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An Examination of the Attitudinal and Structural Barriers to Successful Implementation of Personalized Learning

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An Examination of the Attitudinal and Structural Barriers

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Jeremy Sullivan

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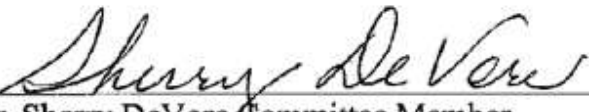
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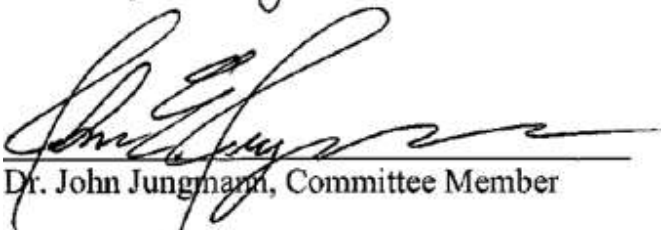
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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

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Abstract

Personalized learning has become a common term in the education lexicon; however, there is not an industry-accepted and universally adopted definition or model. While personalized learning is mentioned in 39 states' Every Student Succeeds Act plan, the models vary greatly because personalized learning requires a full paradigm shift from teacher-centered to student-centered instruction. The purpose of this study was to examine the current barriers K-12 classroom teachers experience when implementing personalized learning. The four core strategies of flexible learning environments, personal learning paths, learner profiles, and competency-based progression identified by Pane et al. (2017a) were utilized to frame personalized learning. The districts chosen to participate publicly identified personalized learning as an instructional priority, and data regarding K-12 classroom teacher beliefs about personalized learning, current structural barriers to personalized learning, extent and types of training on the four core strategies, and current teacher competency levels for the four core strategies were gathered using a cross-sectional census survey. Data were analyzed by examining the mode and frequency distribution of all responses. Analysis of the data indicated strong support for personalized learning in general and the four core strategies. The most frequent structural barriers identified were a lack of time to prepare personalized lessons and too much diversity in achievement levels among students. Teachers reported low levels of participation in professional learning and low levels of competency at using the four core strategies. Overall, analysis of the data indicated teachers believe personalized learning should be utilized; however, teachers are not adequately trained or prepared to utilize the strategies with fidelity and experience structural barriers beyond their control.

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Chapter One: Introduction

Personalized learning in one form or another has appeared in the education lexicon for centuries; however, the concept has lacked a universally accepted definition (Abel, 2016; Bray & McClaskey, 2015; Cavanaugh, 2014; Jenkins & Kelly, 2016; Stevens, 2017). In the National Education Technology Plan (NETP) of 2017, the United States Department of Education (USDOE) explained that in a personalized learning environment "learning objectives, instructional approaches, and instructional content (and its sequencing) may all vary based on learner needs. In addition, learning activities are meaningful and relevant to learners, driven by their interests, and often self-initiated" (United States Department of Education [USDOE], 2017, p. 9). Previously, the NETP of 2010 spurred a series of additional education initiatives that sought to create more personalized learning environments and personalized learning instructional models (USDOE, 2010). These initiatives have unfolded over the past decade and require a deeper examination of personalized learning's definition and role in public education (Walker, 2017).

An integral component to this process has been the increased use of technology and blended learning in classrooms (Bray & McClaskey, 2015). However, this shift in focus from the traditional factory-model of education to a student-centered learning environment requires a full paradigm shift in how curriculum is designed and implemented in the classroom (Brichacek, 2014). For a paradigm shift of this magnitude to be successful, teachers must be adequately trained to design learning activities and environments to meet individual student interests and needs (Brichacek, 2014; DeNisco, 2018).

As implementation of personalized learning increases in schools, it is imperative for school leaders to ensure teachers share a common understanding of the elements of personalized learning and receive targeted and personalized professional learning on the implementation of personalized learning with fidelity (Bray & McClaskey, 2015; DeNisco, 2018). Further, the professional learning opportunities must seek to increase teacher buy-in because teachers are often wary of pedagogical shifts that can be seen as temporary as opposed to shifts in the actual paradigm of teaching (Alliance for Excellent Education, 2017; Grant & Basye, 2014). This chapter includes the background of the study, the conceptual framework, the statement of the current problem, the purpose of the study, the research questions, the significance of the study, and the definition of key terms to provide greater understanding of the barriers faced by classroom teachers at implementing personalized learning with fidelity.

Background of the Study

The tenets of personalized learning can be traced back to the 18th century teachings of Jean-Jacques Rousseau (Dishon, 2017). Progressive educationalists credit Rousseau with "the break from knowledge- and teacher-centered education to a child-centered model which focuses on supporting children's natural capacity and inclination towards learning" (Dishon, 2017, p. 276). One of the first known attempts at systemic personalized learning in the United States was in Pueblo, Colorado, in 1889, when Preston Search, the school superintendent, attempted a curriculum plan that enabled students to progress through studies at their own pace (Ventura, 2014). In 1916, John Dewey advocated for a student-centered approach as opposed to a curriculum-centered

approach to education in his work, *Democracy and Education* (Dishon, 2017; Ventura, 2014).

The NETP of 2010, Race to the Top initiative of 2010, Every Student Succeeds Act (ESSA) of 2015, and the NETP of 2016 and 2017 addressed the need to shift away from the standardized approach to education and placed an emphasis upon more wide-spread utilization of personalized learning (Alliance for Education Excellence, 2016; Basham, Hall, Carter Jr., & Stahl, 2016). The ESSA and NETP provide monetary incentives for schools seeking to implement personalized learning models (Alliance for Excellent Education, 2016; Basham et al., 2016). Currently, 39 states' ESSA plans reference personalized learning, and 17 of those states specifically incorporate personalized learning into their ESSA implementation vision (KnowledgeWorks Foundation, 2018; Molnar, 2018). Rapid increases in education technological availability, capabilities, and content have also led to the increased adoption of various personalized learning models (Pane, Steiner, Baird, & Hamilton, 2015).

While the research concerning how personalized learning can improve student achievement is still in its infancy, recent studies have revealed that personalized learning has the potential for positive gains (Herold, 2016). The largest study on personalized learning to date was completed by the Rand Corporation and funded by the Bill and Melinda Gates Foundation (Herold, 2016). In the study students participating in a personalized learning model saw moderate improvements in reading and math scores compared to students in a traditional learning environment (Herold, 2016). It must be noted these results were identified as "encouraging, promising, and academically meaningful, [but] they were by no means definitive" (Herold, 2016, Gates/Rand Study

section, para. 4). Evidence shows personalized learning has other positive outcomes beyond student academic achievement that can increase student achievement as a secondary influence.

Personalized learning has also been shown to increase student engagement (Bray & McClaskey, 2014, 2015; Brichacek, 2014; Bushweller, 2016; Cote, 2017; Rickabaugh, Sprader, & Murray, 2017). Allowing students to be active participants in the design of their learning allows them to incorporate more of their natural interests and talents (Bray & McClaskey, 2014). Also, a study by Charlotte-Mecklenberg school district revealed the percentage of personalized learning students reporting active engagement in learning was almost double the percentage reported by the entire student population (Bushweller, 2016, p. 5).

Lastly, personalized learning also has the potential to build stronger teacher and student relationships (Dole, Bloom, & Kowalske, 2016; Ferlazzo, 2017; Walker, 2017). Dole, Bloom, and Kowalske (2016) noted as teachers shifted into the facilitator role, they saw an improvement in the rapport they had with their students. Freedom from the traditional lecture method provides the teacher the opportunity to have more meaningful learning conversations, which allows the teacher to make greater connections with students (Viness, Colquitt, Pritchard, & Johnson, 2017). Personalized learning adds a deeper level of relatedness between teachers and students, which fosters closer relationships (Ferlazzo, 2017).

While multiple models for personalized learning exist, the majority of the models embrace the following tenets:

1) Student agency; 2) Differentiated instruction; 3) Immediate instructional

interventions and supports for each student is on-demand when needed; 4)

Flexible pacing; 5) Individual student profiles; 6) Deeper learning and problem-

solving to develop meaning; 7) Frequent feedback from instructors and peers; 8)

Standards-based, world-class knowledge and skills; 9) Anywhere, anytime

learning; 10) Performance-based assessments (project-based learning, portfolios,

etc.). (Abel, 2016, Elements of Personalized Learning section, para. 1)

The Institute for Personalized Learning (2015) placed these tenets under the three core

categories of customized learning paths, competency-based progression, and learner

profiles. The original Rand Corporation's study was organized to integrate the multiple

components into a five-part framework consisting of learner profiles, personal learning

paths, competency-based progression, flexible learning environments, and an emphasis

on college and career readiness (Pane et al., 2015). Pane, Steiner, Baird, Hamilton, and

Pane (2017a) later categorized all of the personalized learning tenets into four core

personalized learning strategies: learner profiles, personal learning paths, competency-

based progressions, and flexible learning environments. These four core strategies created

the foundation for personalized learning in this study and were examined in more detail

in the conceptual framework and in Chapter Two.

It is important to note personalization is different from differentiation and

individualization even though in the NETP of 2010 the terms were interchangeable (Bray

& McClaskey, 2015; USDOE, 2010). The NETP of 2010 also framed personalization as

the umbrella that encompasses individualization and personalization (USDOE, 2010).

Bray and McClaskey (2015) shifted the focus of personalization, differentiation, and

individualization away from instruction and placed the focus on how those terms relate to learning. While the learning in a differentiated or individualized environment begins with the teacher, the learning in a personalized learning environment begins with the learner (Bray & McClaskey, 2015).

Conceptual Framework

The conceptual framework for this study was based on the four core personalized learning strategies: learner profiles, personal learning paths, competency-based progressions, and flexible learning environments (Pane et al., 2017a). The strategies were chosen for the study because they form all or most of the basis for personalized learning in multiple successful personalized learning models. The Institute for Personalized Learning (2015) used customized learning paths, learner profiles, and standards-based progression as the foundational core components of their honeycomb continuum. Flexible learning environments, as a concept, are also included in the continuum; however, they are separated into two categories, flexible learning spaces and flexible time and space, and included in its *Structures and Policies* outer-layer because the elements are not directly tied to learning (The Institute for Personalized Learning, 2015).

Other popular models and definitions for personalized learning are quite similar to the four core strategies identified by Pane et al. (2017a). Decker (2014) used the four core personalized learning strategies to establish a definition of personalized learning. Each strategy was broken down into multiple components: flexible learning environments included operational alignment, staffing and roles, time allocation, and space utilization; competency-based progression included ongoing assessment and individual advancement; personal learning paths included personal learning plans, varied learning

experiences, and student ownership; and learner profiles included strengths and needs,

motivations, information and feedback, and goals (Decker, 2014). Johns and Wolking

(2018) identified the core four elements for personalized learning as flexible content and

tools, targeted instruction, data driven decisions, and student reflection and ownership.

The content of Johns and Wolking's (2018) elements greatly align with the strategies of

personal learning paths, competency-based progression, learner profiles, and flexible

learning environments. The conceptual framework is examined in greater detail in

Chapter Two.

Statement of the Problem

One of the largest barriers regarding personalized learning is there is not yet a

concrete, industry-adopted definition of personalized learning (Abel, 2016; Cavanaugh,

2014; Jenkins & Kelly, 2016; Stevens, 2017). The lack of an industry-accepted definition

creates a major problem regarding gathering reliable data on the academic benefits of

personalized learning. While various components of personalized learning are utilized in

many different learning models (project-based learning, problem-based learning, inquiry-

based learning), there is not a single model of personalized learning being implemented

on a large-scale from which to gather data (Basham et al., 2016; Pane et al., 2015;

Stevens, 2017).

While the Race to the Top initiative, ESSA, and NETPs of 2010, 2016, and 2017

created an education policy environment friendly to implementing personalized learning

models, the shift to large-scaled implementation will require more than a friendly policy

environment. An emphasis from teacher-centered learning to student-centered learning is

a paradigm shift for instructional design and breaks from the more standardized approach

to education that has flourished since the mid-1980s (Grant & Hill, 2006; Jenkins, Williams, Moyer, George, & Foster, 2016). Personalized learning requires students to take a more active role in designing their learning, while requiring teachers to relinquish some of their control regarding instructional pacing and design (Basham et al., 2016).

Current research shows teacher buy-in regarding personalized learning is lacking (Bushweller, 2016; Grant & Basye, 2014; Tanenbaum, Floch, & Boyle, 2013). Jenkins and Kelly (2016) defined buy-in as "getting your team or organization to understand, support and align on a unified approach, in this case for personalized learning" (p. 4). The lack of a generally accepted definition plays a key role in the lack of buy-in for personalized learning (Jenkins & Kelly, 2016). Educators require a "deep foundational understanding of the district's definition and vision…and a clear plan on how to do it" (Jenkins & Kelly, 2016, p. 4).

The lack of buy-in for personalized learning can also be tied to a lack of explicit professional learning opportunities regarding implementing personalized learning (Dole et al., 2016). For professional learning on large pedagogical shifts to be successful, teachers must be actively involved in the learning, while also learning using the same strategies and procedures they will be using with their students (Darling-Hammond & McLaughlin, 2011). Explicit professional development on personalized learning is especially important because teachers have to learn "ways to teach they likely never experienced themselves and that they rarely see their colleagues engage in" (Gulamhussein, 2013, p. 7). Regrettably, evidence reveals teachers report needing more opportunities for professional learning on successful implementation of a variety of personalized learning strategies including the four core strategies of competency-based

progressions, personalized learning paths, learner profiles, and flexible learning environments (Alliance for Excellent Education, 2017; Davis, 2016; DeNisco, 2018; Feldstein & Hill, 2016; Jenkins et al., 2016; Johnsen, 2016; Tanenbaum et al., 2013).

Purpose of the Study

The purpose of the study was to gain a better understanding of K-12 classroom teachers' perceptions of personalized learning and the barriers K-12 classroom teachers are currently experiencing regarding the implementation of the four core personalized learning strategies as identified by Pane et al. (2017a). Identifying and understanding classroom teachers' perceived barriers to personalized learning will assist building and district leaders in multiple ways. Leaders will be better equipped to identify what action steps should be taken to increase the implementation of personalized learning in buildings and districts wishing to utilize personalized learning as an instructional model.

This investigation required gathering data from K-12 classroom teachers regarding their beliefs about personalized learning in general and the four core strategies of personalized learning identified by Pane et al. (2017a). Research participants also identified their current competency level at utilizing the four core strategies and to what extent teachers are receiving targeted professional development on the four core strategies. By gathering data on teachers' perceived barriers and teachers' perceived competency levels, conclusions were drawn regarding possible connections between the barriers and the competency levels and implications for future practice were provided.

Research questions. The following research questions guided the study:

1. What are the current K-12 classroom teacher beliefs regarding the importance of flexible learning environments, competency-based progression, learner profiles, and personal learning paths?

2. What barriers do K-12 classroom teachers report as the most difficult to overcome when implementing personalized learning in their classroom?

3. To what extent do K-12 classroom teachers report receiving explicit professional development in the four core strategies of personalized learning?

4. To what extent do K-12 classroom teachers feel prepared to implement the four commonly accepted components of personalized learning with fidelity?

Significance of the Study

The findings from the study may provide more specificity about what barriers, either attitudinal or structural, still exist for successful implementation of the four core strategies of personalized learning. The results of the study may offer school leaders a clearer picture of how their teachers view personalized learning as an effective means of instruction and identify what barriers exist and are keeping teachers from implementing the four identified core strategies of personalized learning. Since research on personalized learning is still in its infancy, the findings from the study may provide insight regarding various attitudinal and structural barriers to education leaders wishing to implement personalized learning in their districts.

One of the largest difficulties when researching personalized learning is the lack of an industry-accepted definition or model for personalized learning (Cavanaugh, 2014; Herold, 2016). By providing the framework of learner profiles, personal learning paths, competency-based progression, and flexible learning environments, specific data

regarding four explicit personalized learning strategies were obtained. Each of the four core personalized learning strategies presents unique barriers to implementation, which are explored further in Chapter Two. By identifying the barriers to implementing the four core personalized learning strategies experienced by classroom teachers in the two chosen districts, conclusions were drawn on what steps districts can take to make implementation of personalized learning more successful and impactful.

The increased use of technology through various technology integration initiatives has made personalized learning more possible for teachers (Bray & McClaskey, 2014, 2015; Grant & Basye, 2014). Personalized learning requires students and teachers collaborate in the design of the student's learning, and technology helps "facilitate and actualize that collaboration" (McGraw-Hill Education, 2018, Keep Instruction Student-Centered section, para. 1). Technology allows teachers to create personalized learning-focused environments in many different ways (Bray & McClaskey, 2014, 2015; Dobo, 2017). Districts can use technology to provide students access to numerous digital programs that adjust instructional resources and activities based on students' learning needs (Dobo, 2017). Technology can also be utilized to create, maintain, and share examples of students' demonstration of content mastery, which helps facilitate competency-based progressions, learner profiles, and personalized learner paths (Pane et al., 2017a). When utilized correctly, technology also has the power to foster deeper relationships between teacher and student by freeing the teacher from traditional time-consuming, whole-group content delivery through the use of flipped lessons and small-group instruction in station rotations (Hill & Feldstein, 2018).

While the use of technology can make personalized learning much more possible, the utilization of technology does not guarantee personalized learning is happening (Dobo, 2017; Hill & Feldstein, 2018). Utilizing an adaptive software program that adjusts based on student need does not create personalized learning (Dobo, 2017). Adaptive software assigns material based on student responses to various assessments, which in isolation would be considered individualization because individualization is defined as "customiz(ing) instruction based on the learning needs of the individual learner" (Bray & McClaskey, 2015, p. 6). Technology integration must be purposefully utilized to include the student in the design of his/her learning (Bray & McClaskey, 2015; McGraw-Hill Education, 2018).

Access to technology is one of most documented hindrances to the implementation of personalized learning (Chuong & Mead, 2014; Grant & Basye, 2014; Herold, 2016). The districts chosen for this study did not have this specific issue since they had already implemented a technology integration initiative. Removing the barrier of access to technology allowed the study to be more targeted as to the needs of the teachers. By pinpointing specific barriers faced by teachers, leaders are better equipped to ensure teachers wishing to implement personalized learning with fidelity have what they need to be successful.

Definition of Key Terms

For the purposes of this study, the following terms are defined:

Competency-based progression. Each student's progress toward clearly-defined goals is continually assessed (Decker, 2014). A student advances and earns credit as soon as he/she demonstrates mastery (Decker, 2014).

Flexible learning environments. Student needs drive the design of the learning environment (Decker, 2014). All operational elements—staffing plans, space utilization and time allocation—respond and adapt to support students in achieving their goals (Decker, 2014).

Learner profiles. Each student has an up-to-date record of his/her individual strengths, needs, motivations, and goals (Decker, 2014).

Personal learning paths. All students are held to clear, high expectations, but each student follows a customized path that responds and adapts based on his/her individual learning progress, motivations, and goals (Decker, 2014).

Personalized learning. The NETP of 2017 defined personalized learning as "Instruction in which the pace of learning and the instructional approach are optimized for the needs of each learner" (USDOE, 2017, p. 9).

Delimitations, Limitations and Assumptions

The scope of the study was bounded by the following delimitations:

Time frame. Data were collected during the beginning of the second semester of the 2018-2019 school year. The survey remained open from February 10, 2019, to March 7, 2019.

Location of the study. Since the web-based survey was completed electronically, participants had the opportunity to participate in the setting of their choice.

Criteria. Only classroom teachers in grades kindergarten through twelfth grade were invited to participate in the study.

The following limitations were identified in this study:

Sample demographics. The results of this study are specific to the two southwest Missouri school districts included in the study. While these results were analyzed in comparison with the results from other larger studies, the individual results only apply to the identified districts.

Instrument. Since the survey instrument used for this study was created by the researcher, the instrument's scope was a limitation for the study. A respondent debriefing was conducted with a group of educators not participating in the study (Vannette, 2018). The debriefing allowed the researcher to clarify any confusion regarding the survey components before sending the survey to the two selected school districts.

The following assumptions were accepted:

1. The responses of the participants were offered honestly and without bias.

2. The respondents only provided answers based on their own experiences.

3. The inclusion criteria of the sample were appropriate and, therefore, assured that the participants have all experienced the same or similar phenomenon of the study.

Summary

While the concept of personalized learning in education is not new, there is still not a universally accepted definition or model for personalized learning in the public school system (Cavanaugh, 2014; Pane et al., 2015, 2017a). The lack of definition and universal model has limited the research available in the areas of student achievement and teacher readiness (Herold, 2016). Teachers also report many different barriers to implementing personalized learning in their classrooms (Grant & Bayse, 2014; Pane et al., 2017a).

The background information and conceptual framework provided in Chapter One were included to demonstrate the various elements of personalized learning and to justify the use of the four core personalized learning strategies of learner profiles, personal learning paths, flexible learning environments, and competency-based progression identified by Pane et al. (2017a). Since personalized learning does not have one universally accepted model, it was imperative to provide the specific lens through which personalized learning was viewed in this study. Chapter One also included the purpose of the study; the research questions; an explanation of the significance of the study; the definition of key terms; and the delimitations, limitations, and assumptions of the study.

Chapter Two contains the review of existing literature on the topic of personalized learning. The chapter begins by providing a deeper theoretical examination of personalized learning as it relates to the study including personalized learning's definition and the four core strategies of learner profiles, customized learning paths, flexible learning environments, and competency-based progression. Then, the current evidence regarding the identified benefits of personalized learning are synthesized. Finally, the current data of identified barriers to the successful implementation of personalized learning are presented.

Chapter Two: Review of Literature

The review of existing literature is utilized to provide clarity regarding personalized learning as it related to this study. Considering one of the largest barriers to the implementation of personalized learning is its lack of a universally accepted definition and model, the literature review examines various definitions and synthesizes the components of these definitions. As the study was conceptualized using the four core personalized learning strategies of learner profiles, personal learning paths, competency-based progressions, and flexible learning environments, each strategy is examined in detail. Next, a more in-depth examination of the benefits of personalized learning is provided. Lastly, the currently documented barriers to implementing personalized learning are outlined to provide a foundation for analysis of the survey results for this study.

Conceptual Framework

The conceptual framework for this study was based upon the four core personalized learning strategies as identified by Pane et al. (2017a). The strategies are learner profiles, personal learning paths, competency-based progressions, and flexible learning environments (Pane et al., 2017a). Using the four core strategies for analysis, Pane et al. (2017a) determined the schools examined in their study employed these strategies to varying degrees, but none of the schools differed from the traditional model as one might expect from schools which self-identified personalized learning as a priority.

In their first report, *Continued Progress: Promising Evidence on Personalized Learning,* Pane et al. (2015) examined achievement data from 62 public charter and

district schools that received funding to implement personalized learning structures and personalized learning implementation data from the 32 Next Generation Learning Challenges schools which implemented personalized learning and used the Northwest Evaluation Association Measures of Academic Progress assessment for reading and math in the 2014-2015 school year. The study was the most comprehensive study on personalized learning to date (Herold, 2016). The information was gathered from "site visits, interviews with school administrators, teacher logs, teacher surveys, student surveys, national surveys (administered by Grunwald Associates), achievement data for personalized learning students, and achievement data for a matched comparison group of students" (Pane et al., 2015, p. 4). Pane et al. (2015) used a framework consisting of five components: learner profiles, personal learning paths, competency-based progression, flexible learning environments, and an emphasis on college and career readiness.

In 2017, Pane et al. (2017a) issued a follow-up report to the 2015 report; the report delved deeper into the achievement and implementation data of the Next Generation Learning Challenges schools and the national sample. One key change in the updated report pertained to the personalized learning framework; the 2017 report took the five-component framework and changed it to four interdependent strategies: learner profiles, personal learning paths, competency-based progressions, and flexible learning environments (Pane et al., 2017a). Pane et al. (2017a) qualified not all strategies were apparent in each learning environment; however, the four strategies were the four most commonly utilized strategies. Identifying personalized learning involves the utilization of various strategies in various settings aligns with the characteristics of personalized learning identified by the Glossary of Education Reform (2015).

It is important to note that the four interdependent strategies also form key elements to the honeycomb alignment personalized learning model utilized by The Institute for Personalized Learning (2015). The Institute for Personalized Learning uses the honeycomb model to provide their partner districts a framework to transition to a more learner-centered, personalized learning environment (Education Reimagined, 2016). Learner profiles, customized learning paths, and proficiency-based progress form the core of The Institute for Personalized Learning's (2015) instructional model, and flexible learning environments are part of the model's outer *Structures and Policies* section. The decision to place flexible learning environments on the outside of the continuum instead of in the center as a core component was due to the Institute's belief that flexible learning environments alone do not lead to greater learning (The Institute for Personalized Learning, 2015).

The four core strategies as identified by Pane et al. (2017a) can also be connected with Education Elements' Core Four of personalized learning: flexible content and tools, targeted instruction, data driven decisions, and student reflection and ownership (Johns & Wolking, 2018). Flexible content and tools align with personal learning paths, and flexible learning environments in the element requires teachers to "understand how to use foundational, adaptive, and highly customizable content and tools in order to differentiate the path, pace, and/or performance tasks of learning" (Johns & Wolking, 2018, p. 7). These elements align with customizable learning paths, flexible time and pace, and flexible learning spaces in the Institute for Personalized Learning's (2015) honeycomb alignment.

The Core Four element of targeted instruction also aligns with personal learning paths (Pane et al., 2017a) and customizable learning paths (The Institute for Personalized Learning, 2015) in that "teachers identify specific student needs and provide instruction to meet those needs" (Johns & Wolking, 2018, p. 7). The element of data driven decisions aligns with the strategies of competency-based progression (Pane et al., 2017a) and proficiency-based progression (The Institute for Personalized Learning, 2015) because content progression decisions are based upon achievement and mastery data as opposed to the traditional whole-class progression through content based on instructional time (Johns & Wolking, 2018). Lastly, the element of student reflection and ownership ties closely with the strategies of learner profiles (The Institute for Personalized Learning, 2015; Pane et al., 2017a), personal learning paths (Pane et al., 2017a), and customizable learning paths (The Institute for Personalized Learning, 2015) in that "students make goals to improve their learning outcomes and have opportunities to make authentic choices for their learning. Students have authentic choice and ownership of their learning" (Johns & Wolking, 2018, p. 7).

The four core strategies of learner profiles, personal learning paths, competency-based progressions, and flexible learning environments should be viewed as interdependent with the relationship between the strategies as follows:

Learner profiles maintain a rich and up-to-date record of student strengths, needs, goals, and progress; that information is used to define personal learning paths, which are appropriate and meaningful choices of material for each student to work on, with the necessary adult supports; competency-based progression enables these personalized paths to run their natural course by removing external

constraints on what material each student works on, when, and for how long; and

flexible learning environments enable schools to allocate resources in new ways

to best support these processes. (Pane et al., 2017a, p. 7)

The connections stated by Pane et al. (2017a) between the four strategies are very similar

to the connections between the three main components found in The Institute for

Personalized Learning's honeycomb alignment (2015).

The four core strategies were also used by Decker (2014) in the definition of

personalized learning created by the Bill and Melinda Gates Foundation, Afton Partners,

the Eli and Edythe Broad Foundation, CEE Trust, the Christensen Institute for Disruptive

Innovation, Charter School Growth Fund, EDUCAUSE, iNACOL, the Learning

Accelerator, the Michael and Susan Dell Foundation, Silicon Schools, and numerous

educators. The definition is four-part and includes competency-based progression,

flexible learning environments, personal learning paths, and learner profiles (Decker,

2014). Due to the cross-over found in these four different resources and models for

personalized learning, the four core strategies of competency-based progression, flexible

learning environments, personal learning paths, and learner profiles create the conceptual

framework through which personalized learning will be examined.

Personalized Learning Overview

For the sake of this study, personalized learning was defined using the definition

from the NETP of 2017: "Instruction in which the pace of learning and the instructional

approach are optimized for the needs of each learner" (USDOE, 2017, p. 9). To

understand personalized learning, one must examine how personalized learning compares

with other common and similar instructional practices (Bray & McClaskey, 2015). The

USDOE (2017) stated personalized learning is often confused with four other types of learning: adaptive learning, individualized learning, differentiated learning, and competency-based learning. According to Stevens (2017), adaptive learning involves utilizing technology and digital tools to adapt content based on the academic needs of the learner. Lynch (2017) agreed adaptive learning involves using technology or an online resource "that analyzes a student's performance in real time and modifies teaching methods based on that data" (What is adaptive learning? section, para. 1).

Individualized learning and differentiated learning are not as tied to the utilization of technology (Bray & McClaskey, 2015; Stevens, 2017). Individualized learning specifically addresses adjusting the pace of learning to match what each student needs while differentiated learning focuses on adapting the strategies and approaches to learning to meet individual student needs (Stevens, 2017). Competency-based learning focuses on learners progressing on a personal pathway based on their demonstration of mastery (Stevens, 2017). Each of these types of learning often become components of personalized learning models (Johns & Wolking, 2018; Pane et al., 2017a; The Institute for Personalized Learning, 2015). The Institute for Personalized Learning (2015) explicitly stated "a truly personalized learning environment moves beyond both differentiation and individualization" (para. 1).

Previously, the terms personalization, differentiation, and individualization were defined in the NETP of 2010 as follows:

Individualization refers to instruction that is paced to the learning needs of different learners. Learning goals are the same for all students, but students can progress through the material at different speeds according to their learning needs.

For example, students might take longer to progress through a given topic, skip

topics that cover information they already know, or repeat topics they need more

help on.

Differentiation refers to instruction that is tailored to the learning preferences of

different learners. Learning goals are the same for all students, but the method or

approach of instruction varies according to the preferences of each student or

what research has found works best for students like them.

Personalization refers to instruction that is paced to learning needs, tailored to

learning preferences, and tailored to the specific interests of different learners. In

an environment that is fully personalized, the learning objectives and content as

well as the method and pace may all vary (so personalization encompasses

differentiation and individualization). (USDOE, 2010, p. 12)

It must be noted that the terms *differentiation* and *individualization* were not included in

the NETP of 2017 (USDOE, 2017). However, personalized learning was explicitly

addressed 19 times (USDOE, 2017).

Bray and McClaskey (2015) also stressed the differences between personalization,

individualization, and differentiation must be identified to understand the difference

between the three approaches in instructional design. To frame the differences between

the three approaches, Bray and McClaskey (2015) explained the USDOE (2010) defined

the three terms of differentiation, personalization, and individualization as they relate to

instruction. To gain a deeper understanding of how the three approaches apply to the

learner's involvement in the learning process, Bray and McClaskey (2013) developed

their Personalization vs. Differentiation vs. Individualization (PDI) Chart to examine the

three terms from the perspective of the learner (see Figure 1).

Personalization	Differentiation	Individualization
The Learner…	**The Teacher…**	**The Teacher…**
drives their own learning.	provides instruction to groups of learners.	provides instruction to an individual learner.
connects learning with interests, talents, passions, and aspirations.	adjusts learning needs for groups of learners.	accommodates learning needs for the individual learner.
actively participates in the design of their learning.	designs instruction based on the learning needs of different groups of learners.	customizes instruction based on the learning needs of the individual learner.
owns and is responsible for their learning that includes their voice and choice on how and what they learn.	is responsible for a variety of instruction for different groups of learners.	is responsible for modifying instruction based on the needs of the individual learner.
identifies goals for their learning plan and benchmarks as they progress along their learning path with guidance from teacher.	identifies the same objectives for different groups of learners as they do for the whole class.	identifies the same objectives for all learners with specific objectives for individuals who receive one-on-one support
acquires the skills to select and use the appropriate technology and resources to support and enhance their learning.	selects technology and resources to support the learning needs of different groups of learners.	selects technology and resources to support the learning needs of the individual learner.
builds a network of peers, experts, and teachers to guide and support their learning.	supports groups of learners who are reliant on them for their learning.	understands the individual learner is dependent on them to support their learning.
demonstrates mastery of content in a competency-based system.	monitors learning based on Carnegie unit (seat time) and grade level.	monitors learning based on Carnegie unit (seat time) and grade level.
becomes self-directed, expert learner who monitors progress and reflects on learning based on mastery of content and skills.	uses data and assessments to modify instruction for groups of learners and provides feedback to individual learners to advance learning.	uses data and assessments to measure progress of what the individual learner learned and did not learn to decide next steps in their learning.
Assessment **As** and **FOR** Learning with minimal **OF** Learning	Assessment **OF** and **FOR** Learning	Assessment **OF** Learning

Figure 1. Personalization vs. differentiation vs. individualization Chart (v 3). Adapted

from *Make Learning Personal*, by B. Bray and K. McClaskey, 2015, p. 9. Copyright

2015 by Corwin.

The Glossary of Education Reform (2015) acknowledged the wide span of strategies and structures of personalized learning by defining personalized learning as "a diverse variety of educational programs, learning experiences, instructional approaches, and academic-support strategies that are intended to address the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students" (para. 1). What is often considered personalized learning would more likely fit the definitions and descriptions of individualization, differentiation, and adaptive learning (Cavanaugh, 2014; Glossary of Education Reform, 2015). Due to its numerous components, Bray and McClaskey (2015) stated personalized learning can be viewed more as an education "culture shift and transformational revolution" (p. 7).

Achieving personalized learning requires a redesign of the traditional classroom and a teaching paradigm shift (Jenkins et al., 2016). Personalized learning is a teaching methodology where the default perspective is neither the educator nor the curriculum; it is the learner (Abel, 2016; Cavanagh, 2014; Jenkins et al., 2016). Personalized learning must also promote student agency as active participants in the planning and execution of their own learning (Cavanagh, 2014).

Rickabaugh (2016) suggested personalized learning can be viewed as a continuum with one end being personalized to the learner, the middle being personalized with the learner, and the other end being personalized by the learner. Bray and McClaskey (2015) used a similar three-stage continuum; however, their stages were labeled as teacher-centered, learner-centered, and learner-driven. Rickabaugh (2016) explained the personalized to the learner phase is similar to differentiation in that adjustments are made based on what the learner is ready to learn while taking his/her preferences into

account. The personalized with the learner phase has the teacher and student working together to identify mastery standards, set goals, monitor progress, and shape instructional needs (Rickabaugh, 2016) Lastly, the personalized by the learner phase involves the learner shouldering the bulk of the learning path design, progress monitoring, and mastery demonstration while the educator provides guidance and assistance when needed (Rickabaugh, 2016).

While specific definitions and models of personalized learning vary, the consistent theme is "the principles of personalized learning stand in stark contrast with traditional classrooms: students move at their own pace, pursue learning that aligns with their individual interests, and set goals to reach their potential" (Johns & Wolking, 2018, p. 5). Proponents of personalized learning believe "there is a gap between the individual student, their learning, and the support they need to succeed in a way that makes sense to his/her interests" (Abel, 2016, Personalized Learning Defined section, para. 2). Personalized learning closes the gaps that exist in the traditional classroom structure (Abel, 2016; Johns & Wolking, 2018; Pane et al., 2015, 2017a).

Four Core Strategies of Personalized Learning

Learner profiles. One key component in personalized learning environments and the first core personalized learning strategy identified by Pane et al. (2017a) is the use of learner profiles (Bray & McClaskey, 2015; Cavanagh, 2014; Decker, 2014; Pane et al., 2015, 2017a; The Institute for Personalized Learning, 2015). The profiles create a record of each individual student's academic strengths and weaknesses, goals, and interests (Cavanagh, 2014). The profiles help teachers identify students' current level of competency, help students articulate their personal interests and goals, help teachers

create meaningful and effective feedback loops for each student, and help teachers and students identify any needed learning supports and impactful moments for reflection (Decker, 2014). By engaging the students through the use of the learner profile, student ownership of the process can increase (Pane et al., 2017a). As the profile documents the students' learning journey, students can gain a deeper understanding of the connections between their academic performance and their learning progress, which will decrease student frustration and discouragement (Johns & Wolking, 2018).

The Institute for Personalized Learning (2015) reiterated students must be part of the creation of their own profiles, and profiles generally consist of four dimensions: demographic data, academic status, learning-related skill set, and potential learning drivers. In actuality, the true ownership of the learning profile should be the learner (The Institute for Personalized Learning, 2015). All stakeholders—teachers, support staff, administrators, students, and parents—contribute to the learner profile to ensure a comprehensive representation of the student (Avallone, 2017; Pane et al., 2015, 2017a). The profile can provide an all-encompassing vantage point through which to view the student's learning because the profile is used to not only "house information" or "place important data…but also a place where students reflect meaningfully on their work through writing and journaling (and) upload and own the creation of documents and tools that are then housed within the profile" (Lathram, 2015, Learner Profiles Encourage Student Ownership section, para. 4).

Bray and McClaskey (2015) used the concepts of Universal Design for Learning to develop their Personal Learning Profiles. Students, parents, and teachers identify the strengths and challenges students experience in three domains: access, engage, and

express (Bray & McClaskey, 2015). The profiles contain information that answer three different questions: How does each learner access the information? How does each learner need to engage with content and concepts? How do learners express their knowledge and understanding of concepts, content, or ideas? (Bray & McClaskey, 2015). McCarthy (2014) stressed learner profiles provide educators with an understanding of how students make sense of instructional material. Having learner profiles for students allows teachers to design activities catered to a variety of learning styles and provide students the opportunity to choose the pathway best suited to meet their needs (McCarthy, 2014).

The knowledge teachers gain from utilizing learner profiles allows them to create more meaningful learning experiences for all students (Abel, 2016; Bray & McClaskey, 2015; McCarthy, 2014). Pane et al. (2015) reported the majority of the teachers surveyed for their study reported weekly access to a variety of data sources through the learner profiles. The teachers reported "drawing on data from formative assessments or online progress reports in 60% of their lessons, district or state assessments in 55% of their lessons, and personalized student goals in 45% of their lessons" (Pane et al., 2015, p. 16). Since the profiles travel with the students from year to year, the profiles are able to provide future teachers with a greater foundational knowledge of their students on the first day the student is in their class (Lathram, 2015).

Learner profiles should also incorporate additional data beyond academic scores and results (Pane et al., 2015). Seventy-four percent of teachers reported using non-achievement data frequently with learner profiles (Pane et al., 2015). The non-

achievement data included "data on student attitudes, behaviors, and motivation" (Pane et al., 2015, p. 16).

While the majority of teachers reported access to a variety of non-achievement data sources, "61% percent of teachers agreed…they needed help translating the data into instructional steps (Pane et al., 2015, p. 16). Pane et al. (2015) concluded "despite the fact a majority of teachers expressed a need for help translating data into instructional steps, most teachers reported using a variety of data sources on a regular basis" (p. 16). One parent addressed the need for non-achievement data in the following way:

Data has to be more than just numbers and test scores; it has to be personal. I would like my daughter's teacher to know what experiences have made the biggest difference in my child's life as well as what we as parents do at home to support her learning. (Lathram, 2015, Learner Profiles Encourage Personalization section, para. 2).

The parent's statement aligns with The Institute for Personalized Learning's (2015) conclusion that the learner profile must include potential learning drivers, which can include "potential motivational hooks, current career plans, and other factors that might affect his or her commitment to learning" (Learner Profiles section, para. 5).

The learner profile can also be a resource for students, allowing for consistency of learning when transitioning between districts and/or levels of school including moving from high school to college (Lathram, 2015; Pane et al., 2015). For students with high mobility between districts, the learner profile can provide the new district a very clear picture of who the student is as a learner, what standards the student has mastered, and how the student demonstrated his/her mastery (Lathram, 2015). Some higher education

institutions are now accepting high school portfolios as part of a student's admission application (Lathram, 2015).

Personal learning paths. The second core personalized learning strategy requires teachers and students to create and utilize personal learning paths. Pane et al. (2017a) explained personal learning paths establish the environment of flexibility through content exploration. While the teachers establish the parameters for the personal learning path, the students are allowed to make choices about the "content and structure of learning, and the school offers a variety of instructional approaches and curriculum materials, including support for meaningful learning experiences outside of school" (Pane et al., 2017a, p. 12).

The Institute for Personalized Learning (2015) stressed students become co-designers of their learning. This shift will foster more student ownership of the learning process and greater student independence (The Institute for Personalized Learning, 2015). The learning activities and strategies vary, and students are provided one-on-one instructional time that can range from remediation to fill learning gaps to enrichment opportunities for deeper learning (Pane et al., 2017a). Personal learning paths align with differentiation in three different ways: "customizing the learning path a student may take, the pace at which he or she learns, and/or the performance tasks her or she completes to demonstrate understanding" (Johns & Wolking, 2018, p. 11). The key underpinning to each of these forms of differentiation is one of teacher "responsiveness—continual engagement with students to understand their needs and interests and adjust the learning environment accordingly" (Johns & Wolking, 2018, p. 11).

One of the main components of personal learning paths is the incorporation of student choice in regards to curricular content and demonstration of student learning

(Pane et al., 2015). Allowing students to take a more active role in the direction of their learning is one of the main components of the personalized learning model being utilized in Summit Public Schools, a charter school network with schools in California and Washington (Childress & Benson, 2014). Barlow (2015) concluded when students are given greater control over their learning, they are able to learn more effectively and at a quicker pace. However, Pane et al. (2015) noted "where flexibility and choice were offered, they appeared to be teacher-driven rather than student-driven—on the survey, most teachers did not report high levels of student choice in content or path" (p. 17).

One could conclude the personal learning paths are one of the more difficult strategies to master in the current education structure (Barlow, 2015; Pane et al., 2015). Personal learning paths can be time-consuming for teachers and students to create and manage (DeNisco 2018; Pane et al., 2015, 2017a). Pane et al. (2017a) also acknowledged the presence of student choice in the schools surveyed; however, "highly personalized approaches, such as flexible paths through content and extensive student choice in the content or structure of learning were not common in either group" (p. 12).

Jenkins et al. (2016) interviewed 48 teachers currently implementing personalized learning in their classrooms in 30 schools across 19 districts. According to Jenkins et al. (2016), "The standards and learning targets contained in the curriculum should be consistent and easily understood for every student, although the ways in which students meet those standards may differ in order to provide a personalized learning experience" (p. 12). Barlow (2015) framed the difference between utilizing a personal learning path as opposed to a more traditional instructional approach as the difference between designing around the learner as opposed to around the subject or content.

The different pathways should be consistently informed by "real-time data on student performance and engagement, students' learning styles and interests, and the goals of the students and parents" (Jenkins et al., 2016, p. 12). The traditional approach requiring instructional design around the subject forces all students to fit within a specific mold; however, designing instruction around the learner "means knowing as much about the learner as possible, for example, his capacity to learn the material, how, and where he wants to learn it, and how fast he can master the material" (Barlow, 2015, Introduction section, para. 3). Essentially, the paths are informed and guided by the learner profile (Pane et al., 2017a).

Additionally, personal learning paths must be aligned to known goals "so the learner has a clear path forward" (The Institute for Personalized Learning, 2015). Wiggins (2012) stressed the need for known goals in learning to facilitate meaningful and effective feedback. As the learning path is frequently adjusted based on student progress, goal-referenced feedback is essential to guide the path towards future goals and mastery (Wiggins, 2012, Feedback Essentials section, para. 2).

One teacher in the Jenkins et al. (2016) study explained personal learning paths: "We have standards to hold students to, so we mapped out pathways for each quarter…We have individualized playlists. In each playlist, there are assessment pieces and different playlists for each standard" (p. 12). Johns and Wolking (2018) explained personal learning paths as simply giving each student "a variety of methods and resources to achieve a learning goal" (p. 12).

Teachers in the Jenkins et al. (2016) study stressed the curriculum must always remain focused on the individual needs of the students. This matches the conclusion

personalization includes individualization and differentiation drawn by the USDOE (2010). Content mastery is the goal, but teachers and students work together to determine the learning path to achieve mastery (Jenkins et al., 2016; Pane et al., 2015, 2017a; The Institute for Personalized Learning, 2015). The psychological foundation of personal learning paths is predicated on the belief individuals are predisposed to learn in a variety of ways (Butova, 2015). The personal learning path "implements an attempt to increase the student's probability of success by providing various instructional routes, wherefrom the (student) may choose the one that suits his personal learning style" (Butova, 2015, para. 6).

Competency-based progression. The third core personalized learning strategy identified by Pane et al. (2017a) allows students to progress through content and earn possible course credit by demonstrating mastery of identified learning standards and outcomes. The traditional education model was "structured for learners to be compliant and the teacher directing the learner" (Bray & McClaskey, 2015, p. 183). Competency-based progression switches from the teacher directing the pace of the learning to student content mastery directing the pace of the learning (Bray & McClaskey, 2015; Grant & Basye, 2014; Pane et al., 2015, 2017a).

Utilizing competency-based progression allows for student progression to be based on what standards the student has mastered as opposed to how long the student has been engaged with the content (Rickabaugh et al., 2017). Decisions about content progression are informed by the variety of data collected through various formative and summative assessments or performance tasks (Johns & Wolking, 2018). The focus is on identifying what the learners are able to do as opposed to what the learners must learn

and involves the student and teacher "setting goals in the form of knowledge, skills, and

behavioral features a student shall master by the end of his/her studies" (Butova, 2015,

para. 14)

Competency-based progression places the importance on content mastery as

opposed to the traditional use of Carnegie units to award credit (Bray & McClaskey,

2015; Grant & Basye, 2014). The Carnegie unit was originally developed in 1906 as a

means of tracking the amount of time a student received instruction on a particular

subject (Bray & McClaskey, 2015; Carnegie Foundation for the Advancement of

Teaching, 2018). The Carnegie Foundation for the Advancement of Teaching (2018)

explained a Carnegie unit as "a total of 120 hours in one subject—meeting 4 or 5 times a

week for 40 to 60 minutes, for 36 to 40 weeks each year—earns the student one "unit" of

high school credit" (para. 1). Bray and McClaskey (2015) provided a comparative chart

to identify the differences between a Carnegie unit-based system and a competency-based

system (see Figure 2).

Carnegie Unit	Competency-Based
Learners progressed based on seat time.	Learners advance upon mastery.
Learners count credits.	Learners provide evidence of learning.
Bell schedules and structured time for classes.	Learners receive just-in-time support based on their individual learning needs.
Equal opportunity for all leaners.	Learning outcomes emphasize competencies that include application and creation of knowledge along with the development of important skills and dispositions.
Everyone takes the same curriculum.	Learners select courses based on career or college plans.
Learning takes place in school.	Learning takes place anytime, anywhere.

Figure 2. Carnegie Unit vs. Competency-Based. Adapted from *Make Learning Personal*,

by B. Bray and K. McClaskey, 2015, p. 177. Copyright 2015 by Corwin.

The Carnegie Unit is entwined with the traditional age-graded system of school design where students are grouped with other students of the same age (Dockterman, 2018). The age-graded system does not lend itself to content mastery for all because the progression through the system is based upon the age of the learner as opposed to content mastery of the student (Dockterman, 2018). As opposed to designing learning on the premise every student is dynamically different and requires a personal learning path, learning in an age-graded system is "constructed around the assumption that most students would need the same instruction and acquire the same content in about the same time" (Dockterman, 2015, p. 3). Historically, age-graded grouping was designed to accommodate teachers who were trained to deliver age-appropriate content (Dockterman, 2015). The traditional age-grading, Carnegie unit system was designed to be efficient and "relied on whole-group strategies to support academic growth… Instruction targets the middle and rarely meets the specific needs of students who are behind or ahead of the class average" (Johns & Wolking, 2018, p. 16).

Harrisburg Freedom Elementary in Harrisburg, South Dakota, acknowledged the limitations of the age-graded system and shifted to a studio school design. (Bull, 2016). Students are grouped into four different studios according their mastery of standards "but not in a way that students will see themselves as being in what they might start to call the "smart" or "dumb" class" (Bull, 2016, para. 4). Students do not know which studios are mastering more difficult standards because the studios are named for the four components of their EPIC program: empowering, personalizing, innovating, and creating (Lape, 2016).

The utilization of competency-based progression is often hindered by state and local policies that "tie learning checkpoints to 'seat time' requirements" (Grant & Basye, 2014, p. 87). In addition to seat time policies, some states require that all students take certain courses at certain times (Chuong & Mead, 2014). The requirement of all students in a specific grade taking the same course at the same time is in "direct conflict of personalized learning models" (Chuong & Mead, 2014, p. 44). Pane et al. (2015, 2017a) explained while competency-based progression was apparent in the majority of the schools involved in the study, teachers expressed the level to which they utilized the strategy was often hampered by traditional grade-level expectations. While teachers expressed some hindrances to fully implementing competency-based progression, it must be noted that "a majority of teachers…reported using competency-based practices to a moderate or large extent" (Pane et al., 2017a, p. 16).

Many states have begun to take the policy steps required to allow greater utilization of competency-based progression (Patrick, Worthen, Frost, & Gentz, 2016). Oregon has allowed school districts to award students credit based on demonstration of proficiency or mastery of standards since 2002, and Ohio has required that "district's allow students to earn credit by demonstrating mastery beginning with the 2010-2011 school year" (Patrick et al., 2016, p. 13). New Hampshire has redesigned the Carnegie unit into specific standards and competencies, and students earn their credits by demonstrating mastery of the competencies (Patrick et al., 2016).

Rickabaugh (2014) explained competency-based progression is "not about 'driving the curriculum bus' whether the student is ready to learn or not. Instead teachers should focus on the instruction that is needed to help move students to the next level"

(Shift #2 section, para. 1). Content progression based upon mastery requires ongoing assessment through multiple means (Bray & McClaskey, 2015; Decker, 2014). Teachers must ask themselves, "In what ways should we assess each student's level of mastery within the dimensions that we believe are essential for his/her success" (Decker, 2014). The competencies determining mastery must "articulate what learners will learn, how deep or broad the learning will be, and how it will be demonstrated and measured" (The Institute for Personalized Learning, 2015).

      Flexible learning environments. The final core personalized learning strategy identified by Pane et al. (2017a) of flexible learning environments allows school systems and classroom educators to adapt elements such as space, time, and staff to better support personalized learning (p. 20). Decker (2014) stressed "student needs drive the design of the learning environment" (Flexible Learning Environments section, para. 1). Flexible learning environments are counter to the traditional classrooms "structured for learners to be compliant and the teacher directing the learning" (Bray & McClaskey, 2015, p. 183). Bray and McClaskey (2014) explained personalized learning acknowledges the unique qualities each learner possesses and provides "variability in learning" (p. 1). To achieve meaningful variability in learning, the learning environment must be flexible (Bray & McClaskey, 2014). Furthermore, creating a flexible learning environment that is conducive to personalized learning is often the first step classroom teachers will take when transitioning to a personalized learning model (Jenkins et al., 2016). While altering the physical space is often an element of flexible learning environments, "modern flexible learning environments also address other elements of the learning environment such as how students are grouped during learning and how time must be used more

flexibly during the day" (Mehrbach & Beingessner, 2018, What is a Flexible Learning Environment? section, para.1).

As previously noted, the strategy of flexible learning environments is the only core strategy identified by Pane et al. (2017a) not recognized as one of the core components of the personalized learning honeycomb alignment created by The Institute for Personalized Learning (2015). However, multiple components found in the *Structures and Policies* outer-ring of the honeycomb align with flexible learning environments (The Institute for Personalized Learning, 2015). The *Structures and Policies* components which would be classified under the Pane et al. (2017a) umbrella of flexible learning environments include the following: learning-aligned technology, recognition of anytime anywhere learning, learner-centered staffing, flexible time and space, flexible learning spaces, learning based continuums, and interdependent teams (The Institute for Personalized Learning, 2015).

Altering the physical learning space to be more fluid and adaptable is a key element of creating a flexible learning environment (Bray & McClaskey, 2015; Decker, 2014; Jenkins et al., 2016; Pane et al., 2015, 2017a). Flexible spaces can include open, collaborative areas, sitting and/or standing desks, quiet corners, and a variety of seating options (Miller, 2016). A middle school with Singapore American Schools designed adjustable learning spaces to allow for small-group breakout rooms as well as large-group learning spaces where teachers are able to manipulate the physical space to meet the specific learning needs and instructional strategies at any given moment (Mehrbach & Beingessner, 2018). One teacher explained the flexible learning environment by saying, "Here we don't just have four walls, we have a bunch of walls that can open and close, so

we can make the space fit what we need, rather than the space dictating what we can do"
(Mehrbach & Beingessner, 2018, Flexible Physical Space section, para. 3). When
considering the design of the learning space, educators must ask two questions: 1. "How
can the design of the physical space support our instructional vision?" 2. "Can we use
spaces beyond our walls, and if so, how?" (Decker, 2014, Flexible Learning
Environments section, para. 5).

Flexible learning zones should be established to provide students "options to
learn, collaborate, create, and design" (Bray & McClaskey, 2015, p. 184). Comparing the
elements of a structured classroom with a flexible learning space provides a clearer
picture of the reasons behind adapting the learning space for flexibility (see Figure 3).

Structured Classroom	Flexible Learning Spaces
Designed in the industrial age.	Designed for different learning needs.
Teachers as manager and disciplinarian.	Teacher as facilitator and partner in learning
No learner voice and choice.	Learners own how and where they learn.
Seating arrangements to maintain order and control.	Different seating patterns and configurations.
Uniformity where all learners are the same and want to fit in.	Foster creativity, not just productivity.

Figure 3. Structured Classrooms vs. Flexible Learning Spaces. Adapted from *Make
Learning Personal*, by B. Bray and K. McClaskey, 2015, p. 183. Copyright 2015 by
Corwin.

Flexible learning environments also encompass the use of time (Mehrbach &
Beingessner, 2018; Pane et al., 2015, 2017a). The flexible use of time can look several
different ways (Mehrbach & Beingessner, 2018; Pane et al., 2015, 2017a). The Singapore
American Schools middle school allows their core teams to alter their schedules based on
the needs of the team; this can include shortening classes to allow for a guest speaker or

to create a flexible block of time for large-group activities (Mehrbach & Beingessner, 2018). Pane et al. (2017a) provided the example of a charter school where a 5-week trimester is utilized to provide remediation for students in need of additional practice. Students who are on target academically use that time to engage in interdisciplinary learning that extends beyond the regular curriculum (Pane et al., 2017a). The same charter school also allows the entire daily schedule to be altered "to accommodate projects and whole-school design challenges" (Pane et al., 2017a, p. 21).

The utilization of technology is often a key element when facilitating flexible learning environments (Bray & McClaskey, 2015; Pane et al., 2015, 2017a). Utilization of technology and digital resources allows teachers to "provide flexibility in the ways learners access and engage with the content and express what they know" (Bray & McClaskey, 2015, p. 187). Pane et al. (2017a) explained teachers surveyed "report that technology played a primary role in instruction" (p. 21). Technology utilization included using "structured curriculum materials; watching videos, animations, and simulations; solving multi-step, open-ended problems or conducting investigations, and receiving immediate feedback on problem solutions" (Pane et al., 2017a, p. 22). Jenkins et al. (2016) pointed out "several teachers stated that personalization would be impossible without technology" (p. 19). Educators must be careful to not put more emphasis on the digital tool than the learning; therefore, the technology "must be paired with robust personalized instructional methods as a means to increased student learning" (Jenkins et al., 2016, p. 19). The Institute of Personalized Learning (2015) concluded the utilization of technology alone does not increase student achievement, and "what matters is aligning

technology to the learning needs of learners and the purposes of instruction" (Learning Aligned Technology section, para. 1).

Flexible learning environments also utilize data to frequently adapt student groupings to meet individual student needs (Decker, 2014; Pane et al., 2015, 2017a). In a flexible learning environment, educators frequently ask the question, "How should we group students to enable varied learning experiences we hope to offer and modify to their changing needs?" (Decker, 2014). Pane et al. (2015) concluded "76% of teachers surveyed reported that they grouped students of similar ability levels together and 60% of teachers who reported using flexible groupings reported changing groupings at least once a month" (p. 22). However, teachers also reported utilizing heterogeneous and homogeneous groupings depending upon the learning goals (Pane et al., 2017a).

One important specification made by Pane et al. (2015, 2017a) is flexible student grouping appears to be much more prevalent at the classroom level; school level groupings greatly rely on the traditional grade-level model. Teachers at the Singapore American Schools Middle School "examine students' formative work on a regular basis to identify what learning they need next. Students are then grouped and regrouped in response to that data" (Mehrbach & Beingessner, 2018, Flexible Student Grouping section, para. 1). While Pane et al. (2017a) determined school-level flexible groupings were not as prevalent as classroom level, they did provide the example of a charter school where "students are grouped by learning level schoolwide. Administrators considered standardized test data and consulted with parents and students to make student grouping decisions" (p. 21).

Benefits of Personalized Learning

There is not a large body of research regarding personalized learning's impact on academic achievement (Basham et al., 2016; Herold, 2016; Pane et al., 2015, 2017a). Pane et al. (2015) found that 11,000 students across 62 different schools utilizing personalized learning made greater gains in reading and math than students at more traditional schools. The achievement growth appeared to be higher the longer students were engaged in personalized learning strategies (Pane et al., 2015). However, Brad Bernatek, a senior program officer for the Gates Foundation, which helped fund the study, stated, "The results were encouraging, promising, and academically meaningful for the students in these schools…They were by no means definitive" (as cited in Herold, 2016, Gates/RAND Studies section, para. 4). When pressed about whether the gains were the result of personalized learning or the result of the schools being high-functioning schools receiving additional resources, Bernatek stated, "I think it's still early days. That's the biggest takeaway" (as cited in Herold, 2016, Gates/RAND section, para. 7). Pane et al. (2017a) drew similar conclusions as Pane et al. (2015) regarding personalized learning's impact on student achievement while noting "there is suggestive evidence that greater implementation of personalized learning practices may be related to more-positive effects on achievement; however, this finding requires confirmation through further research" (p. 41).

Personalized learning's positive impact on student achievement has been documented in smaller studies as well (Basham et al., 2016; Friedlaender, Burns, Lewis-Charp, Cook-Harvey, & Darling-Hammond, 2014; Goodwin, 2017). In a study of 12 schools implementing personalized learning, Basham et al. (2016) concluded "by the

middle of the school year, more than 25% of students…had already achieved 1 or more years' growth in reading and in math" (p. 130). Waukesha STEM Academy in Waukesha, Wisconsin utilizes personalized learning, and the data suggest the learning model has had a positive impact on academic achievement (Rickabaugh et al., 2017). The Waukesha STEM Academy has shown some of the highest academic achievement in the geographic area and has exceeded expectations according to a statewide report (Rickabaugh et al., 2017). Also, fewer students are requiring academic interventions, and the rate of change is higher than the state average (Rickabaugh et al., 2017).

In a study sponsored by Stanford University, Friedlaender, Burns, Lewis-Charp, Cook-Harvey, & Darling-Hammond (2014) examined four high schools in California utilizing personalized learning and concluded the students in the personalized learning environment academically outperformed students from similar schools serving similar populations. Areas where the students experiencing personalized learning excelled included "higher graduation rates, greater gains on state achievement tests, more enrollment in college preparatory courses, and higher college-persistence rates" (Goodwin, 2017, p. 80). When the existing studies are examined together, one can conclude the academic benefits of personalized learning are promising, but the research is still in its early stages (Herold, 2016; Pane et al., 2015, 2017a).

Personalized learning has also shown positive signs of increasing student engagement (Bray & McClaskey, 2014; Bushweller, 2016; Childress & Benson, 2014; Cote, 2017; Rickabaugh et al., 2017; Vatterott, 2017). Bray and McClaskey (2014) observed the more students are allowed to be active participants in lesson design and tool selection "they became more engaged in the lesson and more motivated to learn" (p. 8).

Cote (2017) came to the similar conclusion that self-directed learning "promotes student engagement and ownership of learning" (p. 613).

The Charlotte-Mecklenberg school district has been implementing personalized learning in phases and surveyed all students, both personalized learning and traditional, on their level of engagement (Bushweller, 2016). The personalized learning students reported that 81% were engaged, 17% were not engaged, and 2% were actively disengaged; however, the data for all students showed that only 47% were engaged, 29% were not engaged, and 24% were actively disengaged (Bushweller, 2016). Educators from the Syracuse City School District described the change in student engagement following the implementation of personalized learning as a shift from "chaos… to purposeful engagement" (Mulvey, Tezuka, & Franz, 2017, p. 55). High student engagement levels were also identified at Waukesha STEM Academy following the implementation of personalized learning (Rickabaugh et al., 2017).

Personalized learning has also shown to have a positive impact on teacher and student relationships (Dole et al., 2016; Ferlazzo, 2017). Todd Rose, co-founder and president of the Center for Individual Opportunity and a faculty member at the Harvard Graduate School of Education, stated personalized learning's focus on the individual actually allows for greater connections between teachers and students:

The principals of individuality… show us that by really understanding individuality and supporting it, we bring that one person closer to the group. It's freeing up more time for the high-value relationships between the teacher and the student…You can best facilitate those deep social interactions by having a system

that understands each person as an individual and is responsive to that. (Walker,

2017, Reason for Alarm section, para. 11)

In their study on changing perspectives from teacher-centered to learner-centered, Dole et

al. (2016) noted greater rapport with students was one of the most often mentioned result.

Further, "as participants changed their teaching pedagogy, they altered their classroom

structure, and their relationships with their students evolved" (Dole et al., 2016, p. 8).

Personalized learning frees the teacher from traditional instructional models and allows

the teacher to "increase meaningful instructional interactions because less time is spent

demonstrating or lecturing" (Viness et al., 2017, p. 522). Ferlazzo (2017) connected these

interactions to fostering a sense of relatedness. The structure of personalized learning is

more conducive to teachers learning more about their students' goals and interests, which

can facilitate deeper relationship connections (Ferlazzo, 2017).

One can also connect personalized learning to increased collective efficacy, which

directly ties to student achievement (Donohoo, Hattie, & Eels, 2018; Eastman, 2018;

Mehrbach & Beingessner, 2018). Mehrbach and Beingessner (2018) explained "the level

of transparency in a flexible learning environment encourages teachers to work at the

highest level possible… The teachers feel a sense of collective responsibility for all

students' learning" (Teacher Effectiveness section, para. 1). The sense of collective

responsibility addressed by Mehrbach and Beingessner closely aligns with the concept

collective efficacy, defined by Bandura (as cited in Donohoo et al., 2018) in 1997, as "a

group's shared belief in its conjoint capability to organize and execute the courses of

action required to produce given levels of attainment" (p. 40). According to Hattie's

Visible Learning research, "collective efficacy is at the top of the list of factors that

influence student achievement…collective efficacy is greater than three times more powerful and predictive of student achievement than socioeconomic status" (Donohoo et al., 2018, p. 40). Effective personalized learning requires purposeful and consistent collaboration between teachers, students, parents, and administrators, which inherently increases the collective efficacy of the learning environment (Eastman, 2018).

Barriers to Personalized Learning

One of the largest barriers regarding the implementation of personalized learning is the lack of a concrete, industry-adopted definition or model (Abel, 2016; Cavanaugh, 2014; Jenkins & Kelly, 2016; Stevens, 2017). Without a personalized learning model that is consistently implemented across multiple districts with a variety of student demographics, gathering reliable data to justify the use of personalized learning is difficult (Bray & McClaskey, 2015; Herold, 2016; Pane et al., 2015). The lack of research is directly related to another commonly reported barrier to the implementation of personalized learning: teacher buy-in regarding personalized learning as an appropriate means of learning for students (Jenkins & Kelly, 2016). Following an in-depth text analysis of 450 responses to the question "What is your biggest challenge in implementing personalized learning?" Jenkins and Kelly (2016) concluded "the number one challenge to personalized learning across all categories of respondents was the same: getting others to buy into it" (p. 4).

Jenkins and Kelly (2016) defined buy-in as "getting your team or organization to understand, support and align on a unified approach" (p. 4). The Massachusetts Personalized Learning Edtech Consortium concluded the lack of buy-in is often a "lack of understanding about what personalized learning looks like in practice" (DeNisco,

2018, p. 20). Fostering teachers' support for personalized learning at the beginning of the implementation process is necessary to achieve buy-in and also "will increase the effectiveness of implementation" (Grant & Bayse, 2014, p. 81).

Pane et al. (2017a) utilized a national sample of teachers already using personalized learning in the classroom, so buy-in was not one of the identified barriers. Respondents were asked to rate 15 different potential barriers as either *does not exist*, *exists but is not an obstacle*, *exists and is a minor obstacle*, and *exists and is a major obstacle* (Pane et al., 2017b, p. 15). Five out of the 15 possible responses were reported as barriers by at least 50% of teachers (Pane et al., 2017b, p. 15). The highest reported barriers included pressure to cover specific material as a result of state or district standards or testing requirements at 65%, lack of flexibility in the curriculum required to teach at 58%, high levels of student disciplinary problems at 57%, scheduling constraints at 56%, and too much diversity in achievement levels among students at 53% (Pane et al., 2017b, p. 15). The complete results broken down by percentage of national sample teachers are shown in Figure 4.

Barrier	Does Not Exist	Exists; Not an Obstacle	Exists; Minor Obstacle	Exists; Major Obstacle
Lack of support from school administration	44%	18%	21%	17%
My own limited knowledge of how to effectively personalize instruction	46%	28%	23%	14%
Too many students for whom I am responsible	33%	23%	25%	20%
Too much diversity in achievement levels among my students	19%	30%	34%	17%
Too much variation in age or maturity among my students	35%	29%	24%	12%
Lack of flexibility in the curriculum I am required to teach (i.e., need to teach specific material in a specific time frame)	24%	18%	37%	21%
Pressure to cover specific material as a result of state or district standards or testing requirements	14%	21%	27%	38%
Excessive amounts of time I need to spend developing personalized materials	29%	24%	25%	21%
Inadequate opportunities to participate in professional development related to personalized learning	30%	23%	35%	11%
Inadequate data to help me personalize students' instruction	46%	20%	28%	6%
Lack of high quality content or materials	37%	19%	34%	11%
An inadequate amount of time to prepare personalized lessons for all students	23%	19%	31%	27%
High levels of student absenteeism	36%	15%	26%	23%
High levels of student disciplinary problems	22%	21%	32%	25%
Scheduling constraints	21%	24%	37%	19%

Figure 4. National sample survey results regarding barriers classroom teachers experience when trying to promote personalized learning with their students. Adapted from *Informing progress—Personalized learning: Teacher and student survey results addendum* by J. Pane, E. Steiner, M. Baird, L. Hamilton, and J. Pane, 2017, p. 15. Copyright 2017 by the Rand Corporation.

In their 2017 executive summary, *Landscape Analysis of Personalized Learning in Massachusetts*, the Massachusetts Personalized Learning Edtech Consortium (2017) examined the current state of personalized learning in Massachusetts public schools through the facilitation of a statewide survey provided to districts. The largest need identified by respondents was teacher professional development with roughly 45% of respondents selecting the option as their greatest need (Massachusetts Personalized Learning Edtech Consortium, 2017, p. 5). A lack of professional development opportunities was also reported as a barrier by 46% of respondents by Pane et al. (2017a, p. 15).

The Alliance for Excellence in Education (2017) identified professional development as a barrier to implementing personalized learning, especially in rural districts lacking professional development opportunities. Feldstein and Hill (2016) also stressed the need for teacher professional development "because personalized learning, done properly, generally means implementing new pedagogical approaches… Successful programs provide faculty with training and pedagogical support" (p. 5). Jenkins et al. (2016) also enforced the idea teachers will need targeted professional development on personalized learning strategies and structure because "teacher preparation programs seldom prepare teachers to teach in a personalized learning environment" (p. 17).

The second most common response to the Massachusetts Personalized Learning Edtech Consortium (2017) survey involved time. Regrettably, the survey does not break down specifically what element of time created a barrier for respondents (Massachusetts Personalized Learning Edtech Consortium, 2017). However, the choice of time as a barrier to personalized learning was more specifically addressed by Pane et al. (2017b) as

"an inadequate amount of time to prepare personalized lessons for all students" (p. 15).

This item was identified as a barrier by 58% of respondents (Pane et al., 2017b).

Summary

In the review of literature, important information about conceptualizing personalized learning was provided to add clarification about how personalized learning was defined and framed for the purpose of this study. Clarification was required due to the lack of a universal definition or model for personalized learning (Bray & McClaskey, 2015; Cavanaugh, 2014; Herold, 2016). A deeper examination of the four core personalized learning strategies provided a clear picture of what each strategy requires and how the strategy differs from the more traditional learning models utilized in classrooms. The currently documented benefits of personalized learning were provided to demonstrate the impact personalized learning can have on learning and engagement when implemented with fidelity. Lastly, an examination of the current barriers to personalized learning found in literature provided a foundational knowledge base of the status quo.

The research methodology and design used for the study are in Chapter Three. The research questions are revisited, and the research design is examined in greater detail in regard to sample selection and instrumentation. Lastly, information regarding the collection and analysis of data is provided.

Chapter Three: Methodology

The methodology utilized to design and implement the descriptive research study is in this chapter. The statement of the problem, purpose of the study, and research questions are revisited. The research design, population, and sample are examined in further detail. The development of the research instrument is explained. The process for data collection is outlined in detail. Lastly, the methods utilized to analyze the collected data are presented.

Problem and Purpose Overview

Following the NETP of 2010, personalized learning has become a popular instructional model in the realm of public education with many different initiatives designed to increase the presence of personalized learning in today's schools (Walker, 2017). The Race to the Top initiative of 2010, ESSA of 2015, and the NETP of 2017 addressed the need for schools to shift away from the standardized approach to education and addressed the need for schools to focus on a more student-centered, personalized learning environment (Alliance for Education Excellence, 2016; Basham et al., 2016; USDOE, 2017). Abandoning the traditional teacher-centered instructional model requires a full paradigm shift on how instruction is designed in the classroom (Bricachek, 2014). However, the industry does not have a single accepted definition for personalized learning or a single accepted method for successful implementation of personalized learning (Abel, 2016; Bray & McClaskey, 2015; Jenkins & Kelly, 2016).

The lack of an industry-accepted definition or learning model has made it difficult for researchers to gather valid, reliable, and transferrable data on personalized learning (Herold, 2016; Pane et al., 2015, 2017a). The existing research has shown several

commonly identified barriers to the implementation of personalized learning. One large barrier to the implementation of personalized learning is the lack of teacher buy-in (Alliance for Excellent Education, 2017; Jenkins & Kelly, 2016). The previously identified lack of a universally adopted definition and model and the lack of targeted professional learning on specific personalized learning strategies have contributed to the lack of teacher buy-in (DeNisco, 2018; Jenkins & Kelly, 2016).

The purpose of this study was to gain a better understanding of K-12 classroom teachers' perceptions of personalized learning and the barriers K-12 classroom teachers are currently experiencing regarding the implementation of the four core personalized learning strategies. Personalized learning was conceptualized using the four core personalized learning strategies of learner profiles, personal learning paths, competency-based progressions and flexible learning environments. Data were gathered from K-12 classroom teachers regarding their personal beliefs on a number of personalized learning-related statements. Research participants also identified barriers to the successful implementation of personalized learning. Analysis of the data determined whether any of the four core strategies of personalized learning was promoted within the district and what types of professional development, district-sponsored or external, were offered to teachers wishing to implement any of the core strategies.

Research questions. The following research questions guided this study:

1. What are the current K-12 classroom teacher beliefs regarding the importance of flexible learning environments, competency-based progression, learner profiles, and personal learning paths?

2. What barriers do K-12 classroom teachers report being the most difficult to overcome when implementing personalized learning in their classroom?

3. To what extent do K-12 classroom teachers report receiving explicit professional development in the four core strategies of personalized learning?

4. To what extent do K-12 classroom teachers feel prepared to implement the four commonly accepted components of personalized learning with fidelity?

Research Design

Quantitative data were collected for analysis. Quantitative research is defined as "research in which the investigator attempts to clarify phenomena through carefully designed and controlled data collection and analysis" (Fraenkel, Wallen, & Hyun, 2012, p. G-7). The goal of quantitative research is to "establish generalizations that transcend the immediate situation or particular setting" (Fraenkel et al., 2012, p. 11). Since the purpose of the study was to gain a better understanding of K-12 classroom teachers' perceptions of personalized learning and the barriers K-12 classroom teachers are currently experiencing regarding the implementation of the four core personalized learning strategies, data from K-12 classroom teachers were collected, analyzed, and compared to the existing data from previous studies.

Data were collected using a survey administered through Qualtrics and distributed via email to all K-12 principals in two districts. The principals then forwarded the survey to the teachers. The survey was a census survey. Attempting to gather data from an entire population requires the use of a census (Fraenkel et al., 2012). Therefore, a census method was selected to examine attitudinal and structural barriers to the successful implementation of personalized learning. Several benefits of using a census include

everyone in the population having the opportunity to have their information utilized in the research, data accuracy concerns are reduced, and census surveys are easier to administer since the entire population is included (Parker, 2011, p. 4). Specific details about the survey instrument are provided in the instrumentation section.

Population and Sample

The research population consisted of all K-12 classroom teachers from two public school districts in southwest Missouri. The population was 2,050 educators. The two districts were chosen because an internet search revealed the two school districts have implemented technology integration initiatives and have also identified personalized learning as an instructional priority.

One must take a few factors into consideration when determining the minimum number of responses needed for the survey. Recent data reveal the email open rate from an unknown source in the education industry to be 23.75% (Chaffey, 2018, Email Statistics-2018 Update section, para. 3). Having the communication regarding the survey originate from within the organization was selected as a viable option to increase this rate. However, difficulties still exist regarding obtaining responses. One must acknowledge "internal surveys will generally receive a 30-40% response rate on average, compared to an average 10-15% response rate for external surveys" (Fryrear, 2015, Typical Response section, para. 3). Taking the email open rate and recent response rates to external surveys into consideration, a response rate of 10% (205) was expected for this study. The final response rate was roughly 12.49% (256).

Instrumentation

The data for this study were collected using a cross-sectional survey designed by the researcher (Appendix A). The survey was designed using the conceptual framework for the study and focused on previously documented barriers to the implementation of personalized learning and previously documented teacher beliefs regarding personalized learning. The four core personalized learning strategies were explicitly addressed. Definitions for the four strategies were provided to increase response validity.

The following demographic information about the respondent was collected in section one: age group of students taught disaggregated as K-2, 3-5, 6-8, and 9-12; subject or content area taught; and number of years taught disaggregated as 0-2, 3-5, 6-10, and 11 and up. The section also included a question about whether or not the teacher knew if the district explicitly mentioned personalized learning in its mission, vision, or instructional priorities.

The second section of the instrument was designed to answer Research Question (RQ) 1. The survey questions about teacher beliefs were designed using a four-point Likert-type scale. A Likert-type scale allows the researcher to gather data on the attitudes of respondents (Fraenkel et al., 2012, p. 127). The statements were designed to address teacher beliefs regarding personalized learning in general as well as teacher beliefs regarding the four core personalized learning strategies of learning profiles, personalized learning paths, competency-based progression, and flexible learning environments. Respondents were asked to rank their level of agreement to multiple statements, with a 1 response as *strongly disagree* and a 4 response as *strongly agree*. The decision was made

to not include a neutral response in an attempt to obtain as accurate information as possible.

The third section of the instrument was designed to answer RQ 2. Participants were given a list of multiple barriers, as identified by Pane et al. (2015, 2017a) and Jenkins and Kelly (2016), classroom teachers might face when implementing personalized learning. Respondents were asked to choose the three largest barriers they have experienced. Respondents also had the option of adding an additional barrier that was not on the list to their response.

The fourth section of the instrument was designed to answer RQ 3 and RQ 4. This section had four sub-sections that specifically addressed the four core personalized learning strategies identified. Each sub-section contained three questions. The first question asked if the respondent had received professional development focused on the specific strategy. If the response was yes, the second question asked whether or not the professional development was sponsored by the district or was facilitated outside of the district and whether or not the professional development was mandatory or optional. The third question required the respondent to rate his/her level of competency in regards to the implementation of the specified strategy.

Prior to distributing the survey, a respondent debriefing was utilized by a small group of education professionals to gather feedback on the clarity and usefulness of the survey before the survey was distributed to the population. A respondent debriefing requires a researcher to "run (the) survey on a small number of respondents prior to sending it out to your entire sample to get feedback on your survey" (Vannette, 2018, Respondent Debriefing section, para. 1). The goal of the respondent debriefing is to

"focus on assessing respondent comprehension and interpretation of survey questions. It should also include overall evaluations of the survey content, time, satisfaction and difficulty" (Vannette, 2018, Respondent Debriefing section, para. 1). The only changes made to the instrument following the respondent debriefing was the inclusion of the definitions of the four core personalized learning strategies. The definitions were included to provide respondents with a common baseline from which to answer the questions.

Data Collection

The survey was developed using the web-based program Qualtrics and distributed through email. Several benefits to using a web-based survey are "greater convenience, lower costs, faster turnaround, multimedia interface, mobile administration (using portable devices), and reduced data entry" (Fraenkel, 2012, p. 397). Letters (Appendix B) were emailed to the superintendents of the two districts chosen to survey explaining the purpose of the study and requesting their district's participation, and both district's granted permission for the teachers to participate in the study.

Once permission was granted by the districts to distribute the survey (Appendix C), the Qualtrics survey link and participation request was emailed to 52 building principals (Appendix D). The building principals were asked to forward the survey link to all K-12 classroom teachers. Within the survey was a message to the teacher including an explanation of the purpose of the study and an explanation of how the data gathered will be used (Appendix E). The survey also included the informed consent form (Appendix F), which instructed participants they agreed to the information in the informed consent by continuing to the next screen.

After a three-week period following the initial survey distribution, the survey was closed. The survey had reached a response rate of roughly 12%, 2% higher than the original minimum number of responses. Also, no additional responses had been received in the four days prior to closing the survey.

Data Analysis

The results of the survey were analyzed using descriptive statistics. Descriptive statistics "permit researchers to describe the information contained in many, many scores with just a few indices" (Fraenkel et al., 2012, p. 187). Utilizing the demographic information provided by the sample, responses were disaggregated by years of experience at the current district and grade-level taught in an attempt to identify possible trends. Further, the data were analyzed by examining the mode measure of central tendency and the frequency distribution of responses in percentage form. Examining the mode was chosen because "the mode is the only measure of central tendency that can be used in finding the most typical case when the data are nominal or categorical" (Bluman, 2013, p. 121).

The results from the responses on the Likert-type *Teacher Beliefs* section were analyzed by identifying the mode for each statement as well as the frequency distribution for each statement. The frequency distributions were organized in a variety of frequency tables. Frequency tables require organizing the data into classes (Bluman, 2013). The classes utilized were the one to four ratings the respondents gave to each statement. The percentage of responses for each rating were provided because "the percentage of respondents who chose each alternative for each question should be given" (Fraenkel et

al., p. 407). The mode and frequency of responses were disaggregated by years of experience and age-group taught.

RQ 2, RQ 3, and RQ 4 were analyzed by examining the frequency of responses regarding the barriers to personalized learning, the training respondents have received on implementing the four core personalized learning strategies, and the self-identified level of competency for each strategy. The classes for the frequency tables were determined by the variables presented in each survey statement. Since respondents were not required to respond to all statements, the number of teachers responding to each statement was provided in the data analysis.

Ethical Considerations

A proposal to the Lindenwood University Institutional Review Board was submitted to gain permission to conduct the study and present the data from the study for publication. Permission was granted by the Lindenwood University Institutional Review Board (Appendix G). All survey responses were anonymous; therefore, confidentiality of the participants was guaranteed. Further, all documentation data will be destroyed three years after the completion of the research. Also, all participants were provided an informed consent form explaining the purpose of the study and how the data collected from the study would be utilized. The informed consent form also explained participation was voluntary, and participants could choose to not answer any question or stop the survey at any time.

Summary

Chapter Three contained an overview of the problem and purpose for the research study and revisited the research questions. The descriptive research study design was

explained in detail, as were the population and sample. The multiple sections of the survey instrument were explained and paired with the appropriate research question addressed by the section. A step-by-step process for data collection was provided, and the descriptive statistics utilized for data analysis were explained. Lastly, the ethical considerations regarding the study were addressed.

Chapter Four includes the purpose of the study, the research questions, and a more detailed breakdown of the population of the study. The data collected are organized as they connect with each research question and are presented in narrative form and in a variety of frequency distribution tables. In addition to the overall results, the data are also disaggregated by the respondents' grade-level taught and years of experience at current district.

Chapter Four: Analysis of Data

Introduction

While personalized learning has become a very common term in education and is referenced in 39 states' ESSA plans, there is still not one industry-accepted model or definition for personalized learning (Abel, 2016; Cavanaugh, 2014; KnowledgeWorks Foundation, 2018; Molnar, 2018). The lack of consistently applied strategies and models of personalized learning has made it difficult to gather reliable and transferable data (Goodwin, 2017). The largest study on personalized learning to date identified four core strategies utilized in personalized learning instructional models: flexible learning environments, learner profiles, personal learning paths, and competency-based progression (Pane et al., 2017a). For this study personalized learning was examined through the lens of the four strategies identified by Pane et al. (2017a). The review of existing literature revealed teachers in personalized learning environments are familiar with the four core strategies to various degrees but often report various barriers to the successful implementation and utilization of the strategies (Jenkins & Kelly, 2016; Pane et al., 2017a).

The purpose of this study was to gain a better understanding of K-12 classroom teachers' perceptions of personalized learning and the barriers classroom teachers are currently experiencing regarding the implementation of the four core personalized learning strategies. The two school districts included in the study have publicly identified personalized learning as an instructional priority. The analysis of the data could assist other education leaders wishing to utilize personalized learning in their districts identify and address the barriers, learning gaps, and lack of clarity their own teachers might be

experiencing. The survey instrument could also be a resource school districts use to gauge the specific barriers to and perceptions of personalized learning according to their classroom teachers.

The instrument utilized for the study was a cross-sectional census survey designed by the researcher. Teacher training and self-reported skill level on the four core personalized learning strategies of flexible learning environments, learner profiles, personal learning paths, and competency-based progression were explicitly addressed. Definitions for the four strategies were provided to all participants to ensure the responses were based upon the same concept. Previously documented barriers to personalized learning were also included as were several Likert-type statements regarding various elements of personalized learning.

Data collected from the respondents were analyzed in multiple ways. The mode measure of central tendency was documented for all responses. A frequency distribution for all responses was also utilized to analyze the data. In addition to analyzing the data as a whole, the data were disaggregated by grade-level taught and the years of experience in the current school district.

Population

Two southwest Missouri districts were invited to participate in the study. After district permission was granted, email requests were sent to 52 principals asking the principal to forward the survey link to their classroom teachers. Only one principal responded she would not be forwarding the link. Overall, 256 (12.49%) of the roughly 2,050 K-12 classroom teachers who should have received the survey responded. Of the 256 respondents, 91 (35.55%) identified as teaching ninth through twelfth grade, 51

(19.92%) identified as teaching sixth through eighth grade, 59 (23.05%) identified as teaching third through fifth grade, and 55 (21.48%) identified as teaching kindergarten through second grade. In regards to years of experience at their current district, 36 (14.06%) reported having worked in their district two or fewer years, 61 (23.83%) reported having worked in their district three to five years, 56 (21.88%) reported having worked in their district six to ten years, and 103 (40.23%) reported having worked in their current district 11 or more years. Lastly, 228 (89.06%) of respondents reported they did know personalized learning was addressed in their district's mission, vision, or instructional priorities; four (1.56%) reported personalized learning was not addressed in those items; and 24 (9.77%) reported they did not know if personalized learning was addressed.

Teacher Beliefs Regarding Elements of Personalized Learning

To answer RQ 1, *What are the current K-12 classroom teacher beliefs regarding the importance of flexible learning environments, competency-based progression, learner profiles, and personal learning paths?,* respondents were presented with seven statements addressing multiple elements of personalized learning. The first three statements addressed the broader elements of personalized learning including the utilization of modern tools to facilitate personalized learning, whether teachers should receive professional learning on implementing personalized learning, and whether students deserve to have an education personalized to their interests, goals, learning styles, and needs. The final four statements explicitly addressed the four core strategies of flexible learning environments, learner profiles, personal learning paths, and competency-based progression. Respondents were asked to rate their level of agreement to each statement

using a Likert-type scale of one to four with one being *strongly disagree* and four being *strongly agree.*

The first statement provided in the survey was, "Modern learning tools, including digital devices, should be utilized in the classroom to provide personalized learning opportunities." All 256 participants responded to this statement. The mode response to this statement was *agree* with 130 (50.78%) respondents choosing this option. When the data were disaggregated by grade-level taught, the mode remained the same for all groups except those reporting to teach third through fifth grade: 32 (54.24%) third through fifth grade teachers chose *strongly agree. Agree* remained the mode for all groups except one when the data were disaggregated by years of experience at the current district. The three to five years category had bimodal results in that *agree* and *strongly agree* were selected by 29 (47.54%) respondents. See Table 1 for the disaggregated frequency distribution of all 256 responses.

Table 1

Teacher Support for Modern Tools to Facilitate Personalized Learning

Population	Selected Response			
	1- Strongly Disagree	2- Disagree	3- Agree	4- Strongly Agree
All	5 (1.95%)	6 (2.34%)	**130 (50.78%)**	115 (44.92%)
Grade				
K-2	2 (3.64%)	1 (1.82%)	**28 (50.91)**	24 (43.64%)
3-5	1 (1.69%)	2 (3.39%)	24 (40.68%)	**32 (50.91%)**
6-8	0 (0%)	0 (0%)	**26 (50.98%)**	25 (49.02%)
9-12	2 (2.2%)	3 (3.3%)	**52 (57.14%)**	34 (37.36%)
Experience				
0-2	1 (2.78%)	1 (2.78%)	**18 (50%)**	16 (44.44%)
3-5	2 (3.28%)	1 (1.64%)	**29 (47.54%)**	**29 (47.54%)**
6-10	2 (3.57%)	1 (1.79%)	**28 (50%)**	25 (44.64%)
11≤	1 (0.96%)	3 (2.88%)	**55 (52.88%)**	45 (43.27 %)

Note. Boldface is the mode.

The second statement provided in the survey was, "Teachers should receive targeted professional learning on practical implementation of personalized learning" and received 255 responses. The mode response for the statement was *strongly agree,* chosen by 161 (63.14%) respondents. When the data were disaggregated by grade-level taught and by years of experience in the current district, *strongly agree* remained the mode for all subgroups. Table 2 contains the disaggregated frequency distribution for all 255 responses.

Table 2

Teacher Support for Professional Learning on Personalized Learning

	Selected Response			
Population	1- Strongly Disagree	2- Disagree	3- Agree	4- Strongly Agree
All	2 (0.78%)	6 (2.35%)	86 (33.73%)	**161 (63.14%)**
Grade				
K-2	1 (1.85%)	0 (0%)	21 (38.89%)	**32 (59.26%)**
3-5	0 (0%)	1 (1.69%)	15 (25.42%)	**43 (72.88%)**
6-8	0 (0%)	1 (1.96%)	18 (35.29%)	**32 (62.75%)**
9-12	1 (1.10%)	4 (4.40%)	32 (35.16%)	**54 (59.34%)**
Experience				
0-2	0 (0%)	1 (2.78%)	13 (36.11%)	**22 (61.11%)**
3-5	1 (1.67%)	1 (1.67%)	21 (35%)	**37 (61.67%)**
6-10	1 (1.79%)	1 (1.79%)	16 (28.57%)	**38 (67.86%)**
11≤	0 (0%)	3 (2.91%)	36 (34.95%)	**64 (62.14%)**

Note. Boldface is the mode.

The third statement in the survey was, "All students deserve to have an education that is personalized to their interests, goals, learning styles, and needs." Overall, 255 survey participants responded to this statement. The mode response was *strongly agree* with 129 (50.59%) participants selecting this option. When the data were disaggregated, *strongly agree* remained the mode for all subgroups but two: the ninth through twelfth grade teachers and the teachers who had been in their district three to five years. *Agree* was the mode for these subgroups with 45 (49.45%) ninth through twelfth grade responses and 28 (46.67%) responses from teachers with three to five years of experience in their current district. There was only a difference of one response between the number of respondents who chose *agree* and the number of respondents who chose *strongly*

66

agree in the three to five years category. Table 3 contains the disaggregated frequency

distribution of all 255 responses.

Table 3

Teacher Belief that Students Deserve a Personalized Education

| | Selected Response | | | |
Population	1- Strongly Disagree	2- Disagree	3- Agree	4- Strongly Agree
All	3 (1.18%)	15 (5.88%)	108 (42.35%)	**129 (50.59%)**
Grade				
K-2	1 (1.82%)	1 (1.82%)	21 (38.18%)	**32 (58.18%)**
3-5	0 (0%)	4 (6.78%)	21 (35.59%)	**34 (57.63%)**
6-8	1 (2%)	0 (0%)	21 (41%)	**28 (56%)**
9-12	1 (2%)	10 (10.99%)	**45 (49.45%)**	35 (38.46%)
Experience				
0-2	0 (0%)	4 (11.11%)	9 (25%)	**23 (63.89%)**
3-5	1 (1.67%)	4 (6.67%)	**28 (46.67%)**	27 (45%)
6-10	1 (1.75%)	1 (1.75%)	24 (42.11%)	**31 (54.39%)**
11≤	1 (0.97%)	7 (6.80%)	47 (45.63%)	**48 (46.60%)**

Note. Boldface is the mode.

The fourth statement was the first to specifically address the four core

personalized learning strategies and focused on flexible learning environments. The

statement was written as, "Teachers should be provided resources to diversify the

physical learning environment for their students." Overall, all 256 participants responded

to the statement. The mode for all responses was *strongly agree* with 160 (62.50%)

respondents choosing this option. *Strongly agree* remained the mode for all subgroups

when the data were disaggregated. Table 4 contains the disaggregated frequency

distribution for all 256 responses.

Table 4

Teacher Support for Flexible Learning Environments

	Selected Response			
Population	1- Strongly Disagree	2- Disagree	3- Agree	4- Strongly Agree
All	2 (0.78%)	9 (3.52%)	85 (33.20%)	**160 (62.50%)**
Grade				
K-2	1 (1.82%)	1 (1.82%)	19 (34.55%)	**34 (61.82%)**
3-5	1 (1.69%)	1 (1.69%)	15 (25.42%)	**42 (71.19%)**
6-8	0 (0%)	2 (3.92%)	16 (31.37%)	**32 (64.71%)**
9-12	0 (0%)	5 (5.49%)	35 (38.46%)	**51 (56.04%)**
Experience				
0-2	2 (5.56%)	1 (2.78%)	9 (25%)	**24 (66.67%)**
3-5	0 (0%)	2 (3.28%)	16 (26.23%)	**43 (70.49%)**
6-10	0 (0%)	2 (3.57%)	20 (35.71%)	**34 (60.71%)**
11$\leq$	0 (0%)	4 (3.88%)	40 (38.83%)	**59 (57.28%)**

Note. Boldface is the mode.

The fifth statement addressed the strategy of learner profiles and was stated as,

"Districts should utilize digital learner profiles that document student work, interests,

goals, and strengths that are available to every teacher each year and are used to inform

instruction." A total of 255 participants responded to the statement. The mode for all

responses was *agree* with 135 (52.94%) respondents choosing this option. A*gree*

remained the mode for all subgroups except one when the data were disaggregated by

grade-level taught and years of experience. The mode for teachers with two or fewer

years of experience in their district was *strongly agree* with 15 (41.67%) respondents

selecting this option. Table 5 contains the disaggregated frequency distribution for all 255

responses.

Table 5

Teacher Support for Learner Profiles

	Selected Response			
Population	1- Strongly Disagree	2- Disagree	3- Agree	4- Strongly Agree
All	7 (2.75%)	37 (14.51%)	**135 (52.94%)**	76 (29.80%)
Grade				
K-2	4 (7.27%)	6 (10.91%)	**33 (60%)**	12 (21.82%)
3-5	0 (0%)	11 (18.64%)	**29 (49.15%)**	19 (32.20%)
6-8	0 (0%)	4 (7.84%)	**25 (49.02%)**	22 (43.14%)
9-12	3 (3.33%)	16 (17.78%)	**48 (53.33%)**	23 (25.56%)
Experience				
0-2	1 (2.78%)	7 (19.44%)	13 (36.11%)	**15 (41.67%)**
3-5	2 (3.28%)	5 (8.20%)	**39 (63.93%)**	15 (24.59%)
6-10	2 (3.57%)	9 (16.07%)	**31 (55.36%)**	14 (25%)
11≤	2 (1.96%)	16 (15.69%)	**52 (50.98%)**	32 (31.37%)

Note. Boldface is the mode.

The sixth statement explicitly addressed the core strategy of personal learning

paths and was written as, "Each student should have his/her own customized learning

path that incorporates student interests, standards mastery, learning styles, and personal

goals." This statement received a total of 255 responses. The mode for all responses was

agree with 140 (54.96%) participants selecting this option. *Agree* remained the mode for

all subgroups except one when the data were disaggregated. The results of the subgroup

of teachers with two or fewer years of experience in their district were bimodal with *agree* and *strongly agree* being chosen by 15 (41.67%) of respondents. Table 6 contains the disaggregated frequency distribution for all 255 responses.

Table 6

Teacher Support for Personal Learning Paths

	Selected Response			
Population	1- Strongly Disagree	2- Disagree	3- Agree	4- Strongly Agree
All	6 (2.35%)	43 (16.86%)	**140 (54.96%)**	66 (25.88%)
Grade				
K-2	2 (3.64%)	7 (12.73%)	**32 (58.18%)**	14 (25.45%)
3-5	1 (1.69%)	13 (22.03%)	**30 (50.85%)**	15 (25.42%)
6-8	0 (0%)	6 (11.76%)	**26 (50.98%)**	19 (37.25%)
9-12	3 (3.33%)	17 (18.89%)	**52 (57.78%)**	18 (20%)
Experience				
0-2	1 (2.78%)	5 (13.89%)	**15 (41.67%)**	**15 (41.67%)**
3-5	2 (3.28%)	11 (18.03%)	**34 (55.74%)**	14 (22.95%)
6-10	1 (1.82%)	10 (18.18%)	**29 (52.73%)**	15 (27.27%)
11$\leq$	2 (1.94%)	17 (16.50%)	**62 (60.19%)**	22 (21.36%)

Note. Boldface is the mode.

The seventh and final statement explicitly addressed the core strategy of competency-based progression and was written as, "Student progression through content should be personalized based on mastery of standards." All 256 participants responded to this statement, and the mode for all responses was *agree* with 134 (52.34%) participants selecting this option. When the data were disaggregated into subgroups, the mode remained *agree* for all subgroups except for teachers with two or fewer years in their

current district, whose mode was *strongly agree* with 18 (50%) members of the subgroup

selecting this option. Table 7 contains the disaggregated frequency distribution for all 256

responses.

Table 7

Teacher Support for Competency-Based Progression

	Selected Response			
Population	1- Strongly Disagree	2- Disagree	3- Agree	4- Strongly Agree
All	4 (1.56%)	32 (12.50%)	**134 (52.34%)**	86 (33.59%)
Grade				
K-2	2 (3.64%)	2 (3.64%)	**30 (54.55%)**	21 (38.18%)
3-5	0 (0%)	11 (18.64%)	**30 (50.85%)**	18 (30.51%)
6-8	0 (0%)	5 (9.80%)	**25 (49.02%)**	21 (41.18%)
9-12	2 (2.20%)	14 (15.38%)	**49 (53.85%)**	26 (28.57%)
Experience				
0-2	1 (2.78%)	3 (8.33%)	14 (38.89%)	**18 (50%)**
3-5	1 (1.64%)	14 (22.95%)	**26 (42.62%)**	20 (32.79%)
6-10	2 (3.45%)	5 (8.62%)	**31 (53.45%)**	20 (34.48%)
11≤	2 (1.94%)	10 (9.71%)	**63 (61.17%)**	28 (27.18%)

Note. Boldface is the mode.

Teacher Beliefs Regarding Barriers to Personalized Learning Implementation

To answer RQ 2, *What barriers do K-12 classroom teachers report as the most*

difficult to overcome when implementing personalized learning in their classroom?,

respondents were presented with a list of 11 previously documented barriers to

personalized learning and asked to choose the three barriers they believe present the

greatest challenges for teachers wishing to implement personalized learning. Respondents

were also able to choose *other* and type their own barriers. Overall, 250 respondents participated in this section of the survey.

> After analyzing the response data, the barrier identified by most teachers was *lack of time to prepare personalized lessons* with 61% of respondents selecting this as one of their three choices. The second-most selected barrier by all respondents was *too much diversity in achievement levels among students* with 48% of respondents selecting this as one of their three choices. The detailed breakdown of all responses can be found in Figure 5.
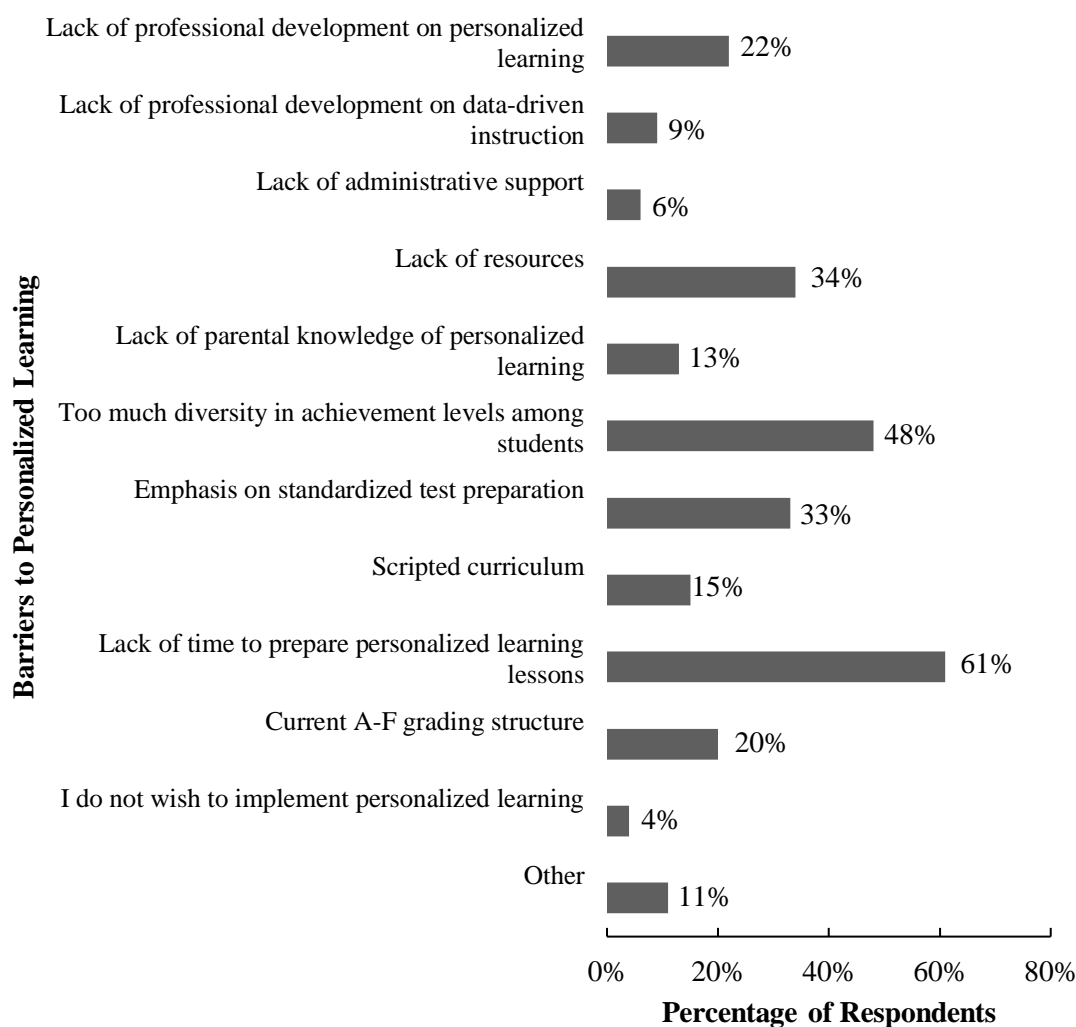
Figure 5. Overall results of teacher reported barriers to personalized learning listed by

percentage of respondents who chose each option.

Teachers who selected *other* as one of their three choices were given the option to

type an explanation of the barrier they have experienced not included in the list. A total

of 28 (11%) respondents selected *other*. Of those 28 respondents, 25 typed an

explanation. The typed responses were analyzed and grouped according to theme with

three main themes emerging: class time, class size, and classroom management. In

regards to class time, the responses addressed the overall limitations of time in a school day or class period and the wide range of topics and standards needed to be addressed in a short amount of time. In regards to class size, respondents expressed difficulty utilizing personalized learning strategies when the number of students in their class is high. In regards to classroom management, respondents expressed that management of multiple students doing multiple activities in multiple ways at varying levels of engagement can pose a significant barrier to implementing personalized learning.

When the data were disaggregated by grade-level taught, *lack of time to prepare personalized lessons* remained the most frequently selected barrier for all subgroups except one. For the subgroup of sixth through eighth grade teachers, the most selected barrier was *too much diversity in achievement levels among students* with 58% of sixth through eighth grade teachers selecting this option. *Lack of time to prepare personalized lessons* was the second-most selected barrier for this subgroup with 56% of the subgroup choosing this option. The comprehensive disaggregated data for the grade-level taught subgroup can be found in Figure 6.
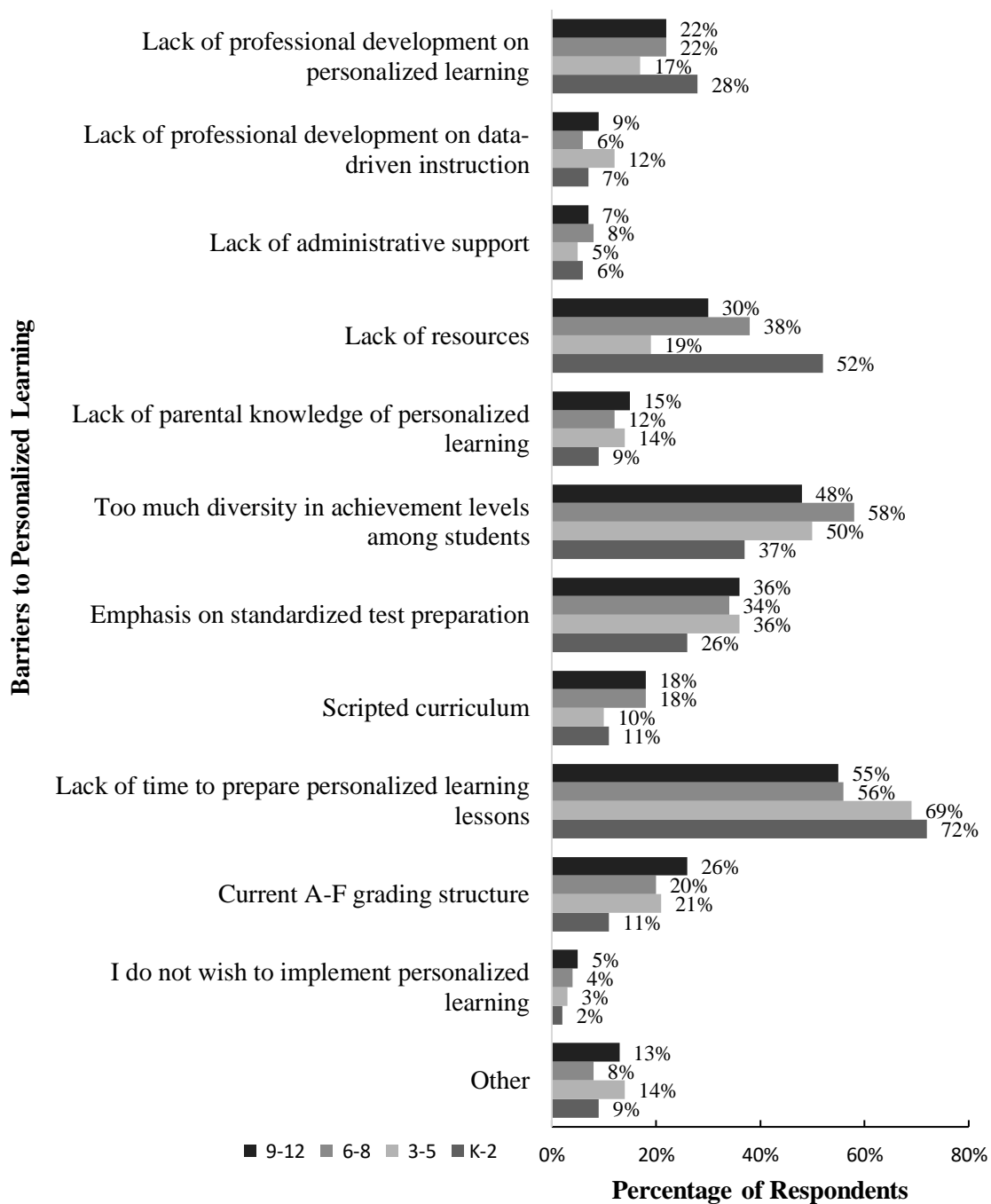
Figure 6. Results of teacher reported barriers to personalized learning disaggregated by

grade-level taught and listed by percentage of respondents who chose each option.

When the data were disaggregated by years of experience in the district, *lack of time to prepare personalized lessons* remained the most frequently selected barrier for all subgroups except one. For the subgroup of teachers who have been at their current district for two or fewer years, the most selected barrier was *too much diversity in achievement levels among students* with 49% of this subgroup selecting this option. *Lack of time to prepare personalized lessons* was the second-most selected barrier for this subgroup with 43% of the subgroup choosing this option. The comprehensive disaggregated data for the years of experience subgroup can be found in Figure 6.
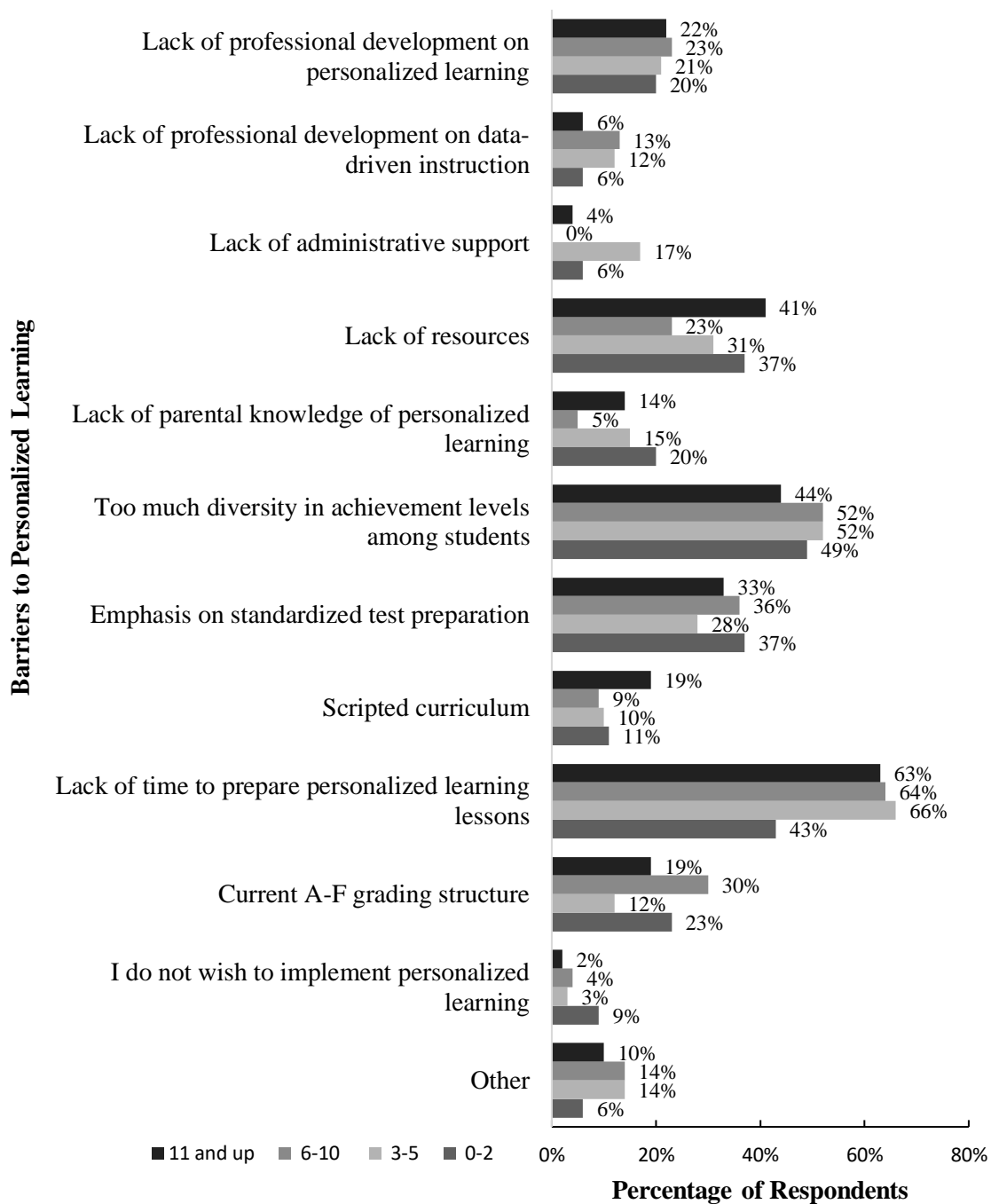
Figure 7. Results of teacher reported barriers to personalized learning disaggregated by

years of experience in current district and listed by percentage of respondents who chose

each option.

Teacher Participation in Training on Core Four Strategies

To answer RQ 3, *To what extent do K-12 classroom teachers report receiving explicit professional development in the four core strategies of personalized learning?*, respondents were asked whether or not they had participated in training on each of the four core personalized learning strategies. Respondents who reported having received training for the identified strategy were asked to identify if the learning they received was required or optional and whether it was provided by the district or took place out-of-district. Each strategy was addressed in its own section so respondents were able to explicitly answer about a specific strategy as opposed to a general overarching concept. A definition for the strategy was provided at the start of each strategy section. The data were analyzed overall and disaggregated by grade-level taught and years of experience in current district.

Flexible Learning Environments. The first core strategy addressed in the survey was flexible learning environments. In total, 250 participants responded to this section. With 136 (54.04%) responses, more teachers reported they had not received any training on creating flexible learning environments than teachers who reported they had received training. When the data regarding participation in trainings were disaggregated by grade-level taught and years of experience in current district, there were some minor changes in the results. While the modes for most categories matched the overall data, a greater number of teachers in grades three through five reported receiving training on flexible learning environments than teachers who reported not receiving any training, 32 (55.17%) compared to 26 (44.83%) respectively. Similarly, a greater number of teachers who have taught in their district for 11 or more years reported receiving training on

flexible learning environments than teacher who reported not receiving any training, 54 (52.94%) compared to 48 (47.06%) respectively. Table 8 contains the detailed results of whether or not teachers have received training on flexible learning environments disaggregated by grade-level taught and years of experience at current district.

Table 8

Disaggregated Participation in Training on Flexible Learning Environments

	Selected Response	
Population	Yes	No
All	114 (45.60%)	**136 (54.40%)**
Grade		
K-2	22 (40.74%)	**32 (59.26%)**
3-5	**32 (55.17%)**	26 (44.83%)
6-8	23 (46%)	**27 (54%)**
9-12	37 (42.05%)	**51 (57.95%)**
Experience		
0-2	12 (34.29%)	**23 (65.71%)**
3-5	23 (39.66%)	**35 (60.34%)**
6-10	25 (45.45%)	**30 (54.55%)**
11≤	**54 (52.94%)**	48 (47.06%)

Note. Boldface is the mode.

Any teacher who reported they had received training on flexible learning environments was prompted to identify what type of training they received: *required in-district*, *optional in-district*, *required out-of-district*, or *optional out-of-district*. Of the 114 (45.60%) teachers who reported having received training on flexible learning environments, the mode response for the type of training was *optional in-district* with 57

(50%) respondents choosing this option. The second-most selected response was *required in-district* with 44 (38.60%) respondents choosing this option. *Optional out-of-district* received the third-most responses with 10 (8.77%). Lastly, *required out-of-district* received the least amount of selections with 3 (2.63%).

When the data were disaggregated by grade-level taught and years of experience at current district, there were some minor changes. The mode for the types of training received by teachers in grades nine through twelve differed from the overall results with 20 (54.05%) members of the group selecting *required in-district*. In the category of teachers who have taught at their current district for two or fewer years, the mode for the type of training differed from the overall results with 6 (50%) of the group selecting *required in-district*. Table 9 contains the results of the type of training teachers have received on flexible learning environments disaggregated by grade-level taught and years of experience at current district.

Table 9

Disaggregated Types of Training on Flexible Learning Environments

	Selected Response			
Population	Required In-District	Optional In-District	Required Out-of-District	Optional Out-of-District
All	44 (38.60%)	**57 (50%)**	3 (2.63%)	10 (8.77%)
Grade				
K-2	9 (40.91%)	**10 (45.45%)**	2 (9.09%)	1 (4.55%)
3-5	10 (31.25%)	**18 (56.25%)**	1 (3.13%)	3 (9.38%)
6-8	5 (21.74%)	**15 (65.22%)**	0 (0%)	3 (13.04%)
9-12	**20 (54.05%)**	14 (37.84%)	0 (0%)	3 (8.11%)
Experience				
0-2	**6 (50%)**	4 (33.33%)	1 (8.33%)	1 (8.33%)
3-5	10 (43.48%)	**13 (56.52%)**	0 (0%)	0 (0%)
6-10	10 (40%)	**11 (44%)**	1 (4%)	3 (12%)
11$\leq$	18 (33.33%)	**29 (53.70%)**	1 (1.85%)	6 (11.11%)

Note. Boldface is the mode.

Learner profiles. The second core strategy addressed in the survey was learner profiles. In total, 247 total participants responded to this section. With 156 (63.16%) responses, more teachers reported they had not received any training on utilizing learner profiles to drive personalized learning for their students than teachers who reported they had received training.

The results remained consistent when the data regarding participation in trainings were disaggregated by grade-level taught and years of experience in current district with all subgroups reporting more teachers had not been trained than those who had been trained. However, the size of the difference between the percentage of those who had received training and those who had not received training varied between subgroups.

When disaggregated by grade-level taught, the least amount of variance was found in ninth through twelfth grade teachers with 41.38% responding *yes* and 58.62% responding *no.* The greatest variance was found in kindergarten through second grade teachers with 30.19% responding *yes* and 69.81% responding *no.* When disaggregated by years of experience at current district, the least amount of variance was found in the three through five years subgroup with 46.55% responding *yes* and 53.45% responding *no.* The greatest variance was found in teachers with two or fewer years of experience with 23.53% responding *yes* and 76.47% responding *no.* Table 10 contains the detailed results of whether or not teachers have received training on utilizing learner profiles to drive personalized learning disaggregated by grade-level taught and years of experience at current district.

Table 10

Disaggregated Participation in Training on Learner Profiles

	Selected Response	
Population	Yes	No
All	91 (36.84%)	**156 (63.16%)**
Grade		
K-2	16 (30.19%)	**37 (69.81%)**
3-5	20 (35.09%)	**37 (64.91%)**
6-8	19 (38%)	**31 (62%)**
9-12	36 (41.38%)	**51 (58.62%)**
Experience		
0-2	8 (23.53%)	**26 (76.47%)**
3-5	27 (46.55%)	**31 (53.45%)**
6-10	17 (31.48%)	**37 (68.52%)**
11≤	39 (38.61%)	**62 (61.39%)**

Note. Boldface is the mode.

Any teacher who reported they had received training on utilizing learner profiles to drive personalized learning was supposed to be prompted to identify what type of training they received: *required in-district*, *optional in-district*, *required out-of-district*, or *optional out-of-district*. Regrettably, the survey was initially sending responses of *no* to this question instead of responses of *yes*. This error was identified within 24 hours of the survey's distribution; however, there were already multiple completed survey responses. Due to this error, the data regarding the types of training received on the utilization of learner profiles to drive personalized learning cannot be considered reliable and will not be presented.

Competency-based progression. The third core strategy addressed in the survey was competency-based progression. In total, 244 total participants responded to this section. With 184 (75.41%) responses, more teachers reported they had not received any training on how to utilize competency-based progression to personalize how students interact with content than teachers who reported receiving training.

The results remained consistent when the data regarding participation in trainings were disaggregated by grade-level taught and years of experience in current district with all subgroups reporting more teachers had not been trained than those who had been trained. However, the size of the difference between the percentage of those who had received training and those who had not received training varied between subgroups. When disaggregated by grade-level taught, the least amount of variance was found in sixth through eighth grade teachers with 32% responding *yes* and 68% responding *no.*

The greatest variance was found in kindergarten through second grade teachers with 19.61% responding *yes* and 80.39% responding *no.* When disaggregated by years of experience at current district, the least amount of variance was found in the three through five years subgroup with 35.09% responding *yes* and 64.91% responding no. The greatest variance was found in teachers with 11 or more years of experience with 19% responding *yes* and 81% responding *no.* Table 11 contains the detailed results of whether or not teachers have received training on utilizing competency-based progression disaggregated by grade-level taught and years of experience at current district.

Table 11

Disaggregated Participation in Training on Competency-Based Progression

	Selected Response	
Population	Yes	No
All	60 (24.59%)	**184 (75.41%)**
Grade		
K-2	10 (19.61%)	**41 (80.39%)**
3-5	15 (26.32%)	**42 (73.68%)**
6-8	16 (32%)	**34 (68%)**
9-12	19 (22.09%)	**67 (77.91%)**
Experience		
0-2	8 (24.24%)	**25 (75.76%)**
3-5	20 (35.09%)	**37 (64.91%)**
6-10	13 (24.07%)	**75.93%)**
11≤	19 (19%)	**81 (81%)**

Note. Boldface is the mode.

Any teacher who reported they had received training on competency-based progression was prompted to identify what type of training they received: *required in-district*, *optional in-district*, *required out-of-district*, or *optional out-of-district*. Of the 60 (24.59%) teachers who reported having received training on competency-based progression, the mode response for the type of training was *required in-district* with 24 (40.68%) respondents choosing this option. The second-most selected response was *optional in-district* with 21 (35.59%) respondents choosing this option. *Optional out-of-district* received the third-most responses with 11 (18.64%). Lastly, *required out-of-district* received the least amount of selections with 3 (5.08%).

When the data were disaggregated by grade-level taught and years of experience at current district, there were some minor changes in the results. The mode for the types of training received by teachers in grades three through five differed from the overall results with 8 (53.33%) teachers selecting *optional in-district.* Additionally, the results for teachers of grades nine through twelve were bimodal *optional in-district* and *optional out-of-district* being chosen by 6 (31.58%) teachers. In the subgroup of teachers who have taught at their current district for six to ten years, the mode for the type of training differed from the overall results with 7 (53.85%) of the group selecting *optional in-district*. Table 12 contains the results of the type of training teachers have received on competency-based progression disaggregated by grade-level taught and years of experience at current district.

Table 12

Disaggregated Types of Training on Competency-Based Progression

	Selected Response			
Population	Required In-District	Optional In-District	Required Out-of-District	Optional Out-of-District
All	**24 (40.68%)**	21 (35.59%)	3 (5.08%)	11 (18.64%)
Grade				
K-2	**5 (50%)**	3 (30%)	1 (10%)	1 (10%)
3-5	6 (40%)	**8 (53.33%)**	0 (0%)	1 (6.67%)
6-8	**8 (53.33%)**	4 (26.67%)	0 (0%)	3 (20%)
9-12	5 (26.32%)	**6 (31.58%)**	2 (10.53%)	**6 (31.58%)**
Experience				
0-2	**4 (50%)**	1 (12.50%)	0 (0%)	3 (37.50%)
3-5	**8 (42.11%)**	8 (36.84%)	1 (5.26%)	3 (15.79%)
6-10	3 (23.08%)	**7 (53.85%)**	1 (7.69%)	2 (15.38%)
11$\leq$	**9 (47.37%)**	6 (31.58%)	1 (5.26%)	3 (15.79%)

Note. Boldface is the mode.

Personal learning paths. The fourth and final core strategy addressed in the survey was personal learning paths. In total, 244 total participants responded to this section. With 186 (76.23%) responses, more teachers reported they had not received any training on how to utilize personal learning paths to personalize how students interact with content than teachers who reported receiving training. Out of the four core strategies, personal learning paths received the highest percentage of teachers reporting having no training on the strategy.

The results remained consistent when the data regarding participation in trainings were disaggregated by grade-level taught and years of experience in current district with all subgroups reporting more teachers had not been trained than those who had been

trained. However, the size of the difference between the percentage of those who had received training and those who had not received training varied between subgroups. When disaggregated by grade-level taught, the least amount of variance was found in third through sixth grade teachers with 29.82% responding *yes* and 70.18% responding *no.* The greatest variance was found in kindergarten through second grade teachers with 17.31% responding *yes* and 82.69% responding *no.* When disaggregated by years of experience at current district, the least amount of variance was found in the three through five years subgroup with 38.60% responding *yes* and 61.40% responding *no.* The greatest variance was found in teachers with 11 or more years of experience with 17.82% responding *yes* and 82.18% responding *no.* Table 13 contains the detailed results of whether or not teachers have received training on utilizing personal learning paths disaggregated by grade-level taught and years of experience at current district.

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Table 13

Disaggregated Participation in Training on Personal Learning Paths

	Selected Response	
Population	Yes	No
All	58 (23.77%)	**186 (76.23%)**
Grade		
K-2	9 (17.31%)	**43 (82.69%**
3-5	17 (29.82%)	**40 (70.18%)**
6-8	14 (28.57%)	**35 (71.43%)**
9-12	18 (20.93%)	**68 (79.07%)**
Experience		
0-2	6 (18.18%)	**27 (81.82%)**
3-5	22 (38.60%)	**35 (61.40%)**
6-10	12 (22.64%)	**41 (77.36%)**
11≤	18 (17.82%)	**18 (82.18%)**

Note. Boldface is the mode.

Any teacher who reported they had received training on personal learning paths was prompted to identify what type of training they received: *required in-district*, *optional in-district*, *required out-of-district*, or *optional out-of-district*. Of the 58 (23.77%) teachers who reported having received training on personal learning paths, the mode response for the type of training was *optional in-district* with 32 (55.17%) respondents choosing this option. The second-most selected response was *required in-district* with 18 (31.03%) respondents choosing this option. *Optional out-of-district* received the third-most responses with 6 (10.34%). Lastly, *required out-of-district* received the least amount of selections with 2 (3.45%). Unlike the other strategies, the mode for each subgroup remained *optional in-district* when the data were disaggregated

by grade-level taught and years of experience at current district. Table 14 contains the

results of the type of training teachers have received on personal learning paths

disaggregated by grade-level taught and years of experience at current district.

Table 14

Disaggregated Types of Training on Personal Learning Paths

	Selected Response			
Population	Required In-District	Optional In-District	Required Out-of-District	Optional Out-of-District
All	18 (31.03%)	**32 (55.17%)**	2 (3.45%)	6 (10.34%)
Grade				
K-2	4 (44.44%)	**5 (55.56%)**	0 (0%)	0 (0%)
3-5	7 (41.18%)	**9 (52.94%)**	1 (5.88%)	0 (0%)
6-8	3 (21.43%)	**9 (64.29%)**	0 (0%)	2 (14.29%)
9-12	4 (22.22%)	**9 (50%)**	1 (5.56%)	4 (22.22%)
Experience				
0-2	2 (33.33%)	**3 (50%)**	0 (0%)	1 (16.67%)
3-5	6 (27.27%)	**13 (59.09%)**	2 (9.09%)	1 (4.55%)
6-10	4 (33.33%)	**7 (58.33%)**	0 (0%)	1 (8.33%)
11≤	6 (33.33%)	**9 (50%)**	0 (0%)	3 (16.67%)

Note. Boldface is the mode.

Teacher Competency Level of Four Core Strategies

To answer RQ 4, *To what extent do K-12 classroom teachers feel prepared to*

implement the four commonly accepted components of personalized learning with

fidelity?, respondents were asked to rate their level of competence for utilizing each of

the four core strategies of flexible learning environments, learner profiles, competency-

based progression, and personal learning paths. The levels respondents could select were

no experience, *beginner*, *proficient*, or *advanced*. Each strategy was addressed in its own section so respondents were able to explicitly answer about a specific strategy as opposed to a general overarching concept. A definition for the strategy was provided at the start of each strategy section. The data were analyzed overall and disaggregated by grade-level taught and years of experience in current district.

      Flexible learning environments. A total of 250 participants rated their level of competence at creating flexible learning environments. Overall, the mode response was *beginner* with 115 (46%) teachers selecting this option. The second-most selected response was *proficient* with 77 (30.80%). *No experience* was the third-most selected response with 48 (19.20%). Lastly, *advanced* was selected by the least amount of teachers: 10 (4%). When the data were disaggregated by grade-level taught and years of experience at current district, *beginner* remained the mode for each subgroup. However, the order of the categories based on percentage of responses did not remain the same for all subgroups. Table 15 shows the frequency distribution of all responses disaggregated by grade-level taught and years of experience at current district.

Table 15

Disaggregated Teacher Competency Level for Flexible Learning Environments

	Selected Response			
Population	No Experience	Beginner	Proficient	Advanced
All	48 (19.20%)	**115 (46%)**	77 (30.80%)	10 (4%)
Grade				
K-2	5 (9.26%)	**26 (48.15%)**	21 (38.89%)	2 (3.70%)
3-5	5 (8.62%)	**25 (43.10%)**	24 (41.38%)	4 (6.90%)
6-8	16 (32%)	**19 (38%)**	12 (24%)	3 (6%)
9-12	22 (25%)	**45 (51.14%)**	20 (22.73%)	1 (1.14%)
Experience				
0-2	8 (14.55%)	**24 (43.64%)**	21 (38.18%)	2 (3.64%)
3-5	11 (18.97%)	**32 (55.17%)**	14 (24.14%)	1 (1.72%)
6-10	8 (14.55%)	**24 (43.64%)**	21 (38.18%)	2 (3.64%)
11≤	18 (17.65%)	**45 (44.12%)**	33 (32.35%)	6 (5.88%)

Note. Boldface is the mode.

Learner profiles. A total of 247 participants rated their level of competence at utilizing learner profiles to drive personalized learning. Overall, the mode response was *no experience* with 99 (40.08%) teachers selecting this option. The second-most selected response was *beginner* with 94 (38.06%). *Proficient* was the third-most selected response with 46 (18.62%). Lastly, *advanced* was selected by the least amount of teachers: 8 (3.24%).

When the data were disaggregated by grade-level taught and years of experience at current district, there were some differing results. While *proficient* and *advanced* consistently remained the two least selected levels for all subgroups, *beginner* and *no experience* traded places between the elementary and secondary grade levels. *Beginner*

was the mode for kindergarten through second grade teachers and third through fifth

grade teachers with 23 (43.40%) and 24 (42.11%) respectively. However, *no experience*

was the mode for sixth through eighth grade teachers and ninth through twelfth grade

teachers with 22 (44%) and 35 (40.23%) respectively. Also, *beginner* was the mode

response for teachers with three to five years and six to ten years of experience at their

current district, 27 (46.55%) and 25 (46.30%) respectively. Table 16 shows the frequency

distribution of all responses disaggregated by grade-level taught and years of experience

at current district.

Table 16

Disaggregated Teacher Competency Level for Learner Profiles

Population	Selected Response			
	No Experience	Beginner	Proficient	Advanced
All	**99 (40.08%)**	94 (38.06%)	46 (18.62%)	8 (3.24%)
Grade				
K-2	21 (39.62%)	**23 (43.40%)**	8 (15.09%)	1 (1.89%)
3-5	21 (36.84%)	**24 (42.11%)**	8 (14.04%)	4 (7.02%)
6-8	**22 (44%)**	14 (28%)	12 (24%)	2 (4%)
9-12	**35 (40.23%)**	33 (37.93%)	18 (20.69%)	1 (1.15%)
Experience				
0-2	**20 (58.82%)**	10 (29.41%)	4 (11.76%)	0 (0%)
3-5	20 (34.48%)	**27 (46.55%)**	11 (18.97%)	0 (0%)
6-10	19 (35.19%)	**25 (46.30%)**	7 (12.96%)	3 (5.56%)
11≤	**40 (39.60%)**	32 (31.68%)	24 (23.76%)	5 (4.95%)

Note. Boldface is the mode.

Competency-based progression. A total of 244 participants rated their level of competence at utilizing competency-based progression to facilitate personalized learning. Overall, the mode response was *no experience* with 109 (44.67%) teachers selecting this option. The second-most selected response was *beginner* with 95 (38.93%). *Proficient* was the third-most selected response with 36 (18.62%). Lastly, *advanced* was selected by 4 (1.64%) teachers.

When the data were disaggregated by grade-level taught and years of experience at current district, the results remained consistent for all subgroups except two. The results for teachers in grades three through five were bimodal with 24 (42.11%) teachers selecting *beginner* and 24 (42.11%) selecting *no experience*. The subgroup of teachers with six to ten years of experience at their current district had a mode response of *beginner* with 27 (50%) of the teachers selecting this option. With 19 (35.19%) respondents, *no experience* was the second-most selected option. P*roficient* and *advanced* consistently remained the two least selected levels for all subgroups. Table 17 shows the frequency distribution of all responses disaggregated by grade-level taught and years of experience at current district.

Table 17

Disaggregated Teacher Competency Level for Competency-Based Progression

	Selected Response			
Population	No Experience	Beginner	Proficient	Advanced
All	**109 (44.67%)**	95 (38.93%)	36 (14.75%)	4 (1.64%)
Grade				
K-2	**23 (45.10%)**	22 (43.14%)	5 (9.80%)	1 (1.96%)
3-5	**24 (42.11%)**	**24 (42.11%)**	9 (15.79%)	0 (0%)
6-8	**22 (44%)**	17 (34%)	8 (16%)	3 (6%)
9-12	**40 (46.51%)**	32 (37.21%)	14 (16.28%)	0 (0%)
Experience				
0-2	**16 (48.48%)**	14 (42.42%)	3 (9.09%)	0 (0%)
3-5	**25 (43.86%)**	21 (36.84%)	10 (17.54%)	1 (1.75%)
6-10	19 (35.19%)	**27 (50%)**	8 (14.81%)	0 (0%)
11$\leq$	**49 (49%)**	33 (33%)	15 (15%)	3 (3%)

Note. Boldface is the mode.

Personal learning paths. A total of 244 participants rated their level of competence at utilizing personal learning paths to drive personalized learning. Overall, the mode response was *no experience* with 121 (49.59%) teachers selecting this option. Out of the four core strategies, more teachers reported *no experience* for personal learning paths than any of the other strategies. The second-most selected response was *beginner* with 92 (37.70%). *Proficient* was the third-most selected response with 28 (18.62%). With 3 (1.23%) teachers, *advanced* was selected by the least amount of respondents.

When the data were disaggregated by grade-level, the results remained consistent with *no experience* remaining the mode for all grade-level subgroups. For all subgroups,

the results for the three other levels also matched the overall results in that *beginner* was chosen the second-most, *proficient* was the third-most selected option, and *advanced* was the least selected option.

When the data were disaggregated by years of experience at their current district, there were a couple of differences between the subgroups. *No experience* remained the mode for teachers with two or fewer years of experience and teachers with 11 or more years of experience. The results for teachers with three to five years of experience were bimodal with *beginner* and *no experience* being chosen by 24 (42.11%) teachers. Teachers with six to ten years of experience had a mode response of *beginner* with 27 (50.94%) selecting this option. *Proficient* and *advanced* remained the third and fourth-most selected competency-level for all subgroups. Table 17 shows the frequency distribution of all responses disaggregated by grade-level taught and years of experience at current district.

Table 18

Disaggregated Teacher Competency Level for Personal Learning Paths

	Selected Response			
Population	No Experience	Beginner	Proficient	Advanced
All	**121 (49.59%)**	92 (37.70%)	28 (11.48%)	3 (1.23%)
Grade				
K-2	**31 (59.62%)**	17 (32.69%)	4 (7.69%)	0 (0%)
3-5	**25 (43.86%)**	22 (38.60%)	9 (15.79%)	1 (1.75%)
6-8	**23 (46.94%)**	19 (38.78%)	5 (10.20%)	2 (4.08%)
9-12	**42 (48.84%)**	34 (39.53%)	10 (11.63%)	0 (0%)
Experience				
0-2	**19 (57.58%)**	13 (39.39%)	1 (3.03%)	0 (0%)
3-5	**24 (42.11%)**	**24 (42.11%)**	9 (15.79%)	0 (0%)
6-10	22 (41.51%)	**27 (50.94%)**	4 (7.55%)	0 (0%)
11≤	**56 (55.45%)**	28 (27.72%)	14 (13.86%)	3 (2.97%)

Note. Boldface is the mode.

Summary

Approximately 2,050 teachers from two southwest Missouri school districts were invited to participate in this study by completing the survey instrument. In total, 256 teachers submitted the survey. Participants provided demographic information in the first section that was used to disaggregate the data. The second section of the survey required participants to use a Likert-type scale to rate their level of agreement with three general statements regarding personalized learning and four statements that specifically addressed the four core personalized learning strategies of flexible learning environments, learner profiles, personal learning paths, and competency-based progression. To answer RQ 1, data from this section were analyzed by identifying the

mode for each statement and by examining the frequency of responses for each statement. The data were also disaggregated by grade-level taught and years of experience at current district.

The third section of the survey examined a variety of previously documented barriers to personalized learning. Respondents chose their top three barriers from the list. They could also add their own barrier. To answer RQ 2, responses to this section were analyzed by examining the number of respondents who selected each barrier. The barriers added by the participants were analyzed and categorized by theme. The data were also disaggregated by grade-level taught and years of experience.

Lastly, the fourth section of the survey was utilized to answer RQ 3 and RQ 4. Respondents were asked to identify the types of training they received on each of the four core personalized learning strategies. Respondents also rated their current level of competency for each strategy. The data were analyzed by identifying the mode and the frequency distribution for each answer choice and were disaggregated by grade-level taught and years of experience.

Chapter Five will revisit the purpose of the study. A summary of the findings of the study is provided in narrative form to offer a more concise examination of the attitudinal and structural barriers K-12 classroom teachers experience when implementing personalized learning. Conclusions are drawn for each of the four research questions based on analysis of the data presented in Chapter Four. Lastly, the conclusions drawn are utilized to offer implications for future practice as well as opportunities for future research.

Chapter Five: Summary and Conclusions

The purpose of the study was to examine the attitudinal and structural barriers classroom teachers experience when implementing personalized learning. The two districts chosen for the study publicly identified personalized learning as an instructional priority. Since there is not one specific industry-adopted definition or model of personalized learning, a specific lens or framework for personalized learning was required to ensure reliable data. For the sake of this study, personalized learning was framed through the lens of the four core strategies of flexible learning environments, learner profiles, personal learning paths, and competency-based progressions as identified by Pane et al. (2017a). The four core strategies were chosen because they also appear in some form in multiple other frameworks for personalized learning including the Institute for Personalized Learning's (2015) honeycomb alignment, Decker's (2014) working definition of personalized learning, and Education Elements' Core Four of personalized learning (Johns & Wolking, 2018).

Data were collected using a census survey designed by the researcher and based on common teacher beliefs regarding personalized learning and common barriers to personalized learning as identified in the review of existing literature in Chapter 2. The data were analyzed using the mode measure of central tendency and the frequency distribution of responses for each answer option per question. Analysis of the data was used to answer the four research questions.

Findings

Teacher beliefs. Analysis of the data from the teacher beliefs section of the survey was used to answer Research Question 1: *What are the current K-12 classroom*

teacher beliefs regarding the importance of flexible learning environments, competency-based progression, learner profiles, and personal learning paths? Participants were asked to rate their level of agreement for seven different statements using a four-point Likert-type scale.

The first statement respondents rated their level of agreement was, "Modern learning tools, including digital devices, should be utilized in the classroom to provide personalized learning opportunities." Analysis of the data revealed the teachers overwhelmingly agree with this statement. The mode response was *agree* with 130 (50.78%) respondents selecting this option. When this figure is combined with the 115 (44.92%) *strongly agree* responses, a total of 245 (96.09%) respondents believed that modern learning tools should be used to provide personalized learning. No significant differences were noted when the data was disaggregated by grade-level taught or years of experience at current district. This mindset could play a key role in the implementation of personalized learning because the utilization of technology in the classroom can make personalized learning much more possible (Bray & McClaskey, 2015; Pane et al., 2015, 2017a).

The second statement respondents rated their level of agreement was, "Teacher should receive targeted professional learning on practical implementation of personalized learning." Analysis of the results indicated wide-spread and passionate support for professional learning on personalized learning. The mode response, with 161 (63.14%) responses, was *strongly agree*. When this figure is combined with the 86 (33.73%) responses for *agree*, a total of 247 (96.86%) respondents believed teachers should receive targeted training on personalized learning. Disaggregating the data did not produce any

changes in the findings. Analysis of the data indicated teachers believe there is a need for professional learning, which aligns with previously documented research (Alliance for Excellence in Education, 2017; Jenkins & Kelly, 2016; Massachusetts Personalized Learning EdTech Consortium, 2017).

The third statement respondents rated their level of agreement was, "All students deserve to have an education that is personalized to their interests, goals, learning styles, and needs." With 129 (50.59%) teachers selecting the mode response of *strongly agree* and 108 (42.35%) selecting *agree,* a total of 237 (92.94%) respondents believed students deserve to have their learning personalized. No major changes in the data were identified when the data were disaggregated by grade-level taught and years of experience at current district. This belief closely aligns with the teacher mindsets presented by Getting Smart Staff (2017): "For teachers, personalized learning helps us learn how to evolve, listen to students' input on the process of learning, and focus on moving to a competency-based model" (Reflecting on New Approaches section, para. 4).

The fourth statement respondents rated their level of agreement was, "Teachers should be provided resources to diversify the physical learning environment for their students." With 160 (62.50%) respondents selecting the mode response of *strongly agree* and 85 (33.20%) respondents selecting *agree*, 245 (95.70%) respondents believed teachers should be provided resources to establish flexible learning environments for their students. The results did not change when disaggregated by grade-level taught and years of experience at current district. This mindset aligns with Bray & McClaskey's (2015) belief the learning environment must be flexible and with the element of flexible

learning spaces found in the *Structures and Policies* components of The Institute for Personalized Learning's (2015) honeycomb alignment.

The fifth statement respondents rated their level of agreement was, "Districts should utilize digital learner profiles that document student work, interests, goals, and strengths that are available to every teacher each year and are used to inform instruction." The mode response was *agree* with 135 (52.94%) responses. When combined with the 76 (29.80%) *strongly agree* responses, a total of 211 (82.75%) teachers expressed their support for learner profiles. The results continue the trend of a large majority of teachers supporting the use of the personalized learning strategy. No major changes were identified when the data were disaggregated by grade-level taught and years of experience at current district. The support for learner profiles strongly aligns with the recommendations of Bray and McClaskey (2015) and Pane et al. (2015).

The sixth statement respondents rated their level of agreement was, "Each student should have his/her own customized learning path that incorporates student interests, standards mastery, learning styles, and personal goals." The mode was *agree* with 140 (54.96%) responses, and a total of 206 (80.78%) teachers selected *agree* or *strongly agree.* Disaggregation of the data by grade-level taught and years of experience at current district produced no major changes. The teacher support for personal learning paths aligns with the need for customized pathways identified by the Institute for Personalized Learning (2015) and Pane et al. (2017a).

The final statement respondents rated their level of agreement was, "Student progression through content should be personalized based on mastery of standards." The mode response was *agree* with 134 (52.34%). When combined with the 86 (33.59%)

strongly agree responses, a total of 220 (85.90%) teachers expressed agreement with the statement. The results indicate a strong majority of teachers support the use of competency-based progression and are compatible with the need for competency-based progression, as documented by The Institute for Personalized Learning (2015) and Pane et al., (2017a). Again, disaggregation of the data by grade-level taught and years of experience at current district produced no major changes

      Barriers to implementation of personalized learning. Analysis of the data from the barriers section of the survey was used to answer Research Question 2: *What barriers do K-12 classroom teachers report as the most difficult to overcome when implementing personalized learning in their classroom?* Participants were provided a list of previously documented barriers and asked to identify the three barriers they believe most inhibits the successful implementation of personalized learning. Participants could also add their own barrier if they wanted to select one that was not on the list.

      The barrier selected by the most respondents was *lack of time to prepare personalized learning lessons* with 61% of respondents selecting this option. Time was also identified by Massachusetts Personalized Learning EdTech Consortium (2017) as a large barrier to personalized learning. It should be noted the percentage of respondents in this study selecting the option of a lack of time is 15% higher than those in the Pane et al. (2017b) study. The second-most selected barrier to the successful implementation of personalized learning identified by respondents was *too much diversity in achievement levels among students* with 48% of respondents selecting this option. The frequency rate for this response was only three percentage points lower than the number of respondents selecting this option in the Pane et al. (2017b) study.

Alliance for Excellence in Education (2017), Jenkins and Kelly (2016), and the Massachusetts Personalized Learning EdTech Consortium (2017) identified a lack of professional development as a major barrier to the implementation of personalized learning; however, this barrier was only selected by 22% of the survey respondents. Disaggregating the data did not reveal anything unusual. All grade-level subgroups had the same top two although the teachers of grades six through eight had the first and second-most selected options switched. Also, all years of experience subgroups had the same top two responses although the teachers who had been at their current district two or fewer years had the first and second-most selected options switched.

Training on personalized learning. Analysis of the data from the final section of the survey was used to answer Research Question 3: To what extent do K-12 classroom teachers report receiving explicit professional development in the four core strategies of personalized learning? Participants were required to identify whether or not they had received targeted training on any of the four core personalized learning strategies. If participants chose they had received training, they were required to identify whether or not the training was mandatory or optional and whether it was facilitated by their district or outside of their district.

In regards to flexible learning environments, 136 (54.40%) respondents reported they had not received any training on utilizing flexible learning environments. Of the 114 (45.60%) teachers who reported receiving training on flexible learning environments, a large majority, 88.60%, reported the training as being offered in the district. Fifty percent of all of the training offered was *optional in-district*, which could indicate the districts are beginning to shift to flexible learning environments but have yet to require the

implementation of the strategy on a large scale. This would align with previous

documentation indicating flexible learning environments as one of the first strategies

utilized in districts beginning to utilize personalized learning (Pane et al., 2017a). When

the data were disaggregated by grade-level taught and years of experience at current

district, no major differences were identified between the subgroups.

When asked about training on the strategy of learner profiles, a total of 156

(63.16%) teachers reported they had not received training on utilizing learner profiles to

drive personalized learning. Regrettably, no data is available on the type of training the

36.84% of respondents received due to the previously mentioned survey error.

When asked about training on the strategy of competency-based progression, the

vast majority, 184 (75.41%) respondents, reported receiving no training on utilization of

the strategy. One can conclude the majority of the training received was offered by the

district with the most frequently selected response being *required in-district*, which was

selected by 40.68% of the teachers who reported receiving training on competency-based

progression. When the data were disaggregated by grade-level taught and years of

experience at current district produced no major changes, the only difference worth

noting was the bimodal responses of *optional in-district* and *optional out-of-district*

found in the subgroup of ninth through twelfth grade teachers.

Fewer teachers reported receiving training on the final strategy of personal

learning paths than any of the other strategies with only 58 (23.77%) teachers reporting

participation in training on the strategy and 186 (76.23%) teachers reporting they had not

received any training. DeNisco (2018) and Pane et al. (2015) concluded that personal

learning paths can be time-consuming. Since a lack of time was the largest barrier

identified by participants, time could also be hindering the utilization of personal learning paths. The majority of training received was *optional in-district*, which was selected by 55.17% of those who have received training. When the data were disaggregated by grade-level taught and years of experience at current district produced no major changes, *optional in-district* remained the most selected option by all subgroups.

      Teacher competency level of four core strategies. Analysis of the data from the final section of the survey was also used to answer Research Question 4: To what extent do K-12 classroom teachers feel prepared to implement the four commonly accepted components of personalized learning with fidelity? Participants were required to rank their level of competence at using each of the four core strategies as either *no experience*, *beginner*, *proficient*, or *advanced*. Overall, the data indicated a low level of competence for each strategy.

      When rating the competency level for flexible learning environments, more respondents selected *beginner* than any other level with 46% of respondents choosing this option. Only 34.80% of respondents identified as *proficient* or *advanced*. It must be noted that more teachers reported receiving training on flexible learning environments than any of the other strategies. No differences were identified when the data were disaggregated.

      When rating the competency level for learner profiles, more respondents selected *no experience* than any other level with 40.08% of respondents choosing this option. *Beginner* was a close second with 38.06% of respondents selecting it. Only 21.86% of respondents identified as *proficient* or *advanced*. No major differences can be identified in the disaggregated data other than a few subgroups switching between the first and second-most selected option.

When rating the competency level for competency-based progression, more respondents selected *no experience* than any other level with 44.67% of respondents choosing this option. *Beginner* was the second-most selected option with 38.93%. Only 16.39% of respondents rated their competency level as either *proficient* or *advanced*. No major differences can be identified in the disaggregated data other than two subgroups who switched between the first and second-most selected options.

Lastly, the most selected level of competency for personal learning paths was *no experience* with 49.59% of teachers choosing this option. Analysis of the data indicated personal learning paths was the strategy with the lowest level of competency among study participants. This could be tied to the fact personal learning paths also has the lowest number of teachers who have received training on the strategy. Personal learning paths also had the lowest level of agreement in the teacher beliefs section. Only 12.71% of teachers reported a competency level of *proficient* or *advanced*. No major differences can be identified in the disaggregated data other than two subgroups who switched between the first and second-most selected options.

Conclusions

The purpose of the study was to examine the current attitudinal and structural barriers experienced by K-12 classroom teachers when implementing personalized learning. All research participants worked in districts where personalized learning has been identified as an instructional priority. For the sake of the study, personalized learning was conceptualized using the four core strategies of flexible learning environments, learner profiles, personal learning paths, and competency-based progressions as identified by Pane et al. (2017a).

Teacher beliefs as an attitudinal barrier. Analysis of the data indicated a high level of support among classroom teachers for general components of personalized learning. There were also indications of a high level of support among classroom teachers for all four of the core personalized learning strategies identified by Pane et al. (2017a). Jenkins and Kelly (2016) and the Massachusetts Personalized Learning EdTech Consortium (2017) noted teacher buy-in was a large obstacle to the implementation of personalized learning. The participant responses revealed teacher buy-in for personalized learning in general and the four core strategies is not lacking among the population for this study. This is also shown by the fact that only 4% of respondents selected *I do not wish to implement personalized learning* as a barrier to its implementation in the barriers section of the survey.

Overall, the beliefs of the teachers in the study cannot be considered a barrier to the implementation of personalized learning because a large majority of respondents selected *agree* or *strongly agree* for all seven belief statements. According to the data, 95.70% of teachers believe modern digital tools should be used to facilitate personalized learning, 96.87% of teachers believe teachers should receive targeted training on personalized learning, and 92.94% of teachers believe that students deserve an education personalized to their interests, goals, learning styles, and needs.

When asked about beliefs aligned with the four core strategies for personalized learning, the large majority of teachers still exhibited support for the strategies although the size of the majority dropped for all of the strategies except flexible learning environments. With 95.70% of teachers expressing agreement that teachers should be provided resources to establish flexible learning environments, one can conclude that

teachers acknowledge that the learning environment must be allowed to change and adapt based on the needs of each student, which aligns with conclusions drawn by Bray and McClaskey (2015) and Mehrbach and Beingessner (2018). While the levels of agreement for learner profiles, personal learning paths, and competency-based progression were not as high as personalized learning in general or flexible learning environments, one can conclude a high level of support still remains for the three strategies. Overall, teachers in the study expressed strong support for personalized learning and the four core personalized learning strategies.

Structural barriers to personalized learning. While teacher mindset and buy-in did not appear to be attitudinal barriers to the implementation of personalized learning, teachers did identify structural barriers they experienced. One can conclude time to prepare personalized learning lessons is a major barrier to the implementation of personalized learning because time was identified by 61% of teachers as a barrier. This conclusion is directly aligned to previous conclusions by Massachusetts Personalized Learning EdTech Consortium (2017) and Pane et al., (2017a). Analysis of the data indicated lack of time is more of an obstacle for elementary teachers with 69% of kindergarten through second grade teachers and 72% of third through fifth grade teachers identifying lack of time as a barrier while 56% of sixth through eighth grade teachers and 55% of high school teachers identified it as a barrier. Considering elementary teachers must cover a wide variety of content spanning various subject groups each day, it is understandable a greater number of elementary teachers would feel constrained by time. Time was also one of the three themes that emerged from the teachers who selected *other* and offered their own barrier.

The second largest structural barrier to personalized learning appears to be the high level of diversity in achievement levels among students. Overall, 48% of teachers identified this as a barrier. The data was quite similar to the 51% of participants who identified this barrier in the Pane et al. (2017a) study. Analysis of the data suggested this barrier becomes greater as students get older because there was a 13% increase between kindergarten through second grade teachers and third through fifth graders. This could be due to the fact third grade is when state-mandated standardized testing begins. Teachers might feel more pressure to get students to meet grade-level standards by the time they take their formal assessment at the end of the year (Barnum, 2017).

Class size as a structural barrier was identified by more than half of the teachers who chose to select *other* and add their own barrier. It is possible that if class size would have been a provided option the overall rankings of the barriers would be different. This conclusion is supported by the fact a total of 45% of respondents chose *too many students for whom I am responsible* in the Pane et al. (2017a) study.

While the Alliance for Excellence in Education (2017) and Jenkins and Kelly (2016) concluded that a lack of professional development was a barrier for the implementation of personalized learning, the data indicated this was not one of the major barriers for the two districts included in the study. This could be due to the fact participants were asked to only select three barriers from the list of eleven. The fact that this barrier was chosen by 22% of participants confirms that lack of professional development for personalized learning is a barrier with the population of the survey, but this barrier is not perceived as one of the largest structural barriers to personalized learning's implementation.

Teacher training and competency as barriers. Analysis of the data revealed the majority of respondents have not received targeted training on any of the four core strategies for personalized learning. Those who have received training reported the majority of training was facilitated by their district. Analysis of the data indicated the lack of training appears to impact the teacher-reported competency level for each strategy.

Of the four strategies, teachers have received the most training on flexible learning environments. However, the percentage was still a minority of teachers at 45.60%. While more teachers reported receiving training on flexible learning environments than the other three strategies, the majority of the training was optional for teachers. Just as more teachers reported receiving training on flexible learning environments, more teachers reported a higher competency level with this strategy than the other three strategies. However, the mode competency level was still beginner. One can conclude there is much room for growth in regards to the availability of trainings and competency level of flexible learning environments. Darling-Hammond, Hyler, and Gardner (2017) noted "effective professional development is key to teachers learning and refining the pedagogies required" (para. 1). In order to see growth in the competency level of teachers utilizing flexible learning environment, schools should be providing targeted professional development on the strategy.

A lack of training on the three other strategies can be deemed a barrier to their implementation. For example, 63.16% of teachers reported no training on learner profiles, and 40.08% of teachers reported having no experience utilizing the strategy. Also, 75.41% of teachers reported receiving no training on competency-based

progression, and 44.67% of teachers reported having no experience utilizing the strategy.

Lastly, 76.23% of teacher reported receiving no training on personal learning paths, and

49.59% of teachers reported having no experience utilizing the strategy. Analysis of the

data revealed the competency level trended lower the more teachers reported no training

on the strategy. One can conclude the lack of targeted training on the strategy has a

negative impact on the teacher competency level. If teacher confidence in their

competency level is low, they might be less likely to utilize the strategy with their

students (Sadler, 2013). The lack of training on the strategies can be identified as a

structural barrier to personalized learning. The low competency levels can be considered

an attitudinal barrier and a structural barrier.

Implications for Practice

The results of this study will assist districts wishing to implement personalized

learning in several ways. First, districts must ensure all teachers know personalized

learning is an instructional priority. Analysis of the data revealed 11% of respondents

either stated that personalized learning was not an instructional priority within their

district or expressed uncertainty as to whether or not personalized learning was a priority.

Districts must provide their teachers with a clear definition of personalized learning and

provide teachers with the specific strategies teachers should use to facilitate personalized

learning within the classroom.

Districts should also explore ways to decrease the structural barrier of lack of time

to implement personalized learning. This could be accomplished by integrating various

education technologies for the purpose of streamlining learner profiles, competency-

based progression, and personal learning paths. By harnessing the power of technology to

collect, organize, and analyze concrete data, teachers will have more time to collect, organize, and analyze the more nuanced and abstract data. By addressing the identified need for more targeted training on the four core strategies of personalized learning, districts can also address the barrier of time. Additional training on the utilization of the strategies could provide teachers with more practical methods for implementing the different personalized learning strategies in less time. As their competency level grows, the amount of time needed to utilize the strategy with students will decrease. Schools could also pair teachers reporting little or no training and experience with teachers reporting more training and experience. This collaborative partnership could help teachers with no experience have a planning partner who could assist them at overcoming their specific barriers to implementation.

Since the second-most explicitly identified barrier involved too much diversity among achievement levels among students, districts should ensure they are providing teachers with adequate training and resources on differentiation strategies and the utilization of various student grouping strategies. Helping teachers understand how to maximize student groups for differentiation will allow teachers to tap into the collective knowledge of the other students in the class. Explicit training on competency-based progression could also help teachers address the wide variety of ability levels in the classroom.

Analysis of the data indicated teachers believed students deserve personalized learning in general and the four core strategies of flexible learning environments, learner profiles, competency-based progression, and personal learning paths have a place in the classroom. However, teachers do not feel prepared to use the four strategies. If districts

wish for teachers to utilize the four core personalized learning strategies, they must be more purposeful about providing targeted professional learning on the strategies they wish to utilize.

Districts wishing to implement personalized learning could also establish model classrooms of the teachers reporting a higher level of competence with the personalized learning strategies. The model classrooms would be exemplars for teachers wishing to see the personalized learning strategies in action. Allowing teachers to visit model classrooms would provide concrete, real-world examples of how personalized learning environments are established and nurtured within the classroom. The teachers with experience can model the strategies for their colleagues while also facilitating small-group or one-on-one trainings for the teachers reporting little or no experience with the strategy. This peer-to-peer learning can allow for job-embedded training that does not require the teacher to be pulled from their classroom for long stretches of time.

Recommendations for Future Research

This study included two school districts who were geographically close to each other in southwest Missouri. The study could be expanded to include other districts who have identified personalized learning as an instructional priority. While only districts with a technology integration initiative were included in this study, it would be interesting to utilize the survey with a district where personalized learning has been identified as an instructional priority but has not instituted a technology integration initiative. The data collected could reveal how much of a barrier the lack of access to technology can be and how districts are addressing this barrier.

For the purpose of this study, personalized learning was conceptually framed using the four core personalized learning strategies as identified by Pane et al., (2017a). Future studies could examine what other strategies are being used to facilitate personalized learning within schools wishing to implement personalized learning. Expanding the literature connecting specific barriers to the implementation of specific personalized learning strategies will allow districts to address their individual needs based on their specific personalized learning model.

Lastly, one of the greatest needs for future research is research on the academic impact of personalized learning. While this study focused on personalized learning from the vantage point of the teacher, there is a need for research on the impact of personalized learning strategies on student achievement. One way districts could do this would be by establishing the previously mentioned model classrooms and comparing the achievement data from the personalized learning classrooms with the more traditional classrooms. This data would help districts target the strategies with the greatest academic impact for large-scale implementation.

Summary

The utilization of personalized learning as an instructional priority in schools has grown dramatically over the last decade; however, there is still not one industry-adopted definition or model for personalized learning. This has made gathering transferrable data on personalized learning difficult, but there are some indications personalized learning has a positive impact on student achievement. Chapter One contained an explanation of the largest study on personalized learning to date (Pane et al., 2015), and personalized learning was examined through the lens of four core strategies: flexible learning

environment, learner profiles, personal learning paths, and competency-based progression. In order to establish a common baseline on the attitudinal and structural barriers to personalized learning, the four core strategies were utilized as the conceptual framework for this study.

In Chapter Two, the conceptual framework of the four core strategies was explored more deeply by connecting the strategies to other prominent models for personalized learning. Each strategy was analyzed individually to provide a clear understanding of what each strategy entails and what makes the strategy different from a more traditional instructional approach. In addition to a deeper examination of the four core strategies, the overarching concept of personalized learning was analyzed by comparing it with other common, and often mistakenly interchangeable, instructional models. Once the general concept of personalized learning and the four core strategies were examined, the benefits of personalized learning were outlined as were the existing barriers to personalized learning implementation.

Chapter Three included a detailed examination of the methodology utilized for this study. The purpose of the study was to examine the attitudinal and structural barriers classroom teachers experience when implementing personalized learning and how competent classroom teachers are at utilizing the four core personalized learning strategies. A cross-sectional census survey designed by the researcher was utilized to gather the data from research participants. The survey was sent to approximately 2,050 classroom teachers across two school districts. In the end, 256 educators participated in the survey.

The findings for the study, included in Chapter Four, indicated a high level of support for personalized learning in general and for the utilization of the four core strategies identified by Pane et al. (2017a). Teachers identified *lack of time to prepare personalized learning lessons* and *too much diversity in achievement levels among students* as the largest structural barriers to the implementation of personalized learning. The majority of teachers also identified that they had not received training on any of the four core strategies for personalized learning. The majority of teachers also rated their level of competence with each strategy as either *beginner* or *no experience*.

Overall, analysis of the data suggested the main barriers to the implementation of personalized learning are structural. The findings from the study indicated teachers support utilizing personalized learning in their classrooms; however, they reported a lack of training on specific strategies and low competency levels at utilizing the strategies. Districts must ensure teachers have a clear understanding of what personalized learning strategies they should be utilizing because the lack of a standard definition and model causes confusion. By specifically addressing what personalized learning looks like from an instructional standpoint, districts will be better equipped to properly train and prepare their teachers to utilize the model. Districts must also ensure teachers have targeted training at utilizing the strategies with students. A paradigm shift of this magnitude requires learning specific to the needs of each school's model, strategies, and goals.

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Appendix A

Survey Questions

<u>**Section 1: Demographics**</u>

What grade do you teach?

What subject do you teach?

How many years have you taught in your current district?

    0-2

    3-5

    6-10

    11 and up

Is personalized learning specifically addressed in your district's mission, vision, or instructional goals?

    Yes

    No

    I do not know

<u>**Section 2: Teacher Beliefs**</u>

On a scale of 1 as *strongly disagree* and 4 as *strongly agree*, rate your level of agreement with the following statements:

- Modern learning tools including digital devices should be utilized in the classroom to provide personalized learning opportunities.
- Teachers should receive targeted professional learning on practical implementation of personalized learning.
- All students deserve to have an education that is personalized to their interests, goals, learning styles, and needs.
- Teachers should be provided resources to diversify the physical learning environment for their students.
- Districts should utilize learner profiles to document student work, interests, goals, and strengths that travel with the student each year and are used to inform instruction design.
- Student progression through content should be personalized based on mastery of standards.
- Each student should have his/her own customized learning path that incorporates student interests, standard mastery, learning styles, and personal goals.

Section 3: Barriers to Implementation

From the list, please identify the three largest barriers to the successful implementation of personalized learning in your classroom. If a barrier is not on the list, please choose *Other* and specify the barrier.

- Lack of professional development on personalized learning
- Lack of professional development on data-driven instruction
- Lack of administrative support
- Lack of resources
- Lack of parental knowledge of personalized learning
- Too much diversity in achievement levels among students
- Emphasis on standardized test preparation
- Scripted curriculum
- Lack of time to prepare personalized lessons
- Current A-F grading structure
- I do not wish to implement personalized learning
- Other: _____

Section 4: Training on Personalized Learning

Answer the following questions regarding professional learning opportunities about personalized learning.

Flexible Learning Environment

1. I have received training on how to create a flexible learning environment for my students.

   Yes (Please answer next question)   No (Go to question 3)

2. Which of the following options shown best describes the training you have received?

   Required In-District
   Optional In-District
   Required Out-of-District
   Optional Out-of-District

3. Rate your competence level regarding utilization and management of flexible learning environments.

No Experience   Beginner   Proficient   Advanced

Learner Profiles

1. I have received training on utilizing learner profiles to drive personalized instruction with my students.

Yes (Please answer next question)   No (Go to question 3)

2. Which of the options shown best describes the training you have received?

   Required In-District
   Optional In-District
   Required Out-of-District
   Optional Out-of-District

3. Rate your competence level regarding utilization of learner profiles to drive personalized instruction.

No Experience   Beginner   Proficient   Advanced

Competency-Based Progression

1. I have received training on utilizing competency-based progression to personalize how students interact with content in my class.

Yes (Please answer next question)   No (Go to question 3)

2. Which of the options shown best describes the training you have received?

   Required In-District
   Optional In-District
   Required Out-of-District
   Optional Out-of-District

3. Rate your competence level regarding utilization of competency-based progression to drive personalized instruction.

No Experience   Beginner   Proficient   Advanced

Personalized Learning Pathways

1. I have received training on creating and utilizing personalized learning
   pathways to personalize how students interact with content in my class.

Yes (Please answer next question)   No (Go to question 3)

2. Which of the options shown best describes the training you have received?

   Required In-District
   Optional In-District
   Required Out-of-District
   Optional Out-of-District

3. Rate your competence level regarding utilization of personalized learning
   pathways to drive personalized instruction.

No Experience   Beginner   Proficient   Advanced

Appendix B

Superintendent Letter

<Date>

(Insert Title and Address)

Dear **(Insert Superintendent's Name)**:

My name is Jeremy Sullivan. I am presently pursuing my Doctorate of Education in Instructional Leadership through Lindenwood University and am in the process of writing my dissertation entitled, *An Examination of the Attitudinal and Structural Barriers to Successful Implementation of Personalized Learning*.

Data will be collected and analyzed in an attempt to identify the current attitudinal and structural barriers teachers face when implementing personalized learning with fidelity. The information gained may assist leaders better identify teacher needs regarding impactful personalized learning. I am attempting to contact schools that have fully implemented technology integration initiatives, so lack of technology is not one of the barriers.

I am hereby requesting your permission to allow me to survey the certified classroom teachers of (**insert district name**). The data will be gathered in a confidential manner, with no identifying information asked.

Your approval on this matter will greatly be appreciated. Thank you for your time and consideration.

Sincerely,

Jeremy Sullivan

Appendix C

Site Permissions

Site 1
To: Jeremy Sullivan

From: ▮▮▮▮▮▮▮

Date: January 11, 2019

Subject: Request to Conduct Research

Your request to conduct research proposal titled, An Examination of the Attitudinal and Structural Obstacles to Successful Implementations of Personalized Learning submitted for consideration has been approved. Please understand this letter constitutes district approval, but the final decision for participation rests with the building principal. You will need to seek approval from the building principal before conducting your research and present this letter.

Feel free to contact ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ if you have questions or need additional information.

▮▮▮▮▮▮
Coordinator of Accountability
▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

Site 2
Re: Research Request Documents

Good afternoon. Proceed with your study. Thought you would like this approval.

▮▮▮▮▮▮▮▮▮.
Executive Director of Elementary Learning
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Appendix D

Principal Letter

<Date>

(Insert Title and Address)

Dear **(Insert Principal's Name)**:

My name is Jeremy Sullivan. I am presently pursuing my Doctorate of Education in Instructional Leadership through Lindenwood University and am in the process of writing my dissertation entitled, *An Examination of the Attitudinal and Structural Obstacles to Successful Implementation of Personalized Learning.* Permission has been granted by **(insert superintendent's name)** to distribute my survey to all K-12 classroom teachers in **(insert district's name)**.

Data will be collected and analyzed in an attempt to identify the current attitudinal and structural barriers teachers face when implementing personalized learning with fidelity. The information gained may assist leaders better identify teacher needs regarding impactful personalized learning.

I am hereby requesting that you forward this email and the accompanying survey link to all of your certified teachers. The data will be gathered in a confidential manner, with no identifying information asked.

Your assistance with this is greatly be appreciated. Thank you for your time, and please do not hesitate to contact me should you have any questions.

Survey Link: (insert survey link)

Sincerely,

Jeremy Sullivan

Appendix E

Teacher Letter

\<Date\>

Dear Educator,

My name is Jeremy Sullivan. I am presently pursuing my Doctorate of Education in Instructional Leadership through Lindenwood University and am in the process of writing my dissertation entitled, *An Examination of the Attitudinal and Structural Obstacles to Successful Implementation of Personalized Learning.*

Data will be collected and analyzed in an attempt to identify the current attitudinal and structural barriers teachers face when implementing personalized learning with fidelity. The information gained may assist leaders better identify teacher needs regarding impactful personalized learning. I am attempting to utilize districts that have fully implemented technology integration initiatives and have identified personalized learning as an instructional priority.

Your participation in the study is strictly voluntary, and the data will be gathered in a confidential manner, with no identifying information asked. The survey should take roughly ten minutes to complete and consists of Likert-type and multiple choice questions.

Your participation is greatly be appreciated. Thank you for your time and consideration, and please do not hesitate to contact me should you have any questions.

Sincerely,

Jeremy Sullivan

Appendix F

LINDENWOOD

Survey Research Information Sheet

You are being asked to participate in a survey conducted by Jeremy Sullivan and Dr. Brad Hanson at Lindenwood University. We are doing this study to identify the attitudinal and structural barriers classroom teachers experience in regards to implementing successful personalized learning. It will take about ten minutes to complete this survey.

Your participation is voluntary. You may choose not to participate or withdraw at any time by simply not completing the survey or closing the browser window.

There are no risks from participating in this project. We will not collect any information that may identify you. There are no direct benefits for you participating in this study.

WHO CAN I CONTACT WITH QUESTIONS?

If you have concerns or complaints about this project, please use the following contact information:

Jeremy Sullivan-

Dr. Brad Hanson-

If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.

By clicking the link below, I confirm that I have read this form and decided that I will participate in the project described above. I understand the purpose of the study, what I will be required to do, and the risks involved. I understand that I can discontinue participation at any time by closing the survey browser. My consent also indicates that I am at least 18 years of age.

You can withdraw from this study at any time by simply closing the browser window.

Please feel free to print a copy of this information sheet.

Appendix G

IRB Approval

Feb 5, 2019 1:09 PM CST

RE:
IRB-19-111: Initial - An Examination of the Attitudinal and Structural Obstacles to Successful Implementation of Personalized Learning

Dear Jeremy Sullivan,
The study, An Examination of the Attitudinal and Structural Obstacles to Successful Implementation of Personalized Learning, has been approved as Exempt.

Category: Category 1. Research, conducted in established or commonly accepted educational settings, that specifically involves normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

The submission was approved on February 5, 2019.

Here are the findings:

- The IRB will approve the application at this time, with the condition that as each building principle approves the study in the Springfield Public School District, as per the approval letter from Jill Palmer, these separate approvals will be uploaded to the application as modifications. Research at these sites may not be conducted until these approvals are secured and submitted to the IRB as part of this application.
- This study has been determined to be minimal risk because the research is not obtaining data considered sensitive information or performing interventions posing harm greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

Sincerely,
Lindenwood University (Lindenwood) Institutional Review Board

Apr 25, 2019 3:34 PM CDT

RE:
IRB-19-111: Modification - An Examination of the Attitudinal and Structural Obstacles to Successful Implementation of Personalized Learning

Dear Jeremy Sullivan,

The study, An Examination of the Attitudinal and Structural Obstacles to Successful Implementation of Personalized Learning, has been Approved.

The submission was approved on April 25, 2019.

Here are the findings:

- This modification entails the addition of research sites with required approval. This modification does not affect the previously approved risk determination.

Sincerely,
Lindenwood University (Lindenwood) Institutional Review Board

Vita

Jeremy Sullivan currently serves as a Learning Specialist with Springfield Public Schools in Springfield, MO. As a Learning Specialist, Jeremy seeks to build capacity in students, teachers, and leaders through coaching, collaborating, and professional learning. Before becoming a Learning Specialist, Jeremy was a Blended Learning Specialist and worked with teachers and students to enhance and transform teaching and learning through the successful implementation of education technology supported by sound pedagogy. Prior to transitioning to a specialist role, Jeremy was an English teacher at Central High School in Springfield, MO and Nixa, MO. While at Nixa, Jeremy sponsored the Gay-Straight Alliance, which won the GLSEN National GSA of the Year award in 2015 for the club's work towards creating a safe and accepting learning environment for all students. Jeremy also participated in the Urban Teaching Fellows program through Fordham University in New York, NY. He earned a Bachelor of Fine Arts in Theatre Arts degree in 2002 from Stephens College in Columbia, MO and a Masters of Arts in Teaching in 2012.