of the eight

observed classrooms, teachers checked in with students throughout the lesson to ask and answer questions, offer suggestions, redirect when necessary, and diagnose misconceptions which show high teacher expectancies in the use of this personalized learning element per RQ2. This was not observed in one classroom in the performing and visual arts content area subgroup; however, this teacher stated in the interview that she frequently checks in with students to monitor their progress. This teacher explained that data-informed instruction looks different in different content areas, especially in performing and visual arts. In this teacher's content area, data is not quantitative but is collected through observations of student behavior and work along with discussions between student and teacher. Observational data collection was also mentioned by a teacher in the science (including health and physical education) subgroup. During teacher interviews, a teacher in the mathematics (including engineering and technology) and a teacher in the language arts (including world languages) subgroups mentioned pre-testing students to collect data to best meet the learning needs of students regarding appropriate content and student groupings. Table 18 summarizes teacher implementation efforts (RQ2) that were either observed during the lesson or mentioned during the interview for the personalized learning element data-informed instruction.

Table 18

Content Area Implementation of Data-Informed Instruction

Content area	Total participants	Implementation of personalized learning element (number of mentions)
Language arts (including world language)	1	• Teacher meets with students throughout learning process to answer questions and provide suggestions (1) • Individual student feedback (1)
Mathematics (including engineering and technology)	2	• Teacher asks questions throughout learning process to promote in depth inquiry (2) • Teacher checks-in with students throughout work time (2) • Teacher analysis of student work (2)
Performing and visual arts	2	• Teacher checks-in with students throughout work time (1) • Conversational versus empirical (2)
Science (including health and physical education)	2	• Teacher checks-in with students throughout work time (2)
Social science (including business)	1	• Teacher checks-in with students throughout work time (1)

Data-informed instruction may be considered by some as an essential part of instructional planning. Responses to RQ3 found that there are challenges in effective implementation of this personalized learning element. Time constraints was a common thread in the concerns with data-informed instruction by six of the eight teachers participants; these teachers were in the following content area groupings: language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, and science (including health and physical education). Large class size was another challenge expressed by four teachers in the language arts (including world languages), mathematics (including engineering and technology), and

science (including health and physical education) content area groupings. Even though pretesting is a means of data-informed instruction, a teacher in the mathematics (including engineering and technology) subgroup shared that pretesting is time consuming. He stated "I am already behind in grading. How can I use this to make decisions when I am behind in posting grades?" A high number of students makes it difficult to keep up with formative assessment in class. There is not enough time to collect, grade, and analyze student data along with other teacher responsibilities. Face to face conversations with students takes much classroom time and takes away from instructional time. A teacher in the language arts (including world languages) subgroup asked how pre-testing can be an effective strategy when introducing foundational content. The same teacher stated that pre-testing can be time consuming and "not a joyful experience for students."

Technology Integration

Teacher expectancies and the use of technology integration to influence instructional planning, as noted in RQ2, seems to be not in the potential benefits of technology in student learning, but in what does effective use of technology look like in the classroom setting for that particular content area. Technology integration was evident in five of the eight observed classrooms. It was not utilized in one classroom in the science (including health and physical education) subgroup and both classrooms in the performing and visual arts subgroup. However, the degree to which it was implemented varied per content area. A teacher in the language arts (including world languages) allowed students to use cell phones to record videos and take pictures to support their

journalistic writing. A teacher in the mathematics (including engineering and technology) subgroup had students using technology to present their findings and record notes on a proposed problem to share with the rest of the class. Another teacher in the same subgroup had students working with a variety of technological tools in their construction task. A teacher in the science (including health and physical education) had students recording data using spreadsheets and other students working with an online simulation. A teacher in the social sciences (including business) subgroup had students using the Internet to collect research on a chosen topic of study. Other meaningful uses of technology mentioned during teacher interviews included using dynamic software for simulations, creating products using 3-D printers and laser engravers, producing videos for demonstration purposes, to publish writing, and using apps geared towards specific content areas. Table 19 summarizes teacher implementation efforts (RQ2) that were either observed during the lesson or mentioned during the interview for the personalized learning element technology integration.

Table 19

Content Area Implementation of Technology Integration

Content area	Total participants	Implementation of personalized learning element (number of mentions)
Language arts (including world language)	1	• Use cell phones to take pictures and record interviews (1) • Use of Turnitin.com for student writing (1) • Use of Google suite and iWork applications (1)
Mathematics (including engineering and technology)	2	• A variety of technology tools available for student use (2) • Use of dynamic software for mathematical modeling (1)
Performing and visual arts	2	• Teacher use of technology to show examples of artistic work (1)
Science (including health and physical education)	2	• Use of recordings for demonstrations (1) • Use of online learning modules and simulations (1) • Data collection (1) • Use of cell phones to assist with lab experiences (1) • Use of Google Suite for assignments (1)
Social science (including business)	1	• Research conducted online (1) • Technology used for creation of final products (1)

However, even with multiple examples of how technology integration influence classroom practices the definition of technology integration was unclear to some participants. Teachers in the social sciences (including business) and science (including health and physical education) subgroups shared during their interviews that even though technology has the potential to enrich student learning they feel the high numbers of technology integration implementation in the quantitative data are skewed due to a misunderstanding of what is expected in terms of technology integration. Both teachers mentioned that some members of their department consider posting documents on an

online learning platform as high use of technology whereas others may use technology to provide more in depth study of content standards. Questions that arose in both interviews included: Does technology integration represent only teacher use of technology during instruction? Does posting documents including notes and assignments on an online learning platform count as technology integration? Should the focus be on student use of technology for collaborative learning experiences or for student created documents and presentations? What if technology is only used for data collection, but not for other aspects of learning? Does it include technology to be used a tool for substitution or does it include technology being used for collaborative purposes?

Even though the participating school district provides a laptop for every student in Grades 7-12, concerns were expressed that some technology that could enhance student learning was not compatible with the school issued MacBooks. This concern was reported by a teacher participant in the science (including health and physical education) since available technology including heart rate monitors and pedometers were only IBM compatible. Teachers in this subgroup and the performing and visual arts subgroup reported that if students are working on the laptop then they are not necessarily physically engaged in the learning for that content area.

Although it was evident in the qualitative data that teachers find value the addition of personalized learning elements in classroom instruction, multiple challenges have risen during implementation efforts. Table 20 summarizes the eight participants' responses to RQ3 regarding content area implementation challenges for personalized learning as presented in the previous discussion of each personalized learning element.

Table 20

Teacher Perceptions of Personalized Learning Elements Implementation Challenges

Personalized learning element	Challenges (number of mentions)
Knowing your learners	• Time for information management (8) • High student caseloads (2) • Definition (interests vs. learning styles) (1)
Student voice and choice	• Standards-based curriculum (5) • Dual-enrollment & AP course guidelines (2) • Time to plan for multiple learning pathways (7) • Assessment practices for multiple learning pathways (1) • Student management (7)
Flexible groupings & space	• Teacher comfort level (2) • Class size (5) • Available space (5) • Funding for field trip experiences (1)
Data-informed instruction	• Class size (4) • Time to analyze data and plan accordingly (6)
Technology integration	• Lack of understanding by teachers of expectations for technology integration (i.e. document creation and data collection vs. student collaboration) (3) • Desired technology not compatible with school issued laptops (1) • Best practices do not always include technology (3)

Professional Development

During the interviews, participants were also asked questions regarding their perceptions of professional development and how it has supported their personalized learning endeavors. The questions were the following:

1. What professional development opportunities were most valuable in assisting your implementation efforts for personalized learning?

2. In your opinion, what professional development or resources would be most valuable in helping you continue to integrate personalized learning in your content area?

The purpose of these two questions was to inform the project in Section 3 by providing next steps in assisting teachers to overcome the challenges of implementing personalized learning in their content areas.

Content-Specific Professional Development

All eight participants stated in their interviews that there is a need for content-specific professional development and examples of personalized learning in their content areas. A teacher in the science (including health and physical education) subgroup stated "there is a need for personalized learning philosophy and strong content knowledge to make personalized learning an effective instructional tool." He discussed that teachers must be masters of their content in order to create different pathways for students that are engaging and meet the learning standards for that course. Six of the eight teachers (all participants except for teachers in the performing and visual arts subgroup) stated that guidance from the district's personalized learning collaborators assisted in their lesson revisions to include personalized learning.

Professional Development Design

Three of eight participating teachers felt that an all-day personalized learning immersion experience was beneficial, but that the follow up support by the coaches afterwards was the most helpful. A teacher in the mathematics (including engineering and technology) content area stated that professional development needs to be personalized

for the teacher and "the teacher needs to feel what it is like to be a student in a personalized learning environment." This teacher also expressed that personalized learning "requires creativity and resourcefulness" which takes time to do. Both teachers in the performing and visual arts category expressed a need to meet with professionals in their content areas outside of the school district to promote growth in their instructional practice. Participants in the language arts and social sciences subgroups all expressed that they looked towards social media and the Internet for professional learning experiences.

Discussion

The quantitative portion of this mixed methods study focused on how the implementation of each of the five personalized learning essential elements (knowing your learners, student voice and choice, flexible groupings and space, data-informed instruction, and technology integration) differed between five content area groupings: language arts (including world languages), mathematics (including engineering and technology), performing and visual arts, science (including health and physical education), and social sciences (including business). The quantitative data was collected from the participating school district and organized in an Excel spreadsheet. The Statistical Package for Social Scientists (SPSS) software was used to analyze the district's strategic plan data informing the frequency content area departments use personalized learning elements in a 10-day period. A one-way ANOVA was used to test for significance in implementation frequency and the Tukey post-hoc test was used to examine significance between content area implementation of each element. The null hypothesis was rejected and alternate hypothesis accepted for three of the five elements:

knowing your learners, student voice and choice, and technology integration. The Tukey test found significant differences between content areas for each of these three personalized learning elements.

The qualitative portion of this study was two-fold: a classroom observation and teacher interview. Eight teachers participated in the qualitative portion of this research from the following content areas: one participant from language arts (including world languages), two participants from mathematics (including engineering and technology), two participants from performing and visual arts, two participants from science (including health and physical education), and one participant from social sciences (including business). An observational protocol was used in each classroom observation, which allowed for consistency between observations. After the classroom observation teachers partook in a 10-question interview with the researcher. During the interview teachers were asked to define personalized learning, share how it was or was not used in the observed lesson, express their opinions on the quantitative results for their content area group, and discuss professional development opportunities. Each interview was recorded and transcribed by the researcher. All participating teachers received an email offering the opportunity to participate in a member check to review themes taken from their interview. Merriam (2009) explained that member checks allowed research participants to examine "preliminary analysis" for validity (p. 217). Using an Excel spreadsheet, the qualitative data was organized by content area grouping, as well as, organized by personalized learning element then coded for emerging themes. The qualitative findings support that teacher expectancies and value of personalized learning

do influence the extent to which they implement personalized learning essential elements in their content areas (RQ2). The dynamics of instruction is dependent on content knowledge, understanding of student needs, and individual teacher confidence in their craft. The qualitative findings support that there is not a one-size-fits-all set of instructional practices that meets the needs of all students and suits the skillset of all teachers. Personalized learning elements are better suited in some content areas than others and their use needs to be strategically implemented to be most effective in promoting student growth. Even though content areas utilize personalized learning elements differently, there exists common challenges perceived by teachers as they implemented personalized learning in their content area (RQ3). Time and availability of resources were common threads throughout discussions of how personalized learning elements are used in the classroom. Teacher understanding was another common thread throughout the interview data. Personalized learning philosophy must clearly be explained with content specific examples in order for meaningful and effective implementation.

Triangulation of the strategic plan, observation, and interview data was used in this mixed methods research study. Merriam (2009) stated that triangulation using multiple data points increases the credibility of research by cross checking data across data sources. The data resources for this mixed-methods research were school district strategic plan data, classroom observations, and participant interviews. The quantitative data was used to inform the qualitative research component. An examination of similarities and differences amongst content area implementation of personalized

learning in the qualitative data was used to support or disconfirm quantitative data. During the interview process, participants were asked to elaborate on why a certain personalized learning element was rated as the highest implemented for their content area and why another personalized learning element was rated as the lowest implemented for their content area.

The quantitative data for knowing your learners showed a significant difference in the number of days out of a 10-day period in how often content area groupings implemented this personalized learning element. Social sciences (including business) reported the highest implementation, whereas, science (including health and physical education) reported the lowest implementation of this element and post hoc comparisons reported a significant difference in how these two content area groups implemented this element. As stated in the qualitative analysis, one teacher questioned the definition of knowing your learners: does it mean knowing students' interests or how students learn best? Even though all eight participants expressed the importance of knowing your learners and demonstrated some aspect of knowing your learners in the observed lessons, participants expressed challenges with the implementation of this element including high student caseloads and time.

Language arts (including world languages) reported the highest implementation of student voice and choice out of a 10-day period, whereas, science (including health and physical education) reported the lowest implementation. Post hoc comparisons reported a significant difference between the implementation of student voice and choice in between the language arts and science content area groupings, as well as, between language arts

and mathematics content area groupings (mathematics including engineering and technology report the second lowest implementation of student voice and choice). This quantitative data is supported by the qualitative data for this personalized learning element. A participant in the language arts (including world languages) group reported that skills, such as critical thinking and questioning, allowed for student choice in their content area. On the other hand, participants in both the science (including health and physical education) and mathematics (including engineering and technology) stated that student voice and choice was the least implement in their content areas due to the standards-based nature of these content areas. One teacher in the mathematics content area group addressed how content standards and the need to teach foundational skills caused this content area to be more "rigid" than other content areas which impacted low implementation of student voice and choice. A teacher in the science content area group mentioned that course standards, advanced placement, and dual enrollment coursework detracts from the implementation of student voice and choice since the curriculum can be scripted with a specific delivery plan. "It is hard to fit content and implement voice and choice in a predetermined timeline."

There was no significance in the frequency of implementation of flexible groupings and space across content areas in the quantitative data. Language arts (including world languages) reported the highest implementation, whereas, science (including health and physical education) reported the lowest implementation of this element. During the observations, five of the eight teachers utilized some element of flexible groupings and space in their class. However, during the interviews it was

expressed that classroom space is often a challenge when implementing this personalized learning element.

The quantitative data for data-informed instruction did not show a significant difference in the number of days out of a 10-day period in how often content area groupings implemented this element. Social science (including business) reported the highest implementation, whereas, science (including health and physical education) reported the lowest implementation of this element. Teachers in both these content areas used data-informed instruction in a similar manner during the observed lesson. These teachers checked on individual students or groups of students during independent work time to monitor progress and provide feedback. A challenge that arose in multiple interviews is that this personalized learning element requires a lot of time to meet with students individually or groups of students to give them meaningful feedback.

Technology integration was the highest reported implemented element out of a 10-day period in four of the five content area groupings in this one-to-one Apple laptop high school. This access to technology along with the school district's expectations for implementation may influence the quantitative results. Social sciences (including business) reported the highest implementation, whereas, science (including health and physical education) reported the lowest implementation of this element. Post hoc comparisons did report a significant difference between the implementation of technology integration between the social science and science content area groupings, the social science and performing and visual arts content areas, as well as, the language arts and science content areas. Through the qualitative data collection process it was found

that some content area department leaders have encouraged teachers to explore technology use in the classroom and teachers in different content areas implement technology differently. It was mentioned during the interview process that the quantitative data may be skewed due to misconceptions of what is expected in terms of technology integration. Is it teacher use or student use of technology? If it is student use of technology, to what degree should students be using technology: general software applications, student collaboration, or real-world simulations? A challenge that was addressed regarded best practices for individual content areas. For instance, a teacher in the performing and visual arts content area stated that personalized learning "elements used or not used depends on the class. For example, there is no technology in pottery, but technology is used in graphic art."

The quantitative data illustrated that personalized learning elements promote student learning differently across content areas. However, the qualitative data shows that implementation of each element depends on the teacher expectancies of the effectiveness of each element in instruction just as heavily as it does on the content area it is being implemented in. Together, the quantitative and qualitative data provided evidence of the effectiveness of personalized learning in content areas, struggles in implementation, and next steps to overcome challenges and barriers in the implementation of personalized learning.

Limitations

Limitations of this study are two-fold: the groupings of content areas and lack of equal representation from content areas. The science and health and physical education

subgroup would be best split into individual subgroups. As mentioned in an interview with a teacher in this group, the high report of technology integration in the quantitative data is most likely skewed by the science department since this participant did not feel that technology was a strength in the health and physical education department. Another limitation is that all content area groups had two participants with the exception of language arts (including world languages) and social sciences (including business). Although teachers from the world language and business departments were represented in the quantitative data, they were not represented in the qualitative data collection.

Conclusion

The findings support that meaningful implementation of personalized learning elements are unique to each content area. One participant described personalized learning as an instructional method that requires "throw[ing] away what you think you know about it and ... opening up to the possibilities." This teacher shared that she was hesitant to implement aspects of personalized learning until a student approached her regarding this mode of instruction in her content area. Differences that influence implementation includes the nature of the course (standards driven, advanced placement or dual enrollment), time constraints in the course structure or teacher time to plan innovative instruction, and available resources such as technology and professional development support.

The analysis of the quantitative data taken from the participating school district's strategic plan showed that three personalized learning elements had statistically significant differences in their implementation across content areas. Knowing your

learners had a statistically significant difference between the social science and science content area groupings, with social science implementing this element at a higher frequency than science. During the observations and interviews, the lack of understanding of what knowing your learners actually means was apparent. Does this element mean knowing your learners on a personal level such as their interests or goals? Or does it represent knowing what educational supports are necessary for this student to succeed in a specific content area?

Two personalized learning elements had multiple statistically significant differences between content areas according to the Tukey analysis: student voice and choice and technology integration. Student voice and choice had a significance between language arts and mathematics, as well as, language arts and science. Whereas technology integration had a statistically significant difference between language arts and science, social science and performing and visual arts, and social science and science. The difference in the implementation of student voice and choice may be due to the nature of a standards-based science curriculum that must meet the needs of advanced placement and dual enrollment courses. Even though science was paired with health and physical education for the content area groups, the participant from the health and physical education department felt that health and physical education provided options for student voice and choice while the science teacher participant voiced concerns over having to align with a set curriculum due to standards. This was also a concern voiced by both teachers in the mathematics (including engineering and technology) content area group. Language arts and social science teacher participants discussed multiple ways that

technology can be used to enhance student learning during the interview. However, the teachers in science (including health and physical education) felt that either teachers were not clear on the depth of implementation of technology that should be counted (data collection or student collaboration) or that technology was not useful for their particular course, "if students are on a device they are not moving." In the performing and visual arts curriculum, not all courses utilize technology as part of their best practices for instruction. As one participant stated, "it really depends on the course."

Looking at each content area separately, the strengths and weaknesses of personalized learning implementation efforts are apparent. In language arts (including world languages), the highest implemented element as reported in the quantitative data was technology integration. The teacher participant in this content area stated that teachers in this department frequently use turnitin.com to check student writing. During the observation, this teacher allowed student to take pictures and make recordings as part of their data collection for the assigned writing task. This content area reported data-informed instruction as the least implemented element in a 10-day period which was supported by comments during the interview: "If you consider pre-testing a way to implement data-informed instruction, does it make sense to pretest when a student has either read or not read the novel?"

Technology integration was also reported to be the highest implemented personalized learning element in mathematics (including engineering and technology). However, it ranked only third highest for this element of the five content area groupings in the quantitative data. Both participating teachers for this content area mentioned the

usefulness of dynamic software in teaching their content and the high use of technological tools to help students innovate such as 3-D printers, laser engravers, and tools for construction. Student voice and choice was reported as the lowest implemented element for mathematics and engineering which was supported in the interview data. Teachers in this area spoke of how the standards based nature of their courses influence how much choice students can actually have. In this area, teachers felt that a foundation must first be built before students can explore further content. The department's structure has also set up a course sequence that builds such a foundation one course at a time.

The performing and visual arts content area reported the student voice and choice as their highest implemented element in the quantitative data, which was supported by both participating teachers during the interview process. Teacher in this content area defined creativity as student voice and choice since every artistic decision a student makes stems from the creative process. The element implemented the least per the quantitative data was data-informed instruction. During the interviews, these participants stated that it isn't that data-informed instruction does not happen in their content area, but that it is observational data not empirical data that is collected.

The science (including health and physical education) content area group reported the lowest implementation for all five personalized learning elements. As mentioned earlier, the Tukey post hoc analysis reported significant differences in implementation between this department and others. Elements of personalized learning were observed in both participants' classrooms during observations. Nonetheless, challenges in implementation efforts of the elements of personalized learning were voiced during the

interviews. Technology integration was reported as the highest implemented element in a 10-day period in the quantitative data for this content area. Yet, both teachers shared concerns with this element. One participant mentioned that the technology for her courses was not compatible with the school issued laptops. The other participant mentioned that he felt that his department colleagues may be confused about what technology integration is expected: data collection or using technology for more in depth student learning. Both teachers felt that the quantitative data for this element may be skewed. As mentioned earlier, teachers in this content area grouping placed different expectancies and values on the element of student voice and choice, which was reported as the lowest implemented element for this content area grouping. The health and physical education teacher reported value in allowing students to design personal workout routines while the science teacher felt constraints placed upon him due to the standards driven nature of his content area.

The social science (including business) content area also reported technology integration as its highest implemented element in the quantitative data. The participant in this content area mentioned during the interview that department leadership has focused on technology integration in curricular planning. Students are also highly encouraged to conduct research and prepare presentations using their school provided laptop, which may also influence this data trend. Flexible groupings and space was the element with the least reported implementation in a 10-day period for this content area. During the observation, the teacher allowed students to form their own groups and sit wherever they wanted in the classroom. However, in his interview he stated that not all teachers in his

content area can easily give up the teacher control required by this personalized learning element.

Personalized learning is an innovative instructional technique that encourages teachers to provide students with options that will make learning more meaningful for that student. Yet, this instructional strategy looks different across content areas and amongst teachers in that content area which is evident in the analysis of data in this mixed methods study. The project in Section 3 will outline a professional development action plan to support teachers as they implement a personalized learning environment for their specific content area.

Section 3: The Project

Introduction

In Section 3, I will introduce the project based on the findings of my research study: a professional development program incorporating personalized learning elements and content area training for teachers. Two goals define this project: to educate teachers in personalized learning strategies and to support teachers in becoming masters in their content area. Participants reported that, in order for personalized learning to be effective, teachers must understand the philosophy behind this instructional strategy and have opportunities to expand their content area knowledge. This yearlong professional development program will consist of an initial training session on the five personalized learning elements (knowing your learners, student voice and choice, flexible grouping and space, data-informed instruction, and technology integration). Teachers will also have additional opportunities to observe these elements being implemented in classrooms, content area focused training with master teachers and community mentors, and ongoing support from a district personalized learning expert. This experience will be tied to teachers' professional learning goal for the academic year in order to hold teachers accountable for the opportunities offered in this program.

Rationale

The professional development program proposed for this project was designed according to the needs identified by the eight participants during the interviews as part of the qualitative data collection process. The professional development needs included the following: full-day immersion experiences, a foundation of personalized learning

elements, content area learning, time to design instruction, and ongoing support during implementation. Participants stated that professional development should also be personalized to meet the learning needs of individual teachers and should not be a one-size-fits-all approach. If teachers are to incorporate personalized learning strategies in their instruction, then professional development must use personalized learning concepts and model such strategies for teachers. This project will outline a two-fold professional development experience: content area training that is personalized to meet the needs of each teacher and training sessions focused on individual personalized learning elements. This professional development experience will also include ongoing support from a district expert in personalized learning strategies to help teachers in the design and successful implementation of personalized learning in the classroom.

Review of the Literature

To aid in the design of an effective professional development program to address teachers' challenges when implementing personalized learning in their content areas, a review of the literature was conducted using multiple databases: Education Source, ERIC, Google Scholar, ProQuest Central, and SAGE Journals. The following search terms were used: *content-specific professional development, instructional coach, pedagogical content knowledge, personalized professional development, professional development models, teacher collaboration, and teacher learning*. Each content area studied for the qualitative component of this research was also included in the search process: *engineering, health and physical education, language arts, mathematics, performing arts, science, social science, and visual arts*. The searches for literature on

these content areas were in combination with *professional development* and *pedagogical content knowledge*.

Teacher Efficacy

Teachers orchestrate the dynamics that take place during instruction in the classroom. In order for a teacher to grow in his or her ability to implement a personalized learning environment for students, it is vital that professional development opportunities build teacher efficacy in delivering this mode of instruction. It vital that teachers are given support as they challenge their uncertainties regarding change in their practice (Dixon, Yssel, McConnell, & Harden, 2014). According to Dixon et al. (2014), the reason that teachers my take part in professional learning experiences and yet return to their classroom without application of this knowledge may be due to a lack of teacher efficacy. Furthermore, Dixon, et al. (2014) explained in their research that teachers who are uncomfortable with their own content knowledge are lesson likely to be flexible with diversifying instruction for students. Franklin, Jarvis, and Bell (2017) stated that if teachers will not successfully implement instructional practices that are mandated without adequate resources and training. Professional development is vital to educators throughout the entire span of their career. Lowrie (2014) stated a needs exists to build efficacy in new graduates to help them overcome feelings of inadequacies, stress, workplace challenges which can be done through workplace professional development.

The development of a teachers' capacity for change will only occur if professional learning is designed to "support teachers to understand how the interdependent elements of curriculum, assessment, teaching, learning and classroom management can work

together in an effectively differentiated classroom" (Frankling et al., 2017). A teacher's path towards a fundamental change in instructional practices, including personalized learning strategies, is a complex process that is comprised of teachers taking charge of such modifications along with constant reflection in how these changes fit with current instructional practices and classroom dynamics (Dixon et al., 2014; Frankling et al. 2017; Van Den Bergh, Ros, & Beijaard, 2015).

Personalized Professional Development

Classroom teachers understand that students may have a diverse learning needs. The same could be said of teachers when it comes to professional development opportunities. Gynther (2016) stated "personalization is education, where participants have different learning objectives, depending on their learning needs" (p. 17). When professional learning is customized to the needs of each teacher more possibilities exist for differentiation and individualization which has the potential to influence academic gains for students (Gynther, 2016). So why is it that professional trainings are not personalized? Lowrie (2014) explained the frustration of the "limited capacity for personalized professional learning" and stated that the personal theories of teachers must be taken into consideration if changes are mandated in the educational setting; therefore, a "bottom-up approach to professional learning" must be implemented (p. 40). Change occurs through the empowerment of all individuals involved. If district leadership, administrators, and teachers collectively work together to design professional development practices that are personalized for individuals, professional autonomy will increase teacher efficacy as teachers take responsibility for their own professional growth

and change within their educational environment (Clarke, 2016; Lowrie, 2014; Matherson & Windle, 2017).

Just as students learn differently, teachers learn differently. Thus, professional development cannot be designed as a one-size-fits-all program (Burbank, Bates, & Gupta, 2016; Lowrie, 2014; Van Den Bergh et al., 2015). If teachers are to implement personalized learning in their classrooms they need to have experienced personalized learning themselves. Pasatta, Hamilton and DeDoes (2017) described a personalized professional development program for teachers that encompassed 120 hours of teacher learning for selected participants. This ongoing professional development program provided teachers with opportunities to experience what students do in a personalized environment along with support to design personalized activities for students. The premise behind the design of this professional learning program was the "need to provide teachers with experiences that mirror the type of personalized learning we - and they - hope to see in their classrooms" (Pasatta et al., 2017, p. 67). As part of this professional development program, small groups of teachers were presented with a real-world scenario to study to allow teachers to experience road blocks and triumphs in the learning process similar to what students may experience in the classroom setting (Pasatta et al., 2017, p. 65). Time for reflections was also embedded into teacher learning experiences to allow teachers to consider how they felt, what they learned, and next steps. Reflections took multiple forms: journals, groups discussions, and writing prompts (Pasatta et al., 2017, p. 67).

In addition to personalizing professional development for teachers, Burbank et al. (2016) stated a "multilevel focus" approach to teacher support emphasizing content and pedagogy is necessary for outcomes resulting in effective teaching and learning practices (p. 57-58). This supports the need for all teachers to be given opportunities to grow as an expert in their content area along with growing in pedagogy. Jao and McDougall (2016) stated that professional development initiatives including "job embedded learning, collaborative (peer) inquiry, attention to student performance, institutional and administrative support, provision of time and other resources, and commitment to continuous long-term engagement" are most effective if they are effectively woven together into a single cohesive program for teacher learning (p. 557).

Ongoing professional development is essential to provide teachers with continued support as instructional strategies are learned, practiced, and reflected upon. Dixon et al. (2014) stated that single presentation professional development offerings provide only a snapshot of knowledge to teachers which is not adequate for implementing change in the classroom, whereas more experience and support with new knowledge allows a teacher to more effectively implement change. Professional development must lay a foundation from which teachers are able to build upon to enhance student achievement in their classroom. Teachers must have opportunities to practice new skills and reflect on such practice so new instructional strategies can be effectively implemented (Pasatta et al., 2017). Matherson and Windle (2017) stated "professional growth should be a steady progression over the course of a semester, a year, or more if it is to have lasting impacts in the classroom and on student achievement" (p. 31).

Content Area Expertise

Without content area expertise, any educator will be unable to design a vibrant curriculum that increases student achievement. Griffin and Brownell (2018) stated content focused professional development has the greatest influence on student learning when compared to other aspects of professional development including active learning, coherence, duration, and collective participation. Research studies across multiple content areas support the need for teachers to continue to build their content area knowledge. In their research on how professional development experiences influence instruction in physical education, Iserbyt, Ward, and Martens (2016) found evidence that student learning is influenced by the strength of the teacher's content-knowledge along with the teacher's ability to give quality feedback to students. Singh-Pillay and Sotsaka (2017) stated in their research on teachers' content knowledge in the engineering classroom that the teacher's understanding of their content influences instructional decisions. According to Thomas-Brown, Shaffer, and Werner (2016), when social studies teachers were surveyed regarding professional development needs that more opportunities for disciplinary knowledge and skills was desired by the majority of participants. Professional development based on a teachers' content area creates learning experiences that are relevant to teachers, increases teacher engagement, and effects the overall quality of his or her teaching (Singh-Pillay & Sotsaka, 2017; Sutherland, Granger, Hughes, Enderle, Ke, Saka, & Tekkemru-Kisa, 2016).

Content area growth can occur in a variety of forms: time to take on the role of a student manipulating content area tools, observing colleagues' classrooms, participating

discussions with colleagues focused on content area phenomena or research literature, mentoring programs with colleges and universities, and community internships which together can build a content-focused professional learning network (Burbank et al.,2016; Glover, Harrison, & Shallcross, 2018; Herro & Quigley, 2017; Sutherland et al., 2016; Wongsopawiro, Zwart, & van Driel, 2017; Yee, 2015). In their research on secondary chemistry teachers collaborating with university professors, Glover et al. (2018) found that content area collaboration "has changed the way they teach, giving them greater confidence, new skills, knowledge and the 'patter' associated with teaching their subject, as well as demonstration skills, giving these and other practical work greater focus in their teaching (p. 124). Herro and Quigley (2017) stated similar results in their research on professional development in STEAM coursework adding that collaborative experiences can also be enabled through the use of technology if meetings with local content area experts are not possible. Jao and McDougall (2016) stated in their work on the Collaborative Teacher Inquiry Project for a ninth-grade mathematics program that content area collaboration is an effective means of professional development since teacher improvement is not successful in an isolated environment.

Teacher effectiveness is dependent on the strength of the teacher's content-knowledge (Iserbyt et al., 2016; Singh-Pillay & Sotsaka, 2017). Content area expertise can be gained through a variety of endeavors including work with school colleagues, members of the community, and global experts, all of which will influence classroom instruction. Without strong content knowledge, teachers will not be successful in the

implementation of new instructional strategies, such as personalized learning which requires teachers to be open to multiple pathways of student learning.

Pedagogical Content Knowledge

Being an expert in a content area does is not sufficient when designing classroom instruction. Pedagogical content-knowledge is the "fusion of both content knowledge and pedagogical knowledge" (Singh-Pillay & Sotsaka, 2017, p. 1215). Saderholm, Ronau, Rakes, Bush, and Mohr-Schroeder (2017) stated in their research on professional development for math and science teachers that it is necessary to connect content-knowledge to classroom practice to increase student achievement:

> a goal for the design of professional development experiences should be to give explicit attention to the meaning and application of these practices so that teachers are able to deconstruct their own cognitive structures and reconstruct them in a more robust form. (p. 815-816)

Teachers want engaging and relevant professional development opportunities that focus pedagogical content knowledge and address students' needs (Matherson & Windle, 2017, p. 30).

According to Thomas-Brown et al. (2016) the greatest needs in professional development experiences for teachers includes "incorporating real-world applications into lessons; learning how to integrate other curricular topics into lessons; learning how to align curriculum, instruction, and assessment with state education standards; and challenging students to accept and share responsibility for their own learning" (p. 64). These examples of pedagogical content knowledge demand a need to personalize teacher

professional development based on content area to maximize the effect it will have on classroom achievement. Pedagogical content knowledge can be built through consistent teacher reflection on instructional practices and student work, reading content area literature, and peer discussions with colleagues and experts in their content areas (Caddle, Bautista, Brizuela, & Sharpe, 2016; Sutherland et al., 2016; Singh-Pillay & Sotsaka, 2017; Wongsopawiro et al., 2017).

Teachers must be exposed to innovative instructional strategies and ways to meet the needs of diverse learners along with engaging in their content area in order to grow as a professional and be an effective classroom practitioner (Iserbyt et al., 2016; Pasatta et al., 2017; Singh-Pillay & Sotsaka, 2017). In their research on professional development for social studies teachers, Thomas-Brown et al. (2016) found that teachers with strong content-knowledge and pedagogy in their content area are more ambitious in their teaching, make better instructional decisions, and are more effective at arousing students' critical thinking skills (p. 69).

Content-Specific Professional Development

A one-size-fits-all professional development model is not responsive to the needs of teachers with diverse strengths and weaknesses across multiple content areas (Caddle et al. 2016; Herro & Quigley, 2017; Sutherland et al, 2016). According to research, teachers felt that their top two professional development needs were content knowledge and pedagogical content knowledge (Caddle et al., 2016; Thomas-Brown et al., 2016). In their research of on professional development for mathematics educators, Caddle et al. (2016) stated

> The vast differences in teachers' mathematical backgrounds and experience, and in their motivations and needs, indicate that in order to support teachers better, we need to meet them where they are. That is, we need to be able to find the right fit in PD programs in order to complement existing strengths and facilitate improvement in other areas. (p. 129)

The implementation of a content area focus professional development program supports teachers in gaining an in depth understanding of their content area and providing students with more enriched learning opportunities in that content area (Griffin, & Brownell, 2018; Jao & McDougall, 2016).

Professional growth for secondary teachers must be two-fold: a focus on effective instructional strategies and continuous development as a master teacher in their content area. Burbank et al. (2016) stated "content area knowledge depth provides both a foundation for flexibility as well as breadth in instruction" (p. 56). Flexibility is essential to plan multiple opportunities for student learning that is key for personalized learning experiences for students. Professional development must include opportunities for teachers to grow in their content area, as well as, in pedagogical content knowledge. Garet, Heppen, Walters, Smith, and Yang (2016) stated professional development can produce significant gains in teacher knowledge if learning opportunities include content knowledge along with content-specific pedagogy.

Instructional Coaches

Traditional professional development sessions are often based on a sage on the stage mentality. However, Yee's (2015) research on learner centered instruction can

influence professional development design by considering the learning needs of each teacher especially when teachers have "varied levels of experience and thus different attitudes toward prescriptive approaches" (p. 100). Learner centered instruction aligns with the need to personalized learning for teachers to maximize professional growth which, in turn, supports gains in student achievement.

To truly personalize professional learning for teachers, the support of an instructional coach is essential to the structure of a professional development program Dixon et al., 2014; Frankling et al., 2017; Herro & Quigley, 2017). An instructional coach must be available for teachers to seek ongoing support and guidance when needed (Yee, 2015). Teachers must be allowed to practice new instructional strategies if they are to make a difference. Teacher practice along with the support of a professional development coach that assists with new lesson and assessment development will support greater classroom success (Dixon et al., 2014; Frankling et al., 2017; Van Den Bergh et al., 2015). Frankling et al. (2017) stated the benefits of embedded professional learning:

> the need for teachers to 'try out' the principles of differentiation [personalized learning] and see the benefits with their own students in their own classrooms, and then share their experiences and seek feedback from colleagues and mentors, leading to increasing 'buy in'. The data also appear to affirm why the 'one shot' external professional development model with no on-site follow up is less effective in changing teachers' practices. (p. 80)

Continued teacher support, including the assistance of instructional coaches, must be integrated into the design of a professional learning program aid in the implementation of

any new instructional strategy if it is to build teacher efficacy. Thus, professional development must be meaningfully integrated into the structure of each teacher's school environment (Lowrie, 2014).

In their research on teacher learning and professional development programs, Van Den Bergh et al. (2015) found that without structured support, feedback, and reflection teachers would not effectively integrate instructional changes into practice. However, if teachers had opportunities to discuss problematic lesson components with an instructional coach extensive feedback could be given to the classroom teacher to promote further teacher learning and build tools to overcome challenges in classroom instruction (Van Den Bergh et al., 2015). Even though the support of an instructional coach promoted teacher learning, Van Den Bergh et al. (2015) stated that a significant finding in their study was "how rarely designers built in opportunities for feedback and coaching in the workplace" (p. 149).

Professional Collaboration

Ongoing professional learning experiences can be supported through opportunities for teacher collaboration. If professional development is learner centered with a shared leadership model, all participants including facilitators will continue to grow professionally. Yee (2014) stated that a learner-centered philosophy emphasizes engagement, exploration, an in-depth investigation along with reflection of the chosen topic which promotes a shared understanding of possibilities and outcomes. As a result of their research on learning circles, Frankling et al. (2017) found that professional collaboration supports the alignment and integration of students, teaching and the

curriculum, and the distributive nature of the model whereby leaders were cultivated at multiple levels. The construct of learning circles appeared to assist in professional development being delivered by a group of leaders who were supported by researchers, and teachers who were in turn supported by leaders as they experimented with the application of differentiation in their classrooms. This meant that professional development was not only collaborative, it was decentralized and its distributive nature allowed knowledge to be shared and accessed much more efficiently (p. 83). Collaborative working environments provides personal and professional development opportunities for all participants that are supportive and reciprocal in nature while refining teachers' expertise (Clarke, 2016; Herro & Quigley, 2017; Jao & McDougall, 2016; Messiou & Ainscow, 2015; Morris, 2017). In addition, an emphasis on engagement during professional development increases teachers' capacity as leaders in the school culture creates an environment based on shared leadership (Parker, Patton, & O'Sullivan, 2016).

Engagement in collaborative practices not only empowers teachers to be more reflective, but assists them toward effective teacher practices that are aligned and explicit (Clarke, 2016; Ma, Xin, & Du, 2018; Morris, 2017). Collaboration can occur with colleagues in a teacher's environment or through interschool collaborative experiences. In their research, Parker et al. (2016) found three professional development practices that were most successful for teacher learning: critical dialogue, public sharing of work, and engagement in a community of learners. In a teacher's school environment, such collaborative experiences may include peer observations and lesson reflections or small

groups that meet focused on a common goal. From their research on learner diversity and professional development, Messiou and Ainscow (2015) concluded that the following were essential for teacher learning: engagement in professional discussions, collaboration and mutual support amongst colleagues, and acceptance of challenging the status quo in the school's culture (p. 253). Given shared experiences and common backgrounds, a more productive learning environment will be created where teachers can exchange ideas, participate in discussions focused on effective instructional practices, and encourage the creation of action-oriented solutions to challenges in teaching (Ma et al., 2018; Morris, 2017; Parker et al., 2016; Wongsopawiro et al., 2017). As "learners construct knowledge in relation to their prior knowledge and experiences and to be useful, knowledge is situated in a relevant or 'authentic' context" (Parker et al., 2016, p. 140-141). However, if professional collaboration is to be effective, it is vital that time is scheduled for teachers to engage in such collaborative activities (Parker et al., 2016).

According to the research of Frankling et al. (2017), highly collaborative professional development programs repeatedly resulted in cross-curricular professional conversations that allowed teachers to learn from the insights of their colleagues by providing opportunities for "teachers to take risks without fear of failure and for collaborative problem solving to flourish" (p. 84). As environments that promote risk-taking are created in collaborative learning communities, excitement and engagement in professional development will develop teacher ownership over their learning experiences and motivate teachers to value and protect time for their own professional growth (Messiou & Ainscow, 2015; Parker et al., 2016). Collaborative dialogue has the power to

change a teachers' practices by enriching their current knowledge, challenging their professional beliefs and values, encouraging their evolvement as a continuous teacher learner, and building supportive and strong relationships with colleagues (Messiou & Ainscow, 2015; Parker et al., 2016).

Project Description

Potential Resources and Existing Supports

The participating school district had incorporated resources into the current professional development plan that will be utilized for the purposes of this project. At the start of this research, the school district had created three personalized learning cohorts, over a period of three years. Each cohort included approximately 30 to 35 Grades K-12 teachers. Secondary participants were from a variety of content areas with most content areas included during the three years of cohorts. These cohorts were the initial teachers to be trained on personalized learning philosophy and were encouraged to implement the elements of personalized learning into classroom instruction. With the addition of grant funding three personalized learning collaborators have also been added to the district's staff. The personalized learning collaborators have at least five years of teaching experience, various content and grade level backgrounds, and have incorporated personalized learning opportunities for students into their former classrooms. These personalized learning collaborators lead one-day professional development sessions providing an understanding of personalized learning elements and examples of how it may be incorporated in a classroom setting. Currently, the personalized learning collaborators are available throughout the school year to provide teachers with one-to-one

support or assist small groups of teachers working on the same instructional task. A district technology team also exists to help teachers integrate technology into instruction. Over the past two years, the school district has created eMerge teams consisting of teachers with expertise in integrating technology into instruction to serve as technology leaders in their buildings. These current components of teacher support will be utilized during the proposed professional development program.

According to the qualitative data needed resources include time, support specific to each content area, and a greater understanding of personalized learning elements. It is to be noted that participants in the qualitative portion of this research study had a variety of experiences when it came to personalized training. Some participants had no formal personalized learning training and other attend sessions led by district leadership and personalized learning collaborators. Financial support is essential for success of the proposed professional development program. Summer writing hourly pay and guest teacher funding for during the academic year would be needed to provide teachers with ample time to design personalized learning options for students. Meeting time would also need to be available more frequently to follow-up with individual teachers and provide more opportunities for collaboration; this could be done during department meetings, professional learning community meetings (which are held on a weekly basis), or other times where the teacher may be available during the work day. Current content area training is done in department meetings with little opportunity to attend national content area conferences. However according to research, there are multiple possibilities for building teachers' content-knowledge and pedagogical content knowledge. One option

could be working with community partners for pairing content area teachers with a mentor in their content area or assisting professional development participants in finding content area learning networks outside of the school district (Garet et al., 2016; Glover et al., 2018; Herro & Quigley et al., 2017; Jao & McDougall, 2016; Saderholm et al., 2017; Wongsopawiro et al., 2017; Singh-Pillay & Sotsaka, 2017). The best way for teachers to be empowered is to expect them to act as professionals who are responsible for their own professional learning needs. (Lowrie, 2014).

Proposal for Implementation and Timetable

The proposed professional development program for this project has three components: personalized learning training, building content area expertise, and professional collaboration focused on reflection and designing instruction. As stated by Dixon et al. (2014), professional development is more effective when it is not completed in a single session, but is ongoing and part of the school culture. Thus, this project has been designed to incorporate ongoing professional development support and maximize teacher learning.

For the purposes of the project proposal, three full-day sessions of professional development incorporating personalized learning strategies, content area work, and teacher instructional work will be presented. The first session focuses on personalized learning theory and includes an overview of all five personalized learning elements (knowing your learner, student voice and choice, flexible groupings, data-informed instruction, and technology integration) and will be presented during the first quarter of the school year. Participants in this session can represent diverse content areas. During

this session examples for all five personalized learning elements will be presented from a variety of content areas. It is important that participants see examples from their content area. Lowrie (2014) stated empowered teachers will take responsibility for their professional endeavors. Thus, this session will conclude with time for teachers to reflect upon how personalized learning can enhance their instruction and brainstorm ways it could be incorporated in their classroom.

The second session supports teachers in the same content area as they work on how personalized learning elements promote student learning in their content area. Multiple content area sessions should occur throughout the school year. Since this session focuses on content area development, sessions will be held individually by content area groups with the assistance of curriculum leaders. The content area agenda provided in Appendix A will focus on mathematics. To start this session, there will be review of the five personalized learning elements. Curriculum leaders will present professional development based on district learning standards, which will have been previously selected by the department. In the agenda provided in Appendix A factoring polynomials is the standard of focus for this piece of the professional development. Teachers that engage in professional activities within their content area will have increased success in delivering classroom instruction as they receive support built into their school culture and are provided with time for practice (Burbank et al., 2016; Singh-Pillay & Sotsaka, 2017). Flexibility will be given to the curriculum leader on the design of the presentation: inviting a local business to present, connecting with a university professor, working with the state department of education curriculum specialist, or creating the presentation on his

or her own. The remainder of the session will provide time for teachers to work as teams on planning personalized learning instruction. The personalized learning collaborators will be present to provide assistance as needed.

The third session allows for teachers to share their personalized learning efforts will colleagues amongst all content areas, provides time for reflection and future planning, and will be occur during the fourth quarter of the academic year. This session will start with a celebration of personalized learning efforts through a public sharing of work. Parker et al. (2016) stated that public sharing of work and engagement in a community of learners were successful components of teacher professional development. This show and tell will allow teachers from multiple content areas to see examples that could be modified to fit their classroom instructional needs and ask those teachers questions as needed. Time for reflection will take place so teachers can process what went well and what could be improved in their personalized learning project. At the end of the session, teachers will be asked to make plans for future projects.

In addition to the three professional learning sessions, participants will also have ongoing support from department leaders, personalized learning collaborators, and colleagues between the professional development experiences. Participants will be encouraged to schedule times with instructional leaders to aide in their instructional planning. All teachers currently participate in weekly professional learning communities which provides time for professional dialogue to discuss instruction specific to their course load. Participants will also have opportunities for personal content area growth, which may occur by attending a content area conference or collaborating with a

university professor or teachers in surrounding school districts. It will be an expectation that teachers share their content area learning at department meetings. Each participant will also be expected to meet at least once with a personalized learning collaborator after the initial session to discuss potential instructional projects and necessary supports. Since the district implements professional learning community meetings (PLCs) once a week during the academic year on Wednesday, PLC teams may choose a personalized learning focus for their yearly goal. Professional development will more effectively build teacher capacity and influence student academic achievement if it is spread throughout the academic year with ongoing support available to teachers (Matherson & Windle, 2017).

Roles and Responsibilities of Others

The success of this professional development program is based on collaborative experiences of district leadership, building administrators, and teachers. District leadership must be willing to provide financial support for guest teachers and summer writing hours, which will provide teachers with workday embedded time to design personalized learning opportunities in their content area. According to Van Den Bergh et al. (2015), a teacher's willingness to learn is a vital factor in the effectiveness of any professional development experience. For this reason, the professional development offering will be made available to all teachers, but participation will not be forced upon all teachers. The district's personalized learning collaborators will be utilized to provide participants with ongoing support as personalized learning is implemented. Building administrators will need to allow for flexible professional development schedules for teachers that may include: full-day or half-day sessions, department meetings, and

professional learning community meetings. Teachers would need to be willing participants in this professional development program. This program requires a year-long commitment to professional growth and may include time outside of the work day for community content area collaboration.

Project Evaluation Plan

There will be formative and summative evaluations to measure the goals that define this professional development plan, which are to build teacher understanding of personalized elements and how each element can be incorporated into classroom instruction, as well as, to support teacher growth in their content area and to develop effective instructional practices for their content area. The purpose of multiple evaluations will provide meaningful feedback so improvements can be made for future professional development opportunities. At the end of the first two sessions, participants will be asked to complete a formative evaluation asking for feedback regarding meeting the day's learning goals and requesting suggestions for improvement. These formative assessments will provide valuable information that will assist professional development leaders to modify the next session to better meet the needs of the participants. At the end of the third session, participants will complete a summative evaluation so district leadership can assess program effectiveness and design future professional development sessions based on participant feedback.

The goals for the first session are that participants should be able to summarize personalized learning philosophy and name at least one benefit for students, as well as, describe the five personalized learning elements and provide at least one example of how

each element could be used in their content area. Upon the conclusion of the second session participants should be able to meet the following goals: summarize instructional strategies for teaching a chosen foundation skill for their content area and describe the personalized learning project chosen by their content team. In each formative assessment questions are included to measure if participants' have met the desired learning goals. If a goal has not been met, then curriculum leaders and personalized learning collaborators will provide additional support to help participants meet each goal. When participants meet with the curriculum leaders and personalized learning collaborators a brief survey will be sent electronically to seek additional guidance for future support for each teacher participant. These surveys will ask the participants what they learned during the meeting and what additional support and resources are needed to assist in personalized learning implementation efforts. These surveys will provide the curriculum leaders and personalized learning collaborators with information so they can better support teachers implementing personalized learning in their content area.

The summative evaluation given after the final session will assess the overall effectiveness of the proposed professional development series. The objectives for the third session includes summaries of the implemented personalized learning projects, analysis and reflection of successes and areas for growth as they continue implementing personalized learning in their content area, and initial planning for a personalized learning project that will be implemented the following academic year. The summative evaluation is designed to assist the participants in reflecting upon the overall experience, allow participants to provide suggestions for improvement, and ask each participant to

share next steps. The information gathered from these assessments will allow district leaders to design professional development opportunities that will continue to support the participants in future instructional endeavors.

The goal for the project evaluation is to allow future sessions to be better geared towards participants' learning needs. District leaders participating in the delivery of this professional development program will be able to use the formative and summative feedback to continue to fine tune and improve future professional development experiences for teachers; thus, building teacher capacity in the school district. Participants will also benefit from the evaluation process. Through purposeful reflection and continuous goal setting, each participant will be able to celebrate small successes, seek help when needed, and be more successful in implementing new classroom instructional practices to increase student achievement in the participant's content area.

Project Implications

The qualitative data in this study focused on needs and desires of teachers regarding professional development offered by the participating school district. Personalized learning is part of the school district's strategic plan. However, teachers feel they need professional development support to learn more about personalized learning, strengthen their content knowledge and instructional practices, and time to complete the necessary work in plan personalized learning experiences for students. The proposed three-day professional development program with ongoing support between sessions meets the needs voiced by participating teachers during data collection.

Local Stakeholders

A school district consists of a community of professionals with a common goal: helping students achieve to their fullest potential. This professional community will only be as strong as the inner support that occurs amongst colleagues: district leadership, professional development specialists, building administrations, curriculum leaders, and teachers. Thus, the designed professional development project integrates all components of the district's community. District leadership provides financial support for guest teachers for teachers participating in full day workshops during the school year and for summer writing pay for participants to write curriculum. Planning and organizational skills from professional development leaders will be utilized to carry out the full day learning sessions and one-to-one assistance for participating teachers. Building administrators will allow teachers to attend the one-day workshops and conferences focused on the teacher's content area. Curriculum leaders will continually look for ways to build content area capacity amongst the teachers in the department. All of these professionals work to support the teachers attending professional development with the goal of improving classroom instruction and student learning.

Larger Context

Student learning is the focus of any school district. If there are professional development experiences that support teachers in increasing overall student learning, school districts will be able to better meet their goals. However, teachers must willingly engage in professional learning if it is to make a difference in student learning. Professional development must be personalized to teachers' individual needs in order to

be effective and engage teacher learners. As previously mentioned, a one-size-fits-all professional development experience is not the way towards school improvement (Burbank et al., 2016; Caddle et al. 2016; Herro & Quigley, 2017; Lowrie, 2014; Rowan & Townend, 2016; Sutherland et al, 2016; Van Den Bergh et al., 2015). Just as students have individual learning needs and are support by teachers, teachers have individual professional learning needs and must be supported by the school district.

Conclusion

The proposed professional development plan addresses the needs to assist teachers in overcoming the challenges of implementing personalized learning in their content areas. The plan includes three full day sessions along with ongoing support from personalized learning collaborators. The goal of the proposed project is to personalized professional development for teachers to meet their individual learning needs.

In Section 4, I will discuss the project's strengths and limitations, and alternate approaches for this research. I will also reflect upon my experiences as a scholar at Walden University, my growth as an educational leader, and my progress as a researcher.

Section 4: Reflections and Conclusions

Introduction

The purpose of the study was to investigate the challenges that arise when secondary teachers implement a personalized learning environment in their content area. As a result of this research, a project was designed to provide teachers with a content-specific professional development program that is personalized to meet the needs of individual teachers. This program will support positive teacher growth and thus increase student achievement. In Section 4, I will state the strengths and limitations of the project outlined in Section 3; provide recommendations for alternate approaches; discuss scholarship, project development and evaluation, leadership and change; reflect on this work; offer insights on future research; and explain the study's implications for social change.

Project Strengths and Limitations

Strengths

Data collected from this research study provided the means to create a professional development plan that met the needs of teachers in different content areas and provide ongoing support to teachers for planning personalized instruction. The strengths of the project met the needs outlined in the data analysis through the creation of a professional development plan including full-day immersion experiences, a training on the personalized learning elements, content area learning, time to design instructional materials, and ongoing support from district leaders. The professional development program created for this project is personalized in order to meet the needs of individual

teachers, to provide teachers with opportunities for content-specific professional learning experiences, and to offer ongoing support for teachers through the access to instructional coaches and collaboration opportunities with colleagues. This project permits teachers to partake in the design of their professional learning and empowers teachers to grow in pedagogy and their content area.

Limitations

The limitations of this project are time and potential costs. After the initial session on personalized learning philosophy, teachers will need to commit to content area professional learning experiences and meetings with an instructional coach. Although this provides ongoing support for teachers as learners it may require multiple meetings that could take teachers outside of the classroom. Even though all efforts will be made to work with teachers' schedules before and after school along with planning periods for instructional coaching appointments and content area training it is not guaranteed that it will happen. Thus, there would be a cost for guest teachers for the days where teachers were out of the classroom. Additional costs are dependent on the content area training as well. If a speaker is brought in or teachers are sent out for content area experiences, fees may add up which could deplete the district's professional development budget.

Recommendations for Alternative Approaches

The problem addressed in this study was the perceived challenges of teachers when implementing personalized learning strategies into their content areas at the secondary level. The local problem allowed for multiple approaches. A single school district participated in this research study. If this study had multiple school districts, a

larger sample size would have led to more generalizable results. With a larger sample size, this study could have compared perceived challenges of teachers at the elementary level and the secondary level to see if the perceived challenges were consistent across K-12 content areas.

Alternatively, a program evaluation for the implementation a personalized learning program for Grades K-12 could have been conducted to provide greater insights to the professional development program in its current standing across the entire school district. Another approached would be to focus on student perspectives of how personalized learning influences them as learners across content areas. This research would provide information on personalized learning strategies that may or may not be more effective to how students view their personal learning strengths.

Scholarship, Project Development, and Leadership and Change

Scholarship

As a student at Walden University, I have been challenged about my beliefs of current educational practices, who I am as a learner, and my future endeavors as an educator. During the coursework for my educational doctorate I have been greatly supported by my professors and colleagues. Class discussions made me question my thinking about current educational practices and how the future of curriculum, instruction, and assessment should look in the field of education. My coursework has prepared me to successfully define problems based on evidence, write both qualitative and quantitative research questions to focus on the problem at hand, propose a framework to guide further examination, collect and analyze essential data, and strategically derive a

solution based on data analysis and past research. I have learned that even though the research process is tedious, it is necessary for a solutions-focused approach on improving educational practices.

Throughout my doctoral journey I have remained a full-time educator and curriculum leader in my school district, as well as, worked with a state university to design a graduate program to build leadership capacity in teachers. At my school, I have shared my doctoral endeavors with my current high school students hoping to instill in them the power of being a lifelong learner. I feel that being a student has provided valuable insights into how my current students multi-task to handle their daily commitments and grow as individuals. My classroom grew as an environment where we struggled together and celebrated together. As a leader, I shared scholarly articles and posed questions to promote scholarly dialogue with my colleagues. My work as a curriculum leader was also influenced as I took a more strategic outlook to how I approached my current position so I could assist others to push their professional growth.

Project Development

During the data analysis process, common themes emerged that provided a focus for the chosen project. Teachers voiced in the qualitative data collection that they wanted professional development that was personalized to their professional needs and content area. Teachers also desired sufficient time to plan personalized learning instructional activities with continued support from the school district. Thus, the goal of the project was to provide a professional development experience focused on how to implement personalized learning elements (knowing your learner, student voice and choice, flexible

groupings, data-informed instruction, and technology integration) into teachers' content areas. The review literature supported a design of collaborative professional development experiences that integrate pedagogical content knowledge with personalized learning elements. As a result of the designed professional development experience, teachers will have created and implemented personalized learning lessons for their students focused on best practices for their content-area.

Through my experiences as a leader in my school and what I have learned through my coursework I feel confident in my ability to design professional development that will engage teachers and be relevant to the needs of each individual teacher. My research along with the review of literature guided my decision throughout the design process. As a means to continuously improve my design, time for participants to provide feedback was integrated into each session so adjustments could be made based on teachers' responses.

Leadership and Change

During my 19 years in education, I have had many opportunities to growth as an educational leader. I have participated on school improvement committees, worked at the district and state level writing standards, and held leadership positions in the state's teachers of mathematics association. In my current role as a curriculum leader, I work with teachers and administrators to promote high student achievement in our school. My four years as a student at Walden University has been most beneficial in my growth as an educational leader. My coursework has helped me develop a solid foundation in curriculum, instruction, and assessment and continues to support my growth as a leader in

education. The theoretical framework for this research, expectancy-value theory, enforces the needs to work collectively with teachers when implementing new initiatives. If teachers do not see the value or hold high expectations of an initiative, such change will not effectively be implemented and student growth will not occur. As a result of this mixed-methods research study, I have gained confidence in my ability to conduct educational research that could positively impact student achievement. This work has allowed me to define problems in education and seek results to promote change in the learning environment.

Reflection on Importance of the Work

As an educator, I always look for the most effective instructional strategies that will help students grow academically. As a leader, I feel that it is my duty to search for methods that not only improve my craft as an educator, but help my colleagues to also grow as educators. Personalized learning is an instructional mode that empowers students as learners. It offers a meaningful educational experience that allows for choice, focuses on students' strengths, and offers multiple paths towards mastery. If teachers are well versed in their content area and in personalized learning strategies, the resulting instructional practices has the potential to increase student achievement in that content area.

The doctoral process taught me that it is essential to continue my growth as a learner in the field of education. I must always look for more effective strategies to meet the needs of the learners in my community. To do this, I cannot work in isolation. Success builds from continued academic studies, collaboration with colleagues, research,

and program development. My coursework at Walden University, along with professors, have taught me to recognize potential problems and redirect my focus on potential solutions to promote growth in student and colleagues. Learning is most effective when it is community focused and people are not left to learn in isolation.

Implications, Applications, and Suggestions for Future Research

Implications and Applications

The purpose of this study was to investigate three research questions: How does the implementation of each of the personalized learning essential elements differ between content area departments? How do teachers demonstrate the implementation of personalized learning elements in their content area? What do teachers describe as challenges in implementing a personalized learning environment in their content area? The data supported the following themes: teachers seek a deeper understanding of personalized learning elements, a strong grasp of content area knowledge and pedagogical content knowledge is required to design multiple pathways for personalized learning experiences, and time is a crucial element in planning and implementation of personalized learning.

The implications of these findings were the demand to design a professional development program that satisfied teachers' needs for a deeper understanding of personalized learning elements (knowing your learner, student voice and choice, flexible groupings, data-informed instruction, and technology integration), content area focused learning opportunities for teachers, and additional time to plan instruction. Three one day sessions coupled with ongoing one-on-one support from personalized learning

collaborators encompass the design of the proposed professional development program. Ongoing feedback from participants will assist district leadership in making improvements in professional learning experiences to better support teachers. As teachers gain confidence in their skills of integrating personalized learning experiences in their content areas, they can share their successes and offer advice to other teachers that seek to improve the learning dynamics in their classroom.

Suggestions for Future Research

This research on the challenges teachers have when implementing personalized learning in their content areas was conducted in a single school district. Future research could focus on multiple sites at different stages in their implementation efforts. For instance, what efforts have assisted teachers in implementation at a school that has focused on personalized learning for 5-10 years compared to a school that has just started the implementation process. Future research could also examine the differences of personalized learning experiences at the elementary level compared to the secondary level.

Implications for Social Change

This study on teachers' challenges in implementing personalized learning in content areas promotes social change through the analysis of the implementation of this innovate instructional mode. If instruction is tailored to meet the needs of individual students, then student achievement will show positive growth. However, this mode of instruction will only be effective if teachers have a thorough understanding of personalized learning strategies along with a deep understanding of their content areas.

Continuous teacher support is also a necessity in the success of a personalized learning environment for students. The project in Section 3 that was designed as a result of the data analysis supports teachers' growth in a content-specific personalized learning professional development program. This program encompasses the professional development needs as mentioned by the participants of this study during the interview process.

Conclusion

In Section 4, I reflected upon my growth as a researcher and this study through the eyes of a scholarly practitioner. I described strengths and limitation of my research along with recommendations for alternate approaches to this research study. Throughout my journey at Walden University I have grown as a leader in the field of education with an increased understanding of curriculum, instruction, and assessment. As a researcher, I have realized that only perseverance will result in meaningful work that has the potential to influence educational practices, teacher growth, and student achievement. As a teacher leader in my school district, I strongly believe that initiatives implemented by a school district will only be beneficial if time is taken to examine and support the needs of teachers so they feel confident in their implementation efforts. This research has inspired me to seek opportunities for my colleagues to grow as learners in their content area along with exploring new instructional strategies that have the potential to increase student achievement. If the voices of teachers are valued, gains will be made in the field of curriculum, instruction, and assessment that can change the way teachers and students grow are learners.

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Appendix A: The Project

The project outlined is based on the results of this research study regarding teachers' challenges in implementing personalized learning in their content areas. The results of this research indicated the need for professional development focused on an in depth understanding of each of the five personalized learning elements and building individual teachers' content area knowledge. Furthermore, participants stated a need for time to plan opportunities for personalized instruction for students. Professional development that is personalized to the needs of individual teachers and embeds pedagogical content knowledge will build teacher efficacy and increase student achievement (Burbank et al., 2016; Clarke, 2016; Griffin & Brownell, 2018; Lowrie, 2014; Matherson & Windle, 2017).

Each full-day professional development session engages participants in a variety of learning activities. Pasatta et al. (2017) stated professional development should be designed to mirror effective classroom instruction. Thus, each full-day session includes large group and small group discussions, multi-media resources, and time for independent work and reflection. The following professional development program for this project includes personalized learning training, content area learning, time for collaborative lesson design, and participant reflection. The project includes the following information for each full-day session: professional development program objective, detailed agenda outlining the session's activities and discussion topics, presentation slides, and participant evaluation survey.

Professional Development Program Objective for Session 1: By the end of the personalized learning training session, participants will be able to:

- Summarize the philosophy of personalized learning and state at least one benefit to students.
- Describe the five elements of personalized learning and explain how each element could be applied to their content area.

Session 1: Personalized Learning Training Agenda

Time	Activity

8:00am - 8:30am (30 minutes)	**Welcome, Introduction, & Energizer**
	• **Introduction of presenters**
	• **State today's learning goal**
	• **Review professional learning expectations**
	  o Be engaged in today's work. Stay off personal technology unless it is part of the learning activity.
	  o Share your ideas and listen to others. Everyone learns better together.
	  o Be forward thinking. Apply today's work to your classroom environment.
	• **Large Group Energizer:** Let's Dance
	  o In their introduction, participants will state their name, school, courses currently teaching, and one interesting fact.
	  o As the music plays, the participants are to walk around the room. Once the music stops participants needs to form groups of 3-4.
	  o In small group, members will introduce themselves using the criteria for introductions.
	  o Repeat three times.

8:30am - 9:30am (60 minutes)	**Why Personalized Learning?**
	• **What is personalized learning?**
	  o Philosophy
	  o Introduce the 5 elements: knowing your learners, student voice & choice, flexible groupings &

	space, data-informed instruction, & technology integration
	• **How does personalized learning benefit students?**
	  o Student testimonials
	  o Teacher testimonials
	• **What does it look like in a classroom?**
	  o Show short video of personalized learning in classrooms. All 5 elements must be present in the video. Classroom examples should represent a variety of core (i.e., language arts, math, science, and social studies) and elective content areas (i.e., business, family consumer science, engineering, journalism, music, theater, visual art, world language)
	  o **Table group discussion:** What did you observe in the video? What activities could you implement in your classroom? Tables must be prepared to share at least one discussion point with the larger group.

9:30am – 10:15am
(10 minutes)
	<u>Knowing Your Learners</u>
	• **Definition**
	  o Participants: in your own words describe what it means to "know your learners".
	  o Presenter: Use an online collaboration forum for participants to share responses. Lead discussion based on responses leading to formal definition.
	• **Classroom Examples**
	  o Examples must include at least one core content area (i.e., language arts, math, science, and social studies) and one elective content area (i.e., business, family consumer science, engineering, journalism, music, theater, visual art, world language)
	  o Examples may be shown electronically. If teachers that have implemented this element are available, ask them to come share ideas.
	• **Content Area Discussion**
	  o **Task 1:** As a group, discuss what you may include on a student information sheet that would be distributed at the beginning of a course.
	  o **Task 2:** Examine a provided district learner profile. Discuss what information is helpful for

	your content area and what decisions you would make based on the information.
10:15am – 10:25am (10 minutes)	**Break** • Drinks and snacks will be provided for participants
10:25am - 11:10am (45 minutes)	**Student Voice & Choice** • **Definition** o Distribute current articles on student-centered learning, student voice and choice in the classroom. o At each table, participants will read the article they chose, take notes, and summarize what they learned. o After time has passed, participants in the room that read the same article will meet to briefly discuss that article and choose talking points for that article. o Participants will go back to their tables and share what they learned. They may choose how to share what they learned: verbal summary, poster, diagram, or another option selected by participant. • **Classroom Examples** o Examples must include at least one core content area (i.e., language arts, math, science, and social studies) and one elective content area (i.e., business, family consumer science, engineering, health & physical education, journalism, music, theater, visual art, world language). o Examples may be shown electronically. If teachers that have implemented this element are available, ask them to come share ideas. • **Content Area Discussion** o Provided a current copy of district standards for each content area. o Each group should look over the current set of standards and find which standards may allow for student voice and choice. o Pick one standard to focus on as a group and discuss how you would implement student voice and choice when teaching that standard.
11:10am - 11:55pm (45 minutes)	**Flexible Groupings & Space** • **Definition** o Provide different types of groups for learning:

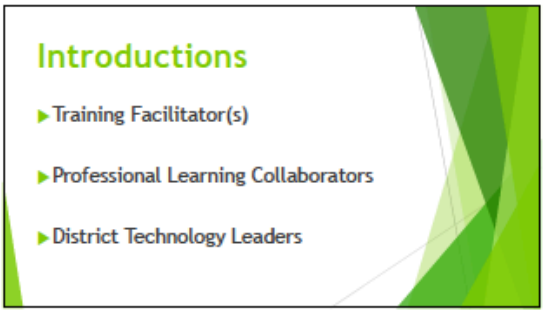
	▪ Video ▪ Article reading ▪ Small group discussion ▪ Direct instruction o Allow participants to choose which groups they want to partake in and allow them to also change groups if desired. • **Classroom Examples:** o Examples must include at least one core content area (i.e., language arts, math, science, and social studies) and one elective content area (i.e., business, family consumer science, engineering, health & physical education, journalism, music, theater, visual art, world language). o Examples may be shown electronically. If teachers that have implemented this element are available, ask them to come share ideas. • **Content Area Discussion** o Participants may choose to work individually or with a partner to create a plan on what flexible learning would look like in their classroom. o Participants should consider types of groups, classroom space, traffic flow, etc.
11:55pm - 12:45pm (50 minutes)	**Lunch** • **Options:** Participants may choose to bring sack lunch or leave campus and eat at a nearby establishment.
12:45pm - 1:30pm (45 minutes)	**Data-Informed Instruction** • **Definition** o **Data collection tools** ▪ District technology leaders will lead discussion on existing tools for data collection • District student information database • Online formative assessment tools ▪ As a large group discuss the value of each tool to promote student growth. • **Classroom Examples:** o Examples must include at least one core content area (i.e., language arts, math, science, and social studies) and one elective content area (i.e., business, family consumer science, engineering,

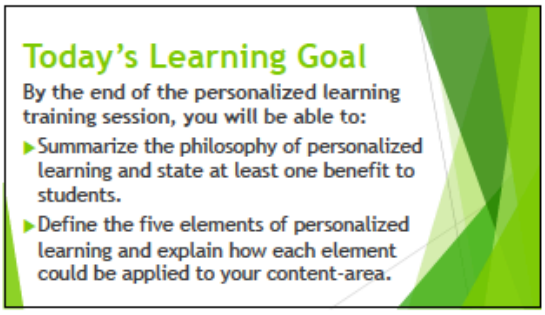
	health & physical education, journalism, music, theater, visual art, world language). o Examples may be shown electronically. If teachers that have implemented this element are available, ask them to come share ideas. • **Content Area Discussion** o Participants will discuss what data is most beneficial to help you meet the needs of their learners for their content area (i.e.: assessment data, course grades, formative assessments currently in place.) o Content areas will create a poster with tools that they feel are most beneficial to their content area. Posters will be hung around the room. o All participants will do a short gallery-walk to read posters from all content areas. o Once participants have seen all the posters they may revise their poster to add ideas from other content areas that may be useful.
1:30pm-2:15pm (45 minutes)	**<u>Technology Integration</u>** • **Definition** o Participants: list current uses of technology on a shared Google doc. o Presenter: create a digital word cloud using provided list to show current uses of technology. Discuss what is shown on the word cloud. • **Technology Show & Tell** o District technology specialists will show programs and tools that engage learners. o Stations will be set-up around the room showing a variety of technology tools. Stations include, but are not limited to: ▪ Video creation ▪ Open source resources ▪ Apps ▪ Online course design ▪ 3-D modeling ▪ Technology playground o District technology leaders will share a list of future technology professional development opportunities with participants. • **Content Area Discussion** o Brainstorm a list of technology tools that would engage learners in your content area.

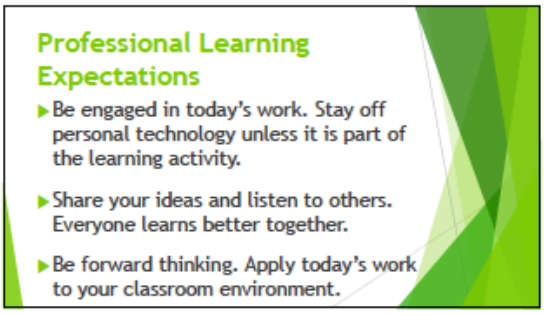
	○ Each participant should select one tool that they plan to utilize in their current or next content unit. • **Partner Sharing** ○ Participants need to find a partner not in their content area and share their what technology they plan to implement. ○ Participants will share what they heard at their tables.
2:15pm-3:00pm (45 minutes)	**<u>Reflection & Goal Setting</u>** • **Reflection** ○ Participants are to look back at their work with each of the five elements of personalized learning and reflect on how they could see a single element or combination of elements being implemented in their classroom. ○ **Goal Setting:** Participants need to write a goal for a personalized learning activity to be implemented in their classroom. ▪ Options could include: a unit review, revising a current project or writing a new project, revising a lesson to add multiple learning modes, personalizing a full learning unit, etc. ○ Participants will create a "to do" list for what they would need to add personalized learning in their instructional practices. (curricular resources, one-on-one assistance, planning time, etc.)
3:00pm-3:30pm (30 minutes)	**<u>Wrap-Up & Evaluations</u>** • **Next Steps:** set an appointment with personalized learning collaborator for one-to-one assistance on your goal. • **Evaluations:** distribute evaluations for participants to complete. Participants may leave once evaluations have been turned in.

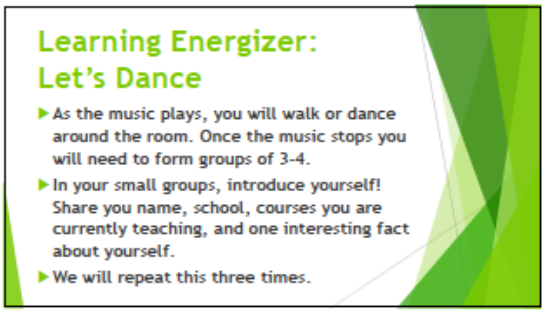
Session 1: Personalized Learning Training Slides

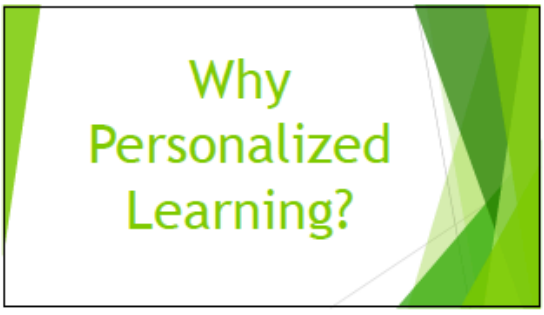
Slides 1-6





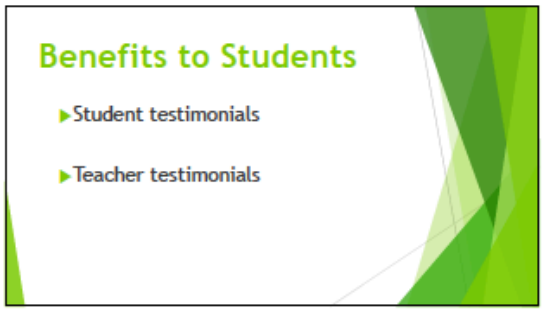






Slides 7-12


Personalized Learning Elements
Knowing Your Learners
Student Voice & Choice
Flexible Groupings & Space
Data-Informed Instruction
Technology Integration


Benefits to Students
Student testimonials
Teacher testimonials


Classroom Examples
(Add Link to Video)

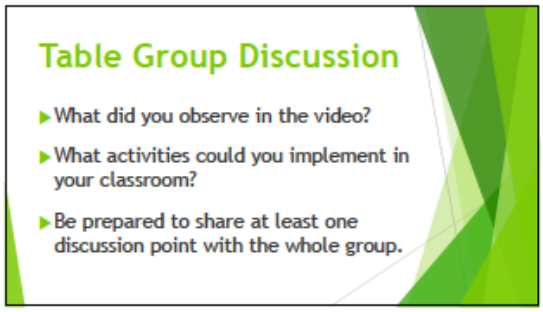
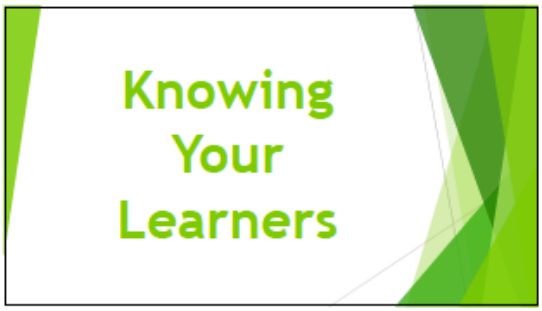
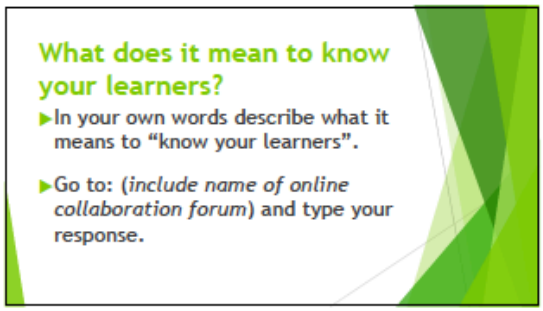
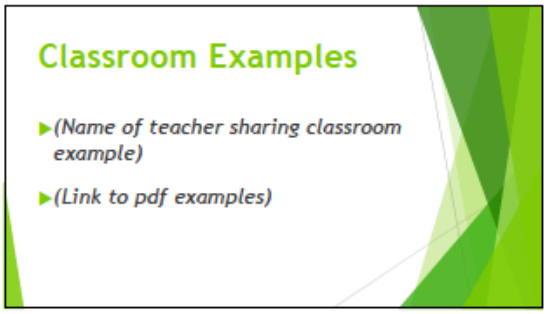


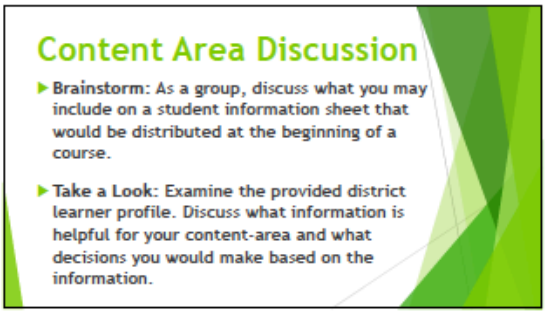
Table Group Discussion
What did you observe in the video?
What activities could you implement in your classroom?
Be prepared to share at least one discussion point with the whole group.

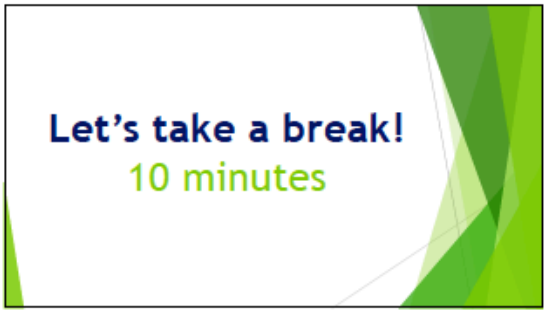

Knowing Your Learners

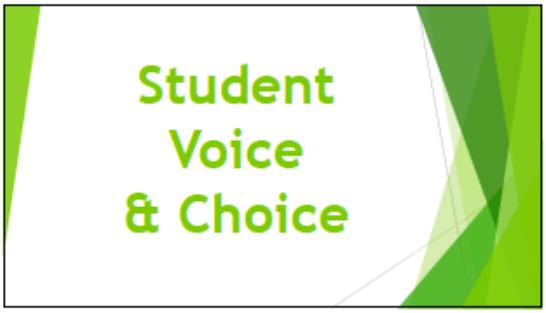

What does it mean to know your learners?
In your own words describe what it means to "know your learners".
Go to: (include name of online collaboration forum) and type your response.

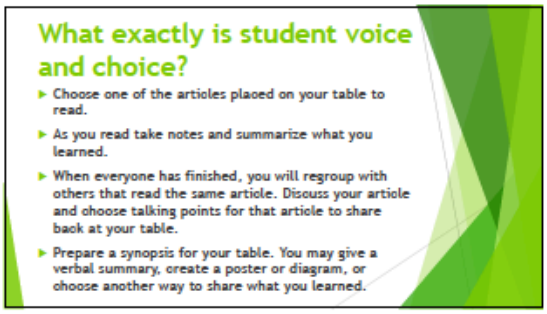
Slides 13-18

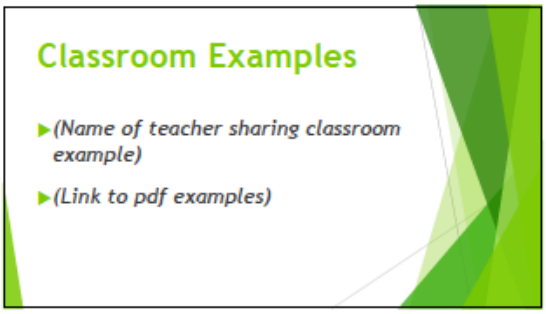

Classroom Examples
(Name of teacher sharing classroom example)
(Link to pdf examples)


Content Area Discussion
Brainstorm: As a group, discuss what you may include on a student information sheet that would be distributed at the beginning of a course.
Take a Look: Examine the provided district learner profile. Discuss what information is helpful for your content-area and what decisions you would make based on the information.

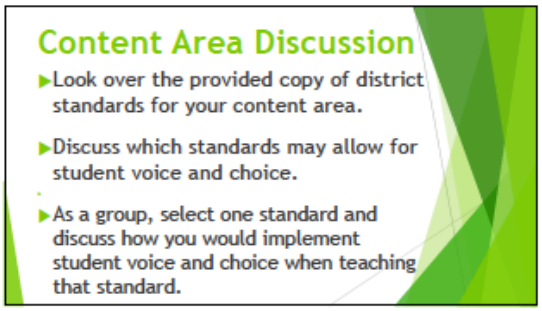

Let's take a break!
10 minutes


Student Voice & Choice

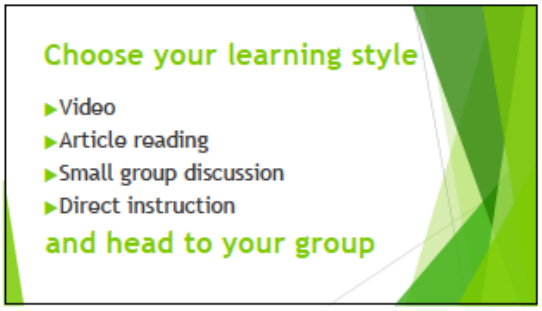

What exactly is student voice and choice?
Choose one of the articles placed on your table to read.
As you read take notes and summarize what you learned.
When everyone has finished, you will regroup with others that read the same article. Discuss your article and choose talking points for that article to share back at your table.
Prepare a synopsis for your table. You may give a verbal summary, create a poster or diagram, or choose another way to share what you learned.

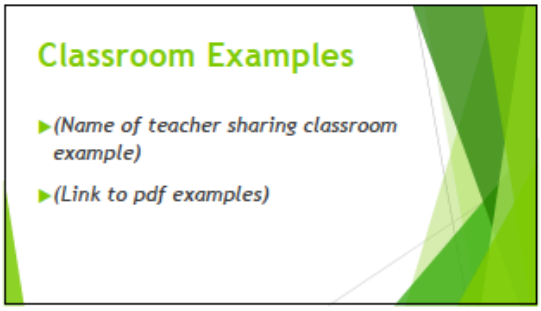

Classroom Examples
(Name of teacher sharing classroom example)
(Link to pdf examples)

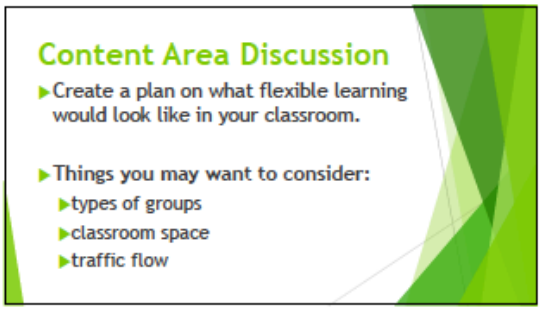
Slides 19-24


Content Area Discussion
Look over the provided copy of district standards for your content area.
Discuss which standards may allow for student voice and choice.
As a group, select one standard and discuss how you would implement student voice and choice when teaching that standard.


Flexible Groupings & Space

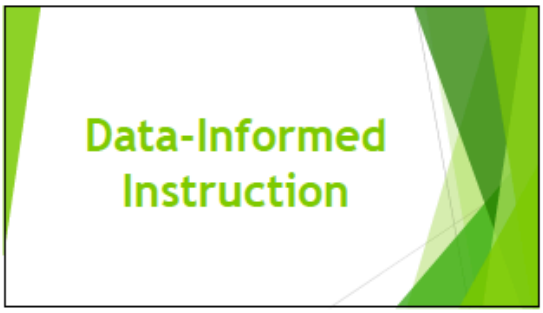

Choose your learning style
Video
Article reading
Small group discussion
Direct instruction
and head to your group

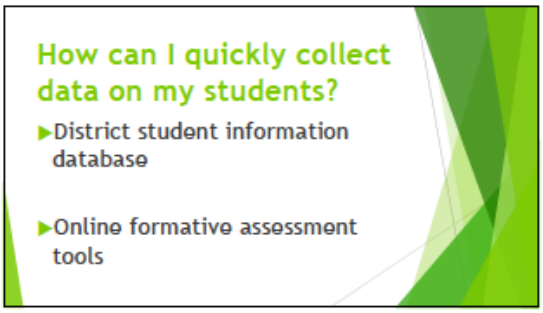

Classroom Examples
(Name of teacher sharing classroom example)
(Link to pdf examples)

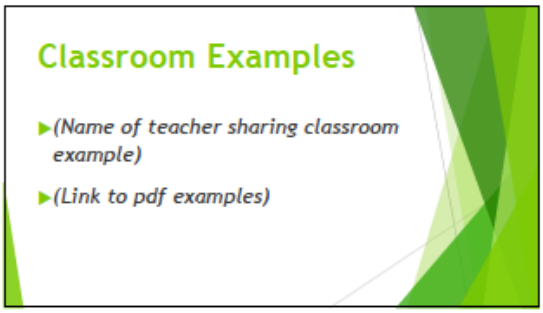

Content Area Discussion
Create a plan on what flexible learning would look like in your classroom.
Things you may want to consider:
types of groups
classroom space
traffic flow


Time for Lunch
We will start back up at12:45pm.

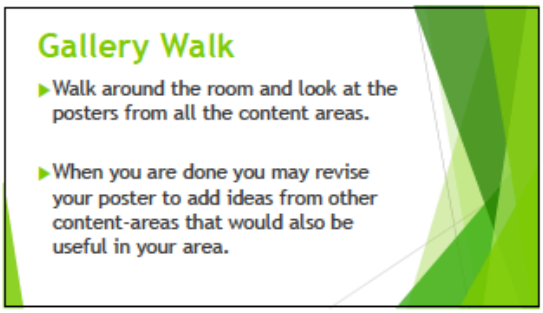
Slides 25-30


Data-Informed Instruction


How can I quickly collect data on my students?
District student information database
Online formative assessment tools

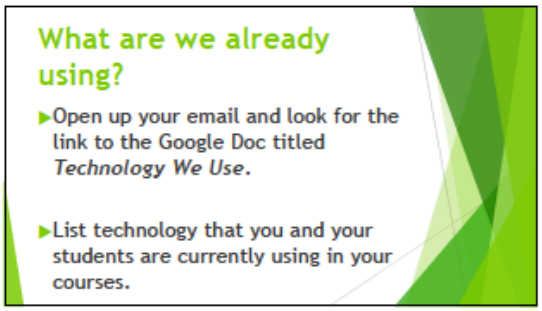

Classroom Examples
(Name of teacher sharing classroom example)
(Link to pdf examples)


Content Area Discussion
Discuss what data is most beneficial to help you meet the needs of your learners in your content-area.
Create a poster with tools that you feel are most beneficial to your content-area.
When you are done hang your poster up in the room.


Gallery Walk
Walk around the room and look at the posters from all the content areas.
When you are done you may revise your poster to add ideas from other content-areas that would also be useful in your area.

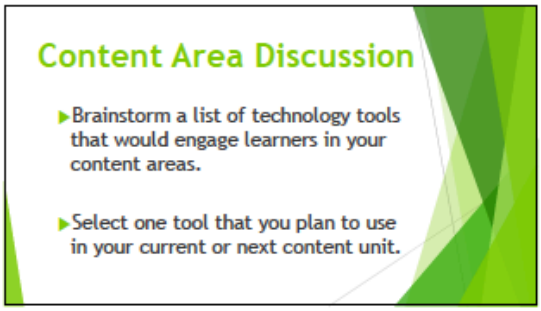

Technology Integration

Slides 31-36

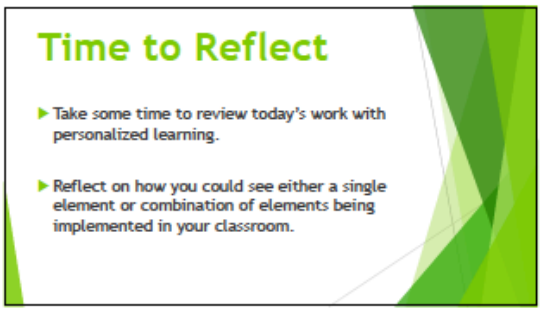

What are we already using?
Open up your email and look for the link to the Google Doc titled *Technology We Use*.
List technology that you and your students are currently using in your courses.


Technology Show & Tell
Visit the technology stations that are of most interest to you:
Video creation
Open source resources
Apps
Online course design
3-D modeling
Technology playground

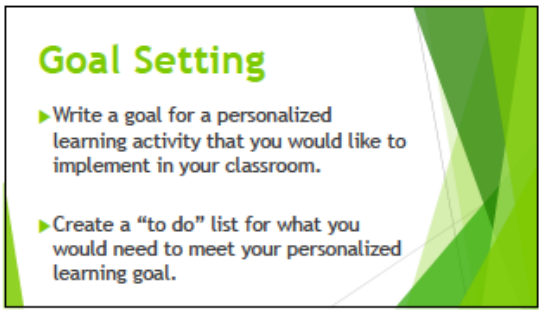

Professional Development Sessions for Technology
(Dates of future PD sessions for technology tools)


Content Area Discussion
Brainstorm a list of technology tools that would engage learners in your content areas.
Select one tool that you plan to use in your current or next content unit.


Partner Sharing
Find a partner not in your content area and share what technology you plan to implement in your course.
You will share what you heard back at your table.


Time to Reflect
Take some time to review today's work with personalized learning.
Reflect on how you could see either a single element or combination of elements being implemented in your classroom.

Slides 37-38



Session 1: Evaluation Questions for Personalized Learning Training

1. In your own words, what is personalized learning? In your explanation, state one benefit of personalized learning for students.
2. Briefly define each personalized learning element. Provide an example of how each element could be applied to your content area.
    a. Knowing Your Learners
    b. Student Voice and Choice
    c. Flexible Groupings and Space
    d. Data-Informed Instruction
    e. Technology Integration
3. On a scale of 1 to 5 how well was today's learning objective met?

    Objective Not Met 1 2 3 4 5 Objective Met
4. Provide any suggestions you may have for improving today's training experience.
5. Please share your goal for how you would like to implement personalized learning in your classroom.
6. How can the personalized learning team assist you in achieving your goal?

Professional Development Program Objective for Session 2: By the end of the building content area expertise training session, participants will be able to:

- List examples of how each personalized learning element fits their curricular area.
- Summarize multiple instructional strategies for teaching a chosen foundation skill for their content area.
- Describe the personalized learning project created by their content-team, including responsibilities and deadlines.

Program Support 2: Building Content Area Expertise (Mathematics) Agenda

Time	Activity

8:00am - 8:30am (30 minutes)	**<u>Welcome, Introduction, & Energizer</u>**
	• **Introduction of presenters**
	• **State today's learning goal**
	• **Review professional learning expectations**
	  o Be engaged in today's work. Stay off personal technology unless it is part of the learning activity.
	  o Share your ideas and listen to others. Everyone learns better together.
	  o Be forward thinking. Apply today's work to your classroom environment.
	• **Teambuilding Activity (STEM Related)**
	  o Form groups of 3-4 teachers and give them a supply bag of random materials (i.e., cups, straws, newspapers, masking tape, paper clips, rubber bands). Each group must be given the same amount and type of supplies.
	  o Set a timer and give group 5 minutes to construct the tallest possible tower using their supplies. The tower's base must be on the floor. The tower must be a free-standing structure.
	  o Measure all the towers after time has passed to determine the winner.
	  o Debrief on strategy and team roles.

8:30am - 9:15am (45 minutes)	**Review of Personalized Learning Elements** • Divide the large group into 5 smaller groups. Give each group a poster-sized sheet of paper with the name of one of the five personalized learning elements (knowing your learners, student voice & choice, flexible groupings & space, data-informed instruction, & technology integration) and a few markers. • Give a few minutes for each group to write examples of how this personalized learning element can be applied in the mathematics classroom. Groups will rotate through all five elements and write examples on each poster. • When finished hang the posters around the room and debrief as a whole group.
9:15am – 10:20am (10 minutes)	**A Focus on Foundations** • Prior to professional development the department was to select a skill to focus on as a large group. This skill should be something that is used in multiple courses and is difficult for students to grasp. For the purpose of this agenda, the skill selected will be **factoring polynomials**. For this activity make sure novice teachers and master teachers are intermixed. • Give each participant a set of polynomials to factor: include quadratics with a x^2 coefficient of 1 and greater than 1, the difference of two squares, the difference of two cubes, and examples that would require factoring by grouping. Allow time for participants to factor each problem using the technique they would instruct students to do in class. • Ask the group to discuss their techniques, similarities and differences. Each group will summarize their discussion for the whole group. • Ask an entire group discuss multiple methods of factoring polynomials that are currently taught in throughout the math sequence. Connect to personalized learning for students (student choice, flexible groupings).
10:20am – 10:30am (10 minutes)	**Break** • Drinks and snacks will be provided for participants
10:30am - 12:00pm (90 minutes)	**Content-Related Speaker** • Reach out to university professors to find a speaker that can discuss instructional methods for teaching mathematics. Contact mathematics department along with education departments at local institutions of higher learning.

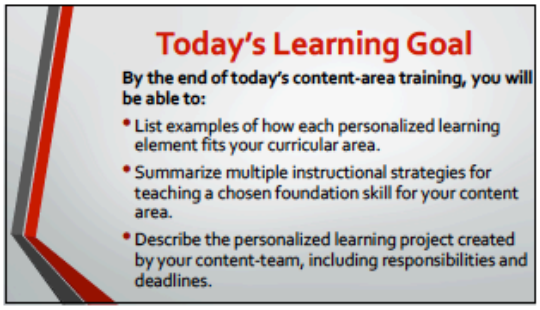
	• Allow time for department teachers to ask questions regarding their specific courses or skills that students struggle with learning.
12:00pm – 1:00pm (1 hour)	**Lunch** • **Options:** Participants may choose to bring sack lunch or leave campus and eat at a nearby establishment.

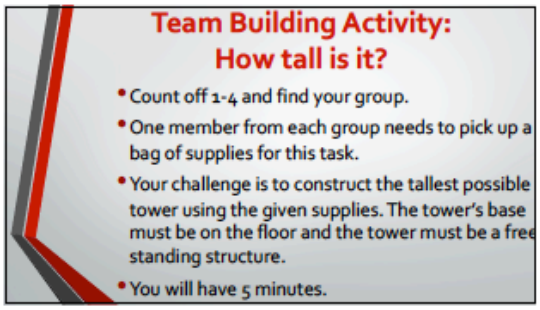
1:00pm – 3:00pm
(2 hours)
	Work as Curriculum Teams
	• Group teachers by course teams:
	  o Algebra 1
	  o Geometry
	  o Algebra 2
	  o Precalculus
	• Each team will select one standard for their course to focus on for a personalized learning activity.
	• This time will be used to outline the learning activity and create learning materials.
	• By the end of the two hours, groups should have an outline of the project, a list of participant responsibilities, and deadlines for completion.
	• The curriculum head and personalized learning collaborators will be available to assist each group as needed.

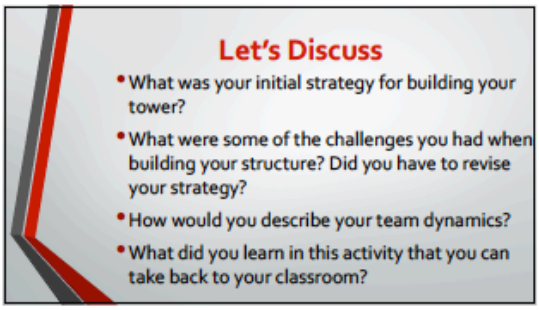
3:00pm-3:20pm (30 minutes)	**Share Ideas for Team Projects** • Each course team will have 5 minutes to share their project will the rest of the department. • Other teachers are allowed to ask questions and provide suggestions for helpful resources.
3:20pm-3:30pm (10 minutes)	**Evaluations** • Distribute evaluations for participants to complete. Participants may leave once evaluations have been turned in.

Session 2: Building Content Area Expertise (Mathematics) Agenda Slides

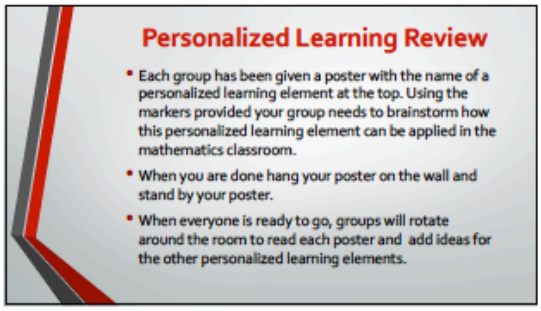
Slides 1-6

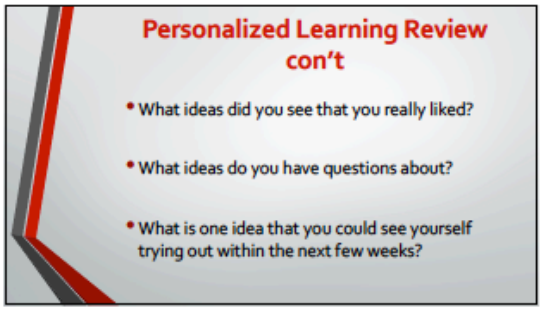




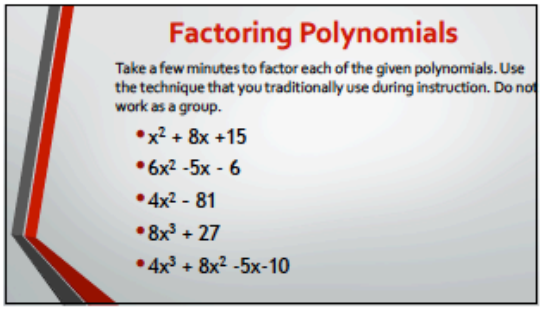


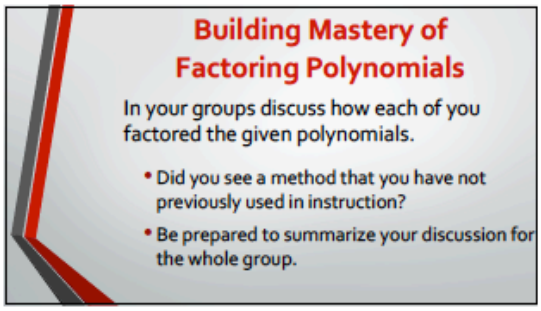
Slides 6-12

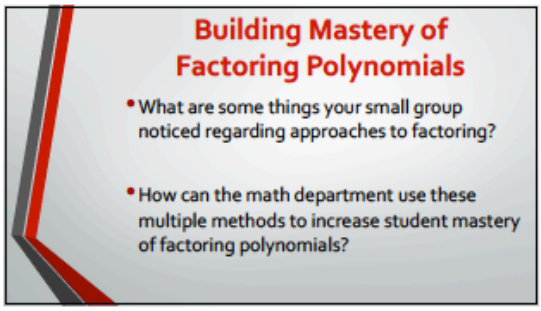

Personalized Learning Review
Each group has been given a poster with the name of a personalized learning element at the top. Using the markers provided your group needs to brainstorm how this personalized learning element can be applied in the mathematics classroom.
When you are done hang your poster on the wall and stand by your poster.
When everyone is ready to go, groups will rotate around the room to read each poster and add ideas for the other personalized learning elements.


Personalized Learning Review con't
What ideas did you see that you really liked?
What ideas do you have questions about?
What is one idea that you could see yourself trying out within the next few weeks?

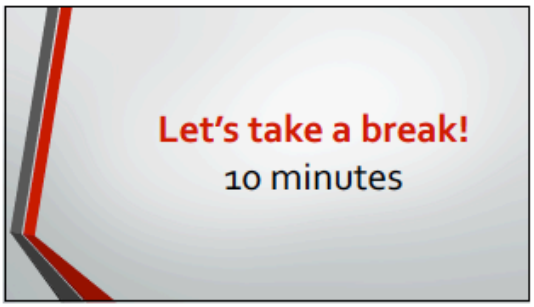

A Focus on Foundations


Factoring Polynomials
Take a few minutes to factor each of the given polynomials. Use the technique that you traditionally use during instruction. Do not work as a group.
$x^2 + 8x + 15$
$6x^2 - 5x - 6$
$4x^2 - 81$
$8x^3 + 27$
$4x^3 + 8x^2 - 5x - 10$


Building Mastery of Factoring Polynomials
In your groups discuss how each of you factored the given polynomials.
Did you see a method that you have not previously used in instruction?
Be prepared to summarize your discussion for the whole group.

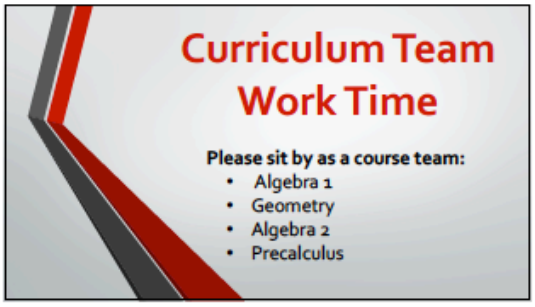

Building Mastery of Factoring Polynomials
What are some things your small group noticed regarding approaches to factoring?
How can the math department use these multiple methods to increase student mastery of factoring polynomials?

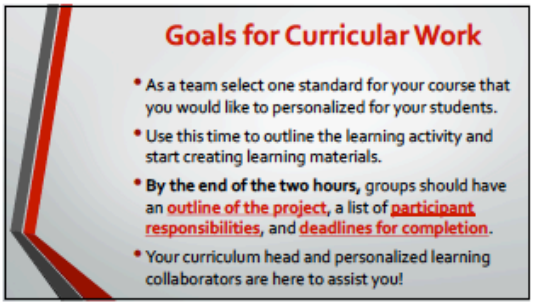
Slides 12-18


Let's take a break!
10 minutes


Welcome
(Name of Speaker)
(Title of Speaker's Presentation)
(Insert speaker's slides after this slide.)


Time for Lunch
We will start back up at 1:00pm.


Curriculum Team Work Time
Please sit by as a course team:
Algebra 1
Geometry
Algebra 2
Precalculus


Goals for Curricular Work
As a team select one standard for your course that you would like to personalized for your students.
Use this time to outline the learning activity and start creating learning materials.
By the end of the two hours, groups should have an outline of the project, a list of participant responsibilities, and deadlines for completion.
Your curriculum head and personalized learning collaborators are here to assist you!


Tell us about your team project
Each course team will have 5 minutes to share their project will the rest of the department.
Questions and suggestions for helpful resources are welcome!

Slide 19

Session 2: Evaluation Questions for Content Area Training

1. During today's discussion focusing on foundations, what new instructional strategies did you learn to support student learning in your classroom?
2. Briefly describe the personalized learning project chosen by your team.
3. On a scale of 1 to 5 how well was today's learning objective met?

   Objective Not Met 1 2 3 4 5 Objective Met
4. Provide any suggestions you may have for improving today's training experience.
5. What is one takeaway from today's session that will help you as you plan instruction?
6. What is one personal goal that you have as a result of today's session?
7. How can the curriculum leader and personalized learning team assist you meeting your goal?

Professional Development Program Objective for Session 3 Goal: By the end of the third professional development training session, participants will be able to:

- Summarize the personalized learning project that was implemented during the academic year.
- Analyze and reflect upon successes and area for growth as they continue implementing personalized learning in their content area.
- Start planning for another personalized learning project to be implemented the following academic year.

Program Support 3: Reflection and Future Planning Agenda

Time	Activity

8:00am - 8:45am (45 minutes)	**Welcome, Introduction, & Ice Breaker**
	• **Introductions**
	  ○ Facilitators
	  ○ Presenters
	  ○ Teachers - state school, content area, and title of your personalized learning project
	• **Professional learning expectations**
	  ○ Be engaged in today's work. Stay off personal technology unless it is part of the learning activity.
	  ○ Share your ideas and listen to others. Everyone learns better together.
	  ○ Be forward thinking. Think of how what you learn today can improve learning for students in your classroom.
	• **State today's learning goal**
	• **Ice breaker:** Aha Moments
	  ○ In your table groups, state one "aha" that you had this year during one of your training sessions or one-to-one meetings with a personalized learning collaborator.
	  ○ Explain how this "aha-moment" has influenced instruction in your classroom.

8:45am – 9:45am
(60 minutes)
	Personalized Learning Project Showcase Session 1
	• To prepare for this session, participants were asked to gather instructional materials and student work examples from their personalized learning project.
	• Session facilitators and personalized learning collaborators would have predetermined groups of 5-6 teachers for this showcase. This first arrangement of groups is by content area. It may be necessary to put 2 content areas together, depending of the number of participants from each content areas.
	• In small groups, participants will discuss their personalized learning project, including:
	  ○ project goal and learning objectives
	  ○ personalized learning elements utilized
	  ○ duration of project
	  ○ teacher preparation
	  ○ student work
	  ○ project strengths and possible revisions
	• Other teachers in the group will have the opportunity to ask questions and provide helpful feedback.
	• As projects are discussed, teachers will note aspects of the project that could be implemented in their own classrooms.

9:45am - 10:00am (15 minutes)	**Break** • Drinks and snacks will be provided for participants • Facilitators will show a slide stating groups for the next showcase session. • At the end of break, participants must be sitting with their second group of mixed content areas.

10:00am - 11:00am
(60 minutes)
	Personalized Learning Project Showcase Session 2
	• Groups for this session will include teachers from different content areas. When determining these groups, facilitators should be sure to not include teachers from the same content area or in the same showcase session 1 group in the same group for session 2.
	• In small groups, participants will discuss their personalized learning project, including:
	  ○ project goal and learning objectives
	  ○ personalized learning elements utilized
	  ○ duration of project
	  ○ teacher preparation
	  ○ student work
	  ○ project strengths and possible revisions
	• Other teachers in the groups will have the opportunity to ask questions and provide helpful feedback.

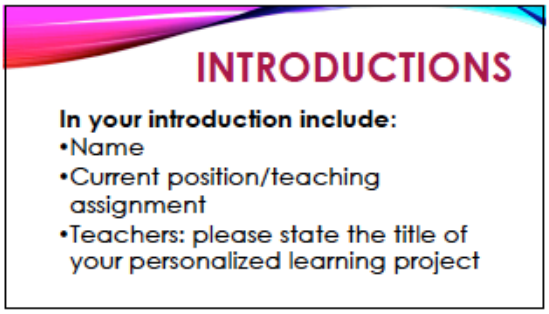
	• As projects are discussed, teachers will note aspects of the project that could be implemented in their own classrooms.
11:00am - 11:30pm (30 minutes)	**Reflection** • Participants will use this time to reflect on what they learned over the 2 showcase sessions. This includes the helpful feedback they were given about their own project along with project ideas heard from other participants that they may want to try in their own classrooms. • Participants will create a short list of potential ideas for their next personalized learning project. • During the last few minutes of reflection time ask participants to share their future ideas with a partner.
11:30pm - 12:30pm (60 minutes)	**Lunch** • **Options:** Participants may choose to bring sack lunch or leave campus and eat at a nearby establishment.

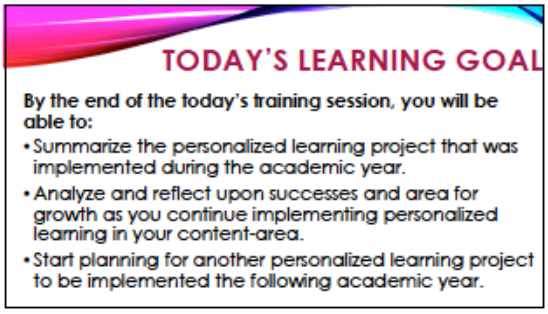
12:30pm - 3:00pm (2.5 hours)	**Next Steps: Participant Work Time**
	• During this time, participants will work on planning their next personalized learning project.
	• By the end of this time, participants should have:
	  o identified specific course standards targeted in this project
	  o a list of necessary resources and materials
	  o an outline of instructional activities
	• The personalized learning collaborators will be available to assist as needed.

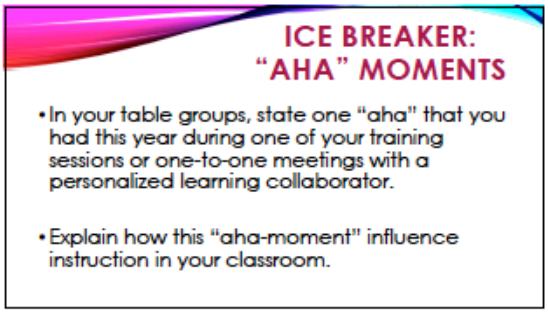
3:00pm-3:15pm (15 minutes)	**Next Steps: Share Your Plan** • Participants will share their idea for their next project in groups of 2-3. • Group members can offer suggestions that may be helpful to each other.
3:15pm-3:30pm (15 minutes)	**Evaluations** • Distribute evaluations for participants to complete. Participants may leave once evaluations have been turned in.

Program Support 3: Reflection and Future Planning Presentation Slides

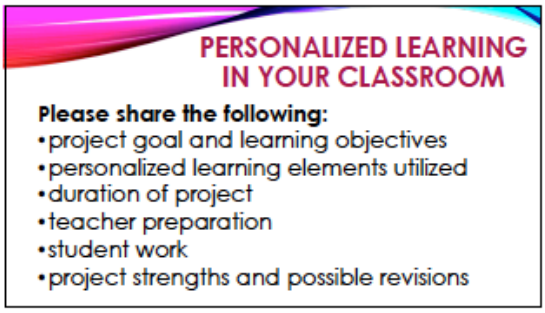
Slides 1-6

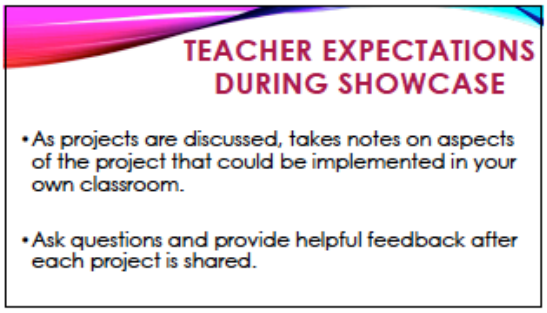


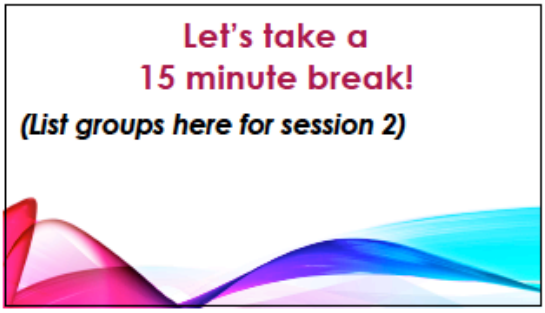


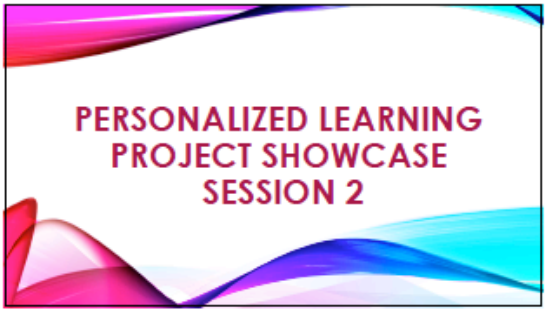


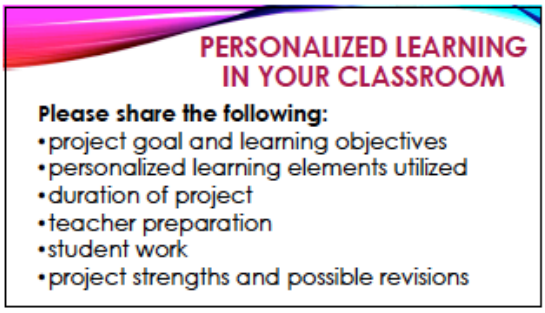
Slides 6-12

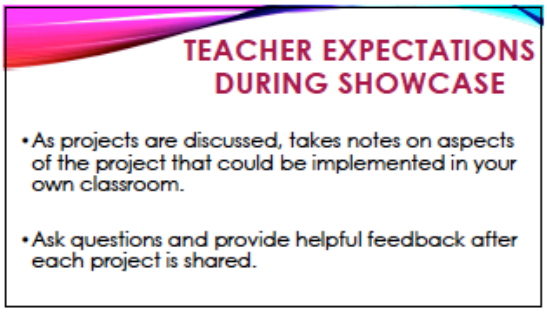

PERSONALIZED LEARNING IN YOUR CLASSROOM
Please share the following:
•project goal and learning objectives
•personalized learning elements utilized
•duration of project
•teacher preparation
•student work
•project strengths and possible revisions


TEACHER EXPECTATIONS DURING SHOWCASE
•As projects are discussed, takes notes on aspects of the project that could be implemented in your own classroom.
•Ask questions and provide helpful feedback after each project is shared.

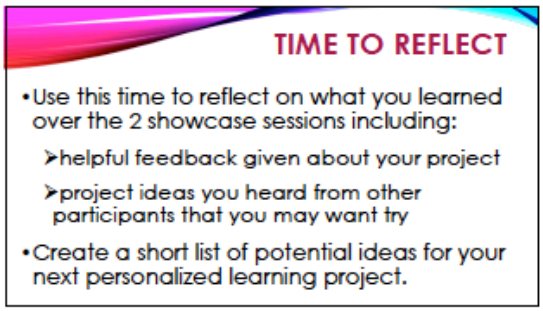

Let's take a 15 minute break!
(List groups here for session 2)

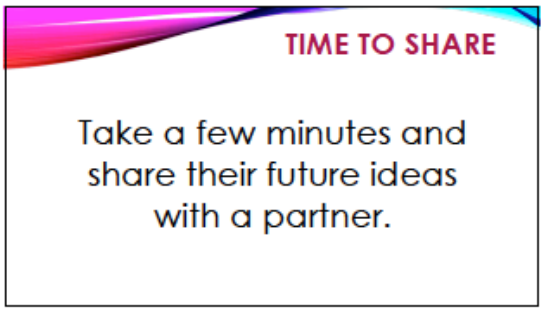

PERSONALIZED LEARNING PROJECT SHOWCASE SESSION 2


PERSONALIZED LEARNING IN YOUR CLASSROOM
Please share the following:
•project goal and learning objectives
•personalized learning elements utilized
•duration of project
•teacher preparation
•student work
•project strengths and possible revisions


TEACHER EXPECTATIONS DURING SHOWCASE
•As projects are discussed, takes notes on aspects of the project that could be implemented in your own classroom.
•Ask questions and provide helpful feedback after each project is shared.

Slides 13-18

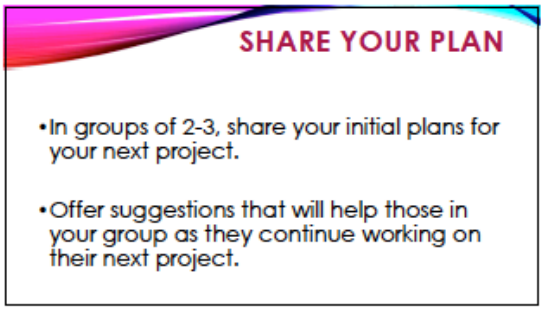

TIME TO REFLECT
•Use this time to reflect on what you learned over the 2 showcase sessions including:
➢helpful feedback given about your project
➢project ideas you heard from other participants that you may want try
•Create a short list of potential ideas for your next personalized learning project.


TIME TO SHARE
Take a few minutes and share their future ideas with a partner.


TIME FOR LUNCH
WE WILL START BACK UP AT 12:30PM.


NEXT STEPS:
TIME TO PLAN


PLANNING YOUR NEXT PROJECT
• Take this time to start planning your next personalized learning project.
• Draft the following:
➢identified specific course standards targeted in this project
➢a list of necessary resources and materials
➢an outline of instructional activities
• Remember the personalized learning collaborators are here to help!


SHARE YOUR PLAN
•In groups of 2-3, share your initial plans for your next project.
•Offer suggestions that will help those in your group as they continue working on their next project.

Slide 19

Session 3: Evaluation Questions for Reflection and Future Planning Session

1. On a scale of 1 to 5 how well was today's learning objective met?

   Objective Not Met 1 2 3 4 5 Objective Met

2. Provide any suggestions you may have for improving today's training experience.
3. Describe the successes you had as you implemented personalized learning in your classroom.
4. Briefly explain your challenges in implementing personalized learning in your content area. What assistance or resources helped you overcome these challenges?
5. Briefly describe your next personalized learning project so we can share useful resources with you.
6. How can your curriculum leader and personalized learning team assist you as you continue to personalize learning for your students?
7. Is there anything else that you would like to share with the personalized learning team and your curriculum leader regarding this year's professional development series?

Appendix B: 2016 and 2017 Strategic Plan Likert-Scale Survey Questions

Note-The survey questions listed below have been extracted from the participating school district's strategic plan survey. The questions used in this Likert-scale survey were written by a select group of K-12 teachers and district administrators. The survey was administered by an independent research firm which collected and organized the data by building, grade level, and in 2017 content area departments.

Survey Section Title: Authentic and Personalized Learning

Question 1: Thinking of all your preps combined, in a typical school day period, how many days did you implement voice and choice in student assignments/activities in your classroom?
Response Choices:
0 days, 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 days, 8 days, 9 days, 10 days

Question 2: Thinking of all your preps combined, in a typical 10 school day period, how many days did you implement activities with flexible student groupings or flexible classroom space?
Response Choices:
0 days, 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 days, 8 days, 9 days, 10 days

Question 3: Thinking of all your preps combined, in a typical 10 school day period, how many days did you implement data-informed activities?
Response Choices:
0 days, 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 days, 8 days, 9 days, 10 days

Question 4: Thinking of all your preps combined, in a typical 10 school day period, how many days did you integrate technology into your lessons?
Response Choices:
0 days, 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 days, 8 days, 9 days, 10 days

Question 5: Thinking of the last 10 school days combined, how many days did you do an activity to get to know your students, or intentionally make a classroom decision based on information you have learned about your students?
Response Choices:
0 days, 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 days, 8 days, 9 days, 10 days

Appendix C: Personalized Learning Observational Protocol Permission

Westside 66
Community Schools

August 15, 2017

To Whom It May Concern:

I hereby grant permission to Angela Mosier to use and modify the "Personalized Learning Checklist".

Sincerely,

Mark W. Welchel

Mark Welchel
Assistant Superintendent
Westside Community Schools

Administration Office
909 South 76th Street
Omaha, NE 68114-4599
pho 402.390.2100
fax 402.390.2136
www.westside66.org

Appendix D: Personalized Learning Observational Protocol

Note-This personalized learning observational protocol tool was created using the Personalized Learning Checklist by M. Weichel, 2017, Westside Community School District, NE. Modifications have been made to the checklist to allow for collection of additional researcher notes during classroom observations. This instrument will be used to collect data for research question 2.

Teacher: **Grade Level:**
Content Area: **# of Students:**

Description of Physical Setting:

PL Component 1: **Knowing Your Learners** Danielson Framework Connections: 1b, 2a, 2b, 3c, 3d, and 4f	**Never**	**Seldom**	**Often**	**Consistently**
Teacher conducts activities to learn about the learners.				
Teacher conducts formative assessments to collect information on each learner.				
Teacher uses information about the learners to make instructional decisions.				
Observer Notes:				

PL Component 2: **Voice & Choice** Danielson Framework Connections: 1a, 1b, 1c, 1d, 2a, 2b, 3a, 3c, and 3e	**Never**	**Seldom**	**Often**	**Consistently**
Teacher demonstrates a mastery of content and enables learners to take risks.				
Teacher facilitates opportunities for learners to alter assignments that make learning more relevant to the learner.				
Teacher designs lesson plans that reflect opportunities for learners to have voice and choice.				
Observer Notes:				

PL Component 3: **Flexible Groupings** **& Space** Danielson Framework Connections: 1a, 1b, 1d, 1e, 2a, 2b, 2c, 2e, 3a, 3b, 3c, and 3e	**Never**	**Seldom**	**Often**	**Consistently**
Teacher makes modifications to the physical environment of the classroom to accommodate different learning activities.				
Teacher designs alignment between learning activities and physical space.				
Teacher adjusts lesson and planning to assist individual learners.				
Observer Notes:				

PL Component 4: **Data-Informed Instruction** Danielson Framework Connections: 1a, 1f, 3c, 3d, and 3e	**Never**	**Seldom**	**Often**	**Consistently**
Teacher uses ongoing methods to assess learner's skill levels and designs instruction accordingly.				
Teacher uses assessments to provide opportunities for learner choice and/or learner groupings.				
Observer Notes:				

PL Component 5: **Technology Integration** Danielson Framework Connections: 1d, 1e, 2b, 2e, 3a, 3c, and 3e	**Never**	**Seldom**	**Often**	**Consistently**
Teacher allows for learners to utilize technology in a meaningful and imaginative way.				
Teacher lesson plans with the SAMR (Substitution Augmentation Modification and Redefinition model in mind.				
Observer Notes:				

Appendix E: Interview Questions

Note- A semi-structured interview process will be utilized to collect data for Research Questions 2 and 3 and collect teacher input on the quantitative findings. This interview structure will allow the researcher to revise questions based on the quantitative survey data and observation data, as well as, add follow-up questions when necessary. The responses to questions 1 and 2 will describe the participants' perception and expectancies of personalized learning; thus, supporting the theoretical framework. Questions 3 and 4 will provide an opportunity for the teacher to elaborate upon the observed lesson (data collected for research question 2). Responses to questions 5 and 6 provide data for research question 3. The quantitative data analysis will serve as the focus for questions 7 and 8. Before concluding the interview, questions 9 and 10 will allow for teacher input towards the potential design of the resulting project.

Teacher:	**Grade Level:**
Content Area:	

Perceptions of Personalized Learning & Professional Development Opportunities

3. What is your definition of personalized learning?
4. In your opinion, what are your thoughts on the value of personalized learning in your content area to improve student learning?

Personalized Learning Essential Element Implementation

5. In the observed lesson, what element(s) of personalized learning did you implement (knowing your learners, student voice and choice, flexible groupings and space, data-informed instructions, and technology integration)?
    - How did you implement the element(s)?
    - Do you feel the implementation was valuable to student learning?
6. If you were to teach the observed lesson again, what changes would you make in how you implemented personalized learning to make the experience more valuable to student learning?

Challenges in Implementing Personalized Learning

7. What challenges, if any, do you have in implementing personalized learning in your content area? Explain.
8. What element of personalized learning is the most challenging to implement in your content area? Why?

Analysis of Strategic Plan Data for Content Area

9. According to the 2017 District Strategic Plan Survey, the (*Content Area Department*) data showed that (*Personalized Learning Element Implemented the Most*) was implemented (*Percent of Element Implemented the Most*) of the time. The element was implemented most frequently in a 10-day cycle compared to the other elements for (*Content Area Department*). In your opinion, why do you think (*Percent of Element Implemented the Most*) had the highest percent of implementation?
10. According to the 2017 District Strategic Plan Survey, the (*Content Area Department*) data showed that (*Personalized Learning Element Implemented the Least*) was implemented (*Percent of Element Implemented the Least*) of the time. The element was implemented least frequently in a 10-day cycle compared to the other elements for (*Content Area Department*). In your opinion, why do you think (*Percent of Element Implemented the Least*) had the lowest percent of implementation?

Professional Development and Resources

11. What professional development opportunities were most valuable in assisting your implementation efforts for personalized learning?
12. In your opinion, what professional development or resources would be most valuable in helping you continue to integrate personalized learning in your content area?

Appendix F: IRB Approval

IRB Approval Number: 12-05-17-0492783. IRB approval was granted on December 5, 2017.