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Teacher Perceptions of Personalized Teaching & Learning in an Instructional Technology Graduate Course: A Phenomenographical Case Study

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Author Note

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Abstract

With the growing focus and popularity of personalized learning in K-12 education, the need to support educators in their ability to implement personalized learning pedagogy grows. The paradigm shift towards personalized learning includes necessary iteration to the types of professional development offered to practicing teachers. This study explored the perceptions of teachers experiencing the meta-learning phenomenon of both teaching and learning about Personalized Learning (PL) in a six-week, online graduate-level course. Inquiry was focused on uncovering how in-service K-12 teachers' experience, understanding of PL, and ability to design PL evolve during a six-week graduate-level education course on personalized learning, ITEC 7600. Additionally, the study explored how ITEC 7600 help in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning. Finally, a composite allowed the voice of the instructors to describe the experiences of their students' understanding of PL, and ability to design PL as it evolves during a six-week graduate-level education course on personalized learning. Results illuminate that while a personalized path towards acquisition of PL pedagogy should be expected due to the qualitatively unique ways participants experience this course, a modeled meta-learning phenomenon is found to support educators' growth in their ability to understand and design personalized learning environments. Results show ways in which the overall design of this course have an impact on current and future practice and research of personalized learning.

Keywords: personalized learning, in-service, graduate course, phenomenographical case study, case study approach (teaching), student-centered learning

Dedication

This work is dedicated to my family, Ryan, Julia, and Luke Stephens, who have been supportive, understanding, and patient as I devoted all of my extra energy to this academic pursuit. My Mom and Dad, who instilled in me the grit required to persevere and push forward when it would have been much easier to set this dream on the shelf. My brother, Austin, and sister Mallory, who, through their own achievements, have motivated me. To my extended family who don't have a clue what I do, but are proud of me, nonetheless. To all the generations who came before me; all you endured to offer better opportunities to your children, and their children, have made a way for me. To my friends, who have filled gaps for me countless times, and have understood why I have been less than the friend they deserve in return during this time.

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Thank you to my dissertation committee: Dr. Jo Williamson, my chair, for the genuine care for my success and the guidance you've provided through this study; Dr. Iván M. Jorrín Abellán, for your approachable demeanor and careful refinement and support of my methodological ability; and Dr. Anissa Lokey-Vega, for the insight, advice and treatment of me as a peer and colleague long before I had earned the right to that title. No group could have served me or this study better. I also thank each professor and teacher I've encountered who has supported my growth over my academic years.

To my iTeach team, peers, and colleagues, thank you for your encouragement and understanding. I am so grateful for your support. Finally, thank you to my friends and family who have always been my loudest cheering section. I will always work hard to make sure your belief in me is justified.

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Chapter 1 Introduction

In this first chapter, key elements of a study which explores and describes the phenomenon of both teaching and learning Personalized Learning (PL) in an online graduate course are provide. This course serves as an elective in an Instructional Technology Master's or Specialist degree program and is one of three courses required to earn a personalized learning certificate. There are many unique factors in this study. While the design, development, and facilitation of a personalized online graduate course must be described to provide context, the core of this study has a more granular focus on the experiences and perceptions of the course participants who are in-service educators learning about personalized learning in a personalized learning environment. The aims of this study include unpacking how in-service teachers experience personalized learning in the course and understanding how a meta-learning experience in a graduate course may support in-service teachers in their conceptualization of, and ability to, leverage personalized learning pedagogy.

Currently, a K-12 education in the context of the United States, and much of the global community, is based on a model of standardization. This model defines success for learners as achieving a high school transcript indicating mastery in the distinct areas of language, math, science, and the humanities. The traditional or normalized education model has for decades overproduced similarly credentialed individuals, which challenges the relevancy and legitimacy of our system of schooling (Apple, 2012). The K-12 education narrative is upheld by learners, educators, and leaders who are conditioned to perpetuate its established efficiency. Personalized Learning (PL) stands in opposition to this "one size fits all" model, and refers to a unique learning model determined by students' individual needs, skills, and interests (Carolan & Guinn,

2007; Carroll, 1975; Johnson et al., 2012; Keefe & Jenkins, 2008; Miller, 2010). Because students learn better in a personalized environment (Dunn, 2000; Dunn & Dunn, 1978), many have begun to implement PL. As you would expect, there is much attention on and study of these implementations. Many implementation studies come to a similar conclusion-educators aren't properly equipped to design and deliver personalized learning.

The personalized learning movement is acknowledged by many as valuable. The U.S. Department of Education (2017) prioritized personalized learning in the National Educational Technology Plan (NETP, 2017) and many think-tanks, and consortiums such at The Gates Foundation, the Chan-Zuckerberg Initiative, Knowledge Works Foundation, and others clamor to discover and diffuse this trend. Even on the international stage, the expectation that education should reform and reposition itself to a more personalized, competency-based, globally responsive model can be seen. In a 2017 report of the 10 Trends Transforming Education as We Know It, the European Political Strategy Centre (EPSC) indicates a shift from "standardisation to customisation to accomplish personalization" (European Union, 2017).

Statement of the Problem

Researchers from around the globe continue to debate the semantic disparity of the term "Personalized Learning" and seek, yet again, to define personalize learning itself (Lokey-Vega & Stephens, 2019; Boniger et al., 2019). Actualizing personalized learning is also challenge due to several practical problems. There are a multitude of definitions for personalized learning, and this variance creates stark differences in implementation models. These definitions and implementation vary so greatly due to the hyper-specific socio-political contexts where personalized learning is being attempted. While so many are attempting to define personalized

learning, and measure success in implementations, very few are focused on uncovering the best ways to prepare and support educators to accomplish personalized learning in their own environments (Arnesen et al., 2019). Many who study the success of implementations conclude that educators aren't properly equipped to design and deliver personalized learning (Dishon, 2017). Despite this realization, little research on the best training practices for effective personalized learning has been conducted. This gap found in the literature guided the inquiry for this proposed study.

Purpose of the Study

While there is growing research interest and activity in the field of personalized learning, there are significant gaps in understanding what effective professional learning for personalized learning is (Arnesen et al., 2019). While the topic of teacher professional development, and even personalized professional development has been studied, none of the models reviewed specifically study how and why professional learning for personalized learning may differ (Schifter, 2016). This proposed study will capture educator experiences within the bounded system of a personalized learning course which develops their ability to implement personalized learning through a phenomenographical case study research methodology. The study of this meta-learning experience can inform how to specifically design and deliver professional learning for personalized learning in the future.

Research Questions

The research questions and topics selected will guide the qualitative inquiry process of this proposed study and reflect both the phenomenographical and case study methodologies.

Within each research question, topics of interest are listed. Topics of interest in this study served to better focus the analysis of data.

RQ1: How do in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning?

Topics of interest:

-PL Components that are easiest for teachers to understand

-Emerging questions and concerns of participants regarding PL design

-Evolution of understanding of PL

RQ2: How does ITEC 7600 help in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning?

Topics of interest:

-Contextual factors that enable and impede teachers understanding and designing PL.

-Additional experiences that help teachers understand and design PL.

Composite: Instructors' Perceptions of Their Students' Experiences

How do instructors describe the experiences of their students' understanding of PL, and ability to design PL as it evolves during a six-week graduate-level education course on personalized learning?

Topics of Interest

-Critical assignments or course interactions that enable and impede students' understanding and designing PL

-Additional experiences that help teachers understand and design PL

Significance of Research

For educators to meet the demands of schools and districts who are innovating and aiming towards more personalized learning experiences, they must shift their approach. Providers of educator preparation and professional development must be presented with research-based options for modeling, coaching, and supporting educators and leaders to endeavor on this this innovation effort. This research on professional learning for personalized learning will inform those who develop professional learning opportunities as well as more traditional or formal learning on personalized learning theory, tools and pedagogy.

Conceptual Framework

Researchers and practitioners have agreed that the confusion around personalized learning makes it difficult to translate into practice (Bingham et al., 2018; Gross & DeArmond, 2018; Watson & Watson, 2016). For many educators and administrators, looking at existing implementation of personalized learning in other schools helps them with conceptualization. There are so many claiming to enact personalized learning, and each implementation has variation across a multitude of domains (Patrick et al., 2015; Powell, W., & Kusuma-Powell, O. 2011). The implementation outcomes (success or failure) of any single model are hyper-specific to the environment wherein implementation occurs. A broad acceptance that a variety of models is required due to the nature of variation within each environment is required.

Lokey-Vega & Stephens (2019) contribute a conceptual framework to the field of personalized learning which accounts for this variation. Rather than identifying a singular model of personalized learning, they instead suggest that all models of personalized learning exist across a continuum. The Personalized Learning Continuum Framework (PLCF) allows for all models of personalized learning, despite varying theoretical tilts, pedagogical approaches, levels

of technological inclusion, and distributions of power to exist across an infinite plane. It is essential to note that the PLCF is not aimed at making value judgements on any model of personalized learning. Rather, it is a tool to understand how and why variation exists as it depends on several factors defined below.

The Personalized Learning Continuum Framework (PLCF) conceptualizes personalized learning as a congruence of pedagogical methods, academic learning time (ALT), and power distribution. Using the PLCF, researchers and practitioners seeking to study and implement personalized learning can understand, sort, and compare varying models using a common vocabulary of key terms, despite reviewing many models with varying definitions. This common language and situating of models can help to inform universally effective professional learning and training opportunities for all systems, schools, and educators who seek to actualize personalized learning regardless of localized definitions and model specificity.

Definition of Terms

Academic Learning Time (ALT): "the amount of time during which students are actively, successfully, and productively engaged in learning" (Gettinger & Seibert, 2002, p.1).

Automated Pedagogy: The automation of pedagogy exists when authority to curate, create, assess or assign learning is automated by either adaptive learning software and algorithm developers or by a teacher without the aid of software or algorithms, therefore enacting agency over learning decisions (Lokey-Vega & Stephens, 2019, p. 32).

Student Centered Pedagogy: A pedagogical approach wherein the learner is an active participant in curating, creating, assessing, and assigning learning. The student is self-

directed and granted a higher degree of autonomy in the learning environment (Glowa and Goodell, 2017; Conti, 1985, as cited in Barrett, Bower & Donovan, 2007, p.38).

Procedures

This study identified a problem of practice in educator professional learning for personalized learning and described a framework and methodology for a phenomenographical case study. A description of the context and participants of the study is also provided. Additionally, data collection and analysis details are aligned to the driving research questions.

Overview

Chapter one provided background and an introduction to the proposed study, as well as offering a statement of the problem which this study aims to address. In addition, the conceptual framework for this study was introduced in order to provide context and a framework upon which future discussion and literature will be situated. The purpose of this study as well as the research questions and topics of investigation are provided, as is an overview of the significance of this research, definitions of key terms, and an outline of the research procedures to be followed. In chapter two, a description of the theoretical roots of personalized learning will be provided. Definitions and models of personalized are shared and situated within the conceptual framework, and a collection of seminal literature and research pertinent to the field and specifically this study is discussed. In chapter three, a full exposition of the methodology of this study is provided including a deeper analysis of the problem, a thick description of the context and participants of this study, as well as a review of data collection and analysis methods. Chapter four shares the findings of this study, and chapter five offers a discussion of the results and the implication of the results on current and future research and practice.

Chapter 2 Review of Literature

Seen by some as an emergent field of study, Personalized Learning is derived from varying epistemological, psychological, and theoretical roots which have been studied extensively. Identified by a different name early in the twentieth century, educational theorists and cognitive science researchers began to study "student-centered pedagogies", a more individualized approach to learning. However, these were not the first notions of a personalized way of learning. This chapter will position personalized learning within a theoretical context, offer an exploration of varied definitions and models of personalized learning in relationship to the conceptual framework, and offer a review of previous research efforts within which the gap addressed by this proposed study.

Underpinnings of Personalized Learning

Perhaps first idealized as "well-regulated freedom" by philosopher and author Jean Jacques Rousseau in 1762 in his book *Emile*, or *On Education,* a model for personalized learning has been long viewed as a countermeasure to the 'status quo' of disconnected learning (Rousseau, 1979). In the nineteenth century, famed authors Henry David Thoreau and Ralph Waldo Emerson saw education through a radical personal lens as well. In an 1837 letter, Thoreau writes:

> I would make education a pleasant thing bot to the teacher and the scholar. This discipline, which we allow to be the end of life, should not be one thing in the schoolroom, and another in the street. We should seek to be fellow students with the pupil, and should learn of, as well as with him, if we would be most helpful to him (p. 20).

In 1883, Emerson continues: “the secret of education lies in respecting the pupil. It is not for you to choose what he shall know, what he shall do. It is chosen and foreordained, and he only holds the key to his own secret” (Emerson, 1883 [1863], p. 143). Personalized learning as evidenced by these early writings, is not a modern idea. The evolution from idea to theory and from theory to action has spanned almost three centuries.

In the twentieth century, theorists Dewey (1923), Vygotsky (1978) and Piaget (1948; Kuhn, 1979) had continued impacts on the redefinition of learning. Led by the writings of educator and philosopher John Dewey, in response to the traditional teacher-centered system of education, the progressive education movement argues that learning should be a ‘journey of experiences’ and that connectedness to life is of paramount importance. Dishon (2017) reviewed the theories of Dewey and the earlier Rousseau to investigate the apparent binary between the constructivist and behaviorist approaches to personalized learning, described as a “comprehensive reform of education” rather than a new strategy or initiative (p. 277). Unlike the traditional role of educators as deliverers of knowledge, advocates of progressive education view the role of the educator as one of teaching students how to learn, not just broadcasting facts. Facilitation becomes the educator's key role when adopting the “Harkness Method” a way of learning envisioned by Edward Harkness, a philanthropist and pragmatist who made a large donation to the Philips Exeter Academy to enact this vision. "What I have in mind is teaching...where boys could sit around a table with a teacher who would talk with them and instruct them by a sort of tutorial or conference method” (Harkness, 1930 as cited in Kennedy, 2020, p.1). Harkness was largely influence by Dewey’s social constructivist theories illustrated here:

> I believe that the school is primarily a social institution. Education being a social process, the school is simply that form of community life in which all those agencies are concentrated that will be most effective in bringing the child to share in the inherited resources of the race, and to use his own powers for social ends…The teacher is not in the school to impose certain ideas or to form certain habits in the child, but is there as a member of the community to select the influences which shall affect the child and to assist him in properly responding to these. Thus the teacher becomes a partner in the learning process, guiding students to independently discover meaning within the subject area (Dewey, 1897, article II).

In the middle of the twentieth century, Swiss clinical psychologist, Jean Piaget, and Russian psychologist Lev Vygotsky deepened the understanding of student-centered learning as they continued to develop social constructivist theories of education. Piaget observed that children construct knowledge not via rote memorization of facts, but through lived experiences and social interactions (Piaget, 1948, 1979). Vygotsky suggested that to successfully function in school and beyond, children need to learn more than a set of facts and skills (Vygotsky, 1978). They need to master a set of mental tools. After mastering these mental tools, learners gain agency over their own learning. Learning then, according to Vygotsky, is personal. It must start with the learner. Boylan, Barblett & Knaus (2018) state that a focus on "preparing children for the twenty-first century provides an opportunity for the implementation of mindset theory to assist children in being creative, connected and engaged learners who exhibit agency over their learning." This implies that mindset theory is a growing focus for students in the 21st century. This requires students to take ownership of their learning and this can only be done if the teacher provides

flexibility within that learning. Students must be motivated to learn, know how they learn, and have a stake in their learning process (Cole and Wertsch, 1996).

Another school of thought from which personalized learning is derived is cognitive science. Cognitive science is an outgrowth of behaviorism which supports socially dependent learning. A common inclusion in most definitions and models of personalized learning is a mastery model. Mastery learning is an application of behaviorism which emphasizes student mastery of specific learning objectives and leverages remediated instruction to support student mastery. Mastery learning assumes all students can learn what is taught in school if their instruction is approached systematically, they are supported when and where they have difficulty, if they are given flexibility of time to achieve mastery, and if there is a clear understanding of what constitutes mastery. Benjamin Bloom (1968, 1971, 1974, 1976) is credited with designing the basic instructional process. He proposed a model of school learning based on the belief that if each student was allowed the time needed to learn the material, and the time was appropriately spent, the student would be able to achieve the specified learning objectives. If all students were given the same time to learn the material, many students would not attain the level of knowledge expected by the instructor.

Technology has made it possible to implement mastery learning at scale with the advancement of tools that can diagnose learner misconceptions and immediately present remedial material. Adaptive technology software now has the ability to not only vary the pace of presented material, but also how it is presented and at what specific level of difficulty. Though there is an emphasis in these adaptive programs on drill-and-practice, in some situations and circumstances, that is instructionally appropriate. Technology makes the mastery learning process more efficient and personalized. With advances in educational technology, assessment

systems, learning management systems (LMS), and student information systems (SIS), learners and educators alike have access to data and analytics that support personalization closer to critical learning moments that occur in real-time called the "Zone of Proximal Development" (Vygotsky, 1978; Zone of Proximal Development and Scaffolding - Tools of the Mind, 2015).

Personalized Learning Definitions and Models

Although varied, most definitions and conceptions of personalized learning involve customizing curriculum, instruction, and assessment to the interests, abilities, and needs of each individual student (Bray & McClaskey, 2015; Roberts-Mahoney et al., (2016). The abundant variation in definitions that exist for 'personalized learning' make sense when one considers that many of the definitions are created within hyper-local contexts (Scheopner Torres et. al., 2018; Pane et al., 2015). A district who had just deployed a 1:1 device to all students would model their plan for personalized learning around leveraging the tools and software that they worked hard to provision. Basham et al., (2016) conducted an 18-month design research study aimed at identifying the characteristics of a personalized learning environment. Their research concludes that the characteristics of "successful" personalized learning environments require much more than simply technology tools, but rather list a collection of characteristics (p. 130). Promoting learner self-regulation, having access to transparent and actionable near-real-time data, and embedding the principles of Universal Design for Learning are variables which are found to support a personalized environment (Wilusz & Templeton, 2017). The research, academic literature, and think-tank generated content on defining and describing personalized learning is so varied in its description, enactment, and evaluation, that it can be hard to conceptualize, and therefore difficult to enact (Patrick et al., 2013). These broad definitions are not surprising however, since PL has such broad theoretical foundations. In the definitions provided in Table 1,

it is interesting to discover that despite the semantic variety that exists, there are many commonalities.

Table 1

Personalized Learning Definitions

Publication	*Definition*
Association for Supervision of Curriculum and Development (ASCD)	PL has five key elements: flexible anytime/everywhere learning, redefined teacher role/expand teacher, project-based authentic learning, student-driven learning path, and mastery/competency-based progression /pace" (Hanover Research, 2012, p. 8).
Association of Personalized Learning and Services (APLS)	"PL is putting the needs of students first; tailoring learning plans to individual students; supporting students in reaching their potential; providing flexibility in how, what, when, and where students learn; supporting parent involvement in student learning" (APLS, 2012, p. 1).
Bingham and Dimandja	PL is a "strategy in which teachers used digital resources to adjust instruction according to students' learning needs and interests to promote mastery of skills and content" (Bingham & Dimandja, 2017, p. 76).
Bray and McClaskey	In a personalized learning environment, learners actively take part in their learning. They have a voice in what they are learning based upon how they learn best. Learners have a choice in how they demonstrate what they know and provide evidence of their learning. The teacher is their guide on their personal journey" (Bray & McClaskey, 2017, p. 7).
Future Ready Schools	"Personalized learning as a student-centered approach designed to help students develop deeper learning competencies, including thinking critically, using knowledge and information to solve problems, working collaboratively, communicating effectively, learning how to learn, and developing academic mindsets" (Future Ready Schools, 2017, p. 40).
Gates Foundation	"Personalized learning seeks to accelerate student learning by tailoring the instructional environment - what, when, how and where students learn - to address the individual needs, skills and interests of each student. Students can take ownership of their own learning, while also developing deep, personal

	connections with each other, their teachers and other adults." (Gates Foundation, 2014, p. 6)
iNacol	"Personalized learning is tailoring learning for each student's strengths, needs, and interests - including enabling student voice and choice in what, how, when, and where they learn - to provide flexibility and supports to ensure mastery of the highest standards possible" (Patrick, Kennedy, & Powell, 2013, p. 3).
International Society of Technology Educators (ISTE)	"[Personalized] learning that is tailored to the preferences and interests of various learners, as well as instruction that is paced to a student's unique needs" (Basye, 2018, p. 12).
Lokey-Vega and Stephens	"Personalized learning is an educational paradigm shift that values learner differences and harnesses technology to allow educator and learner to co-plan an individualized educational experience" (Lokey-Vega & Stephens, 2018, p. 7). "The mass customization of learning through a unique combination of automated and student-centered pedagogies" (Lokey-Vega & Stephens, 2019, p. 317).
Personalized Learning Foundation (PLF)	PL includes "strong emphasis on parental involvement, smaller class sizes, more one on one teacher and student interaction, attention to difference in learning styles, student driven participation in developing the learning process, technology access, varied learning environments, teacher and parent development programs, and choices in curriculum programs." (PLF, 2012, para.1)
Powell and Kusuma-Powell	"Personalized learning is about making the curriculum as attractive and relevant as possible to the widest possible audience" (Powell & Kusuma-Powell, 2011, p. 7).
The Council of Chief State School Officers (CCSSO) and Jobs for the Future	"As much as possible, instruction is customized students' individual developmental needs, skills, and interests. In a personalized experience, students develop connections to each other, their teachers, and other adults that support their learning. Ways to build toward personalized learning include co-designing an individual learning plan and scaffolding supports and interventions for each learner" (CCSSO & Jobs for the Future, 2017, p. 47).
The National Center for Learning Disabilities (NCLD)	"Personalized learning allows all children to receive a customized learning experience. Students learn at their own

	pace with structure and support in challenging areas. Learning aligns with interests, needs and skills, and takes place in an engaging environment where students gain a better understanding of their strengths." (NCLD, 2018, p. 4)
United States Office of Education Technology (USOET)	"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 (personalization encompasses differentiation and individualization)." (U.S. Office of Education Technology, 2018, para. 5)
Zmuda, Curtis, and Ullman	"Personalized Learning is a progressively student driven model in which students deeply engage in a meaningful, authentic, and rigorous challenges to demonstrate desired outcomes" (Zmuda, Curtis, & Ullman, 2015, p. 7).

It becomes evident that a large number of the definitions found in literature idealize a constructivist view of personalized learning, where the learner and the educator co-create a learning path and pace, while counting on the technology to accomplish some of the basal and necessary tasks which can be automated. Current and constant advancements of technology allow for the automation of some didactic learning but align more to a behaviorist view of personalized learning whereby adaptations are made in real time based on learner performance. Many of these definitions focus on a mastery/competency-based model (Hanover Research, 2012, p. 8; Bingham & Dimandja, 2017, p. 76; Bray & McClaskey, 2017, p. 7; Patrick, et al., 2013, p. 3). Other common themes emerge which Lokey-Vega & Stephens (2018, 2019) used as they posited a universal definition, a theory of action that would allow for all these localized definitions to find an alignment. For the purposes of this proposed study, personalized learning will adopt a combination of the Lokey-Vega & Stephens (2018, 2019) definitions below which collectively align to the conceptual framework. "Personalized learning is an educational

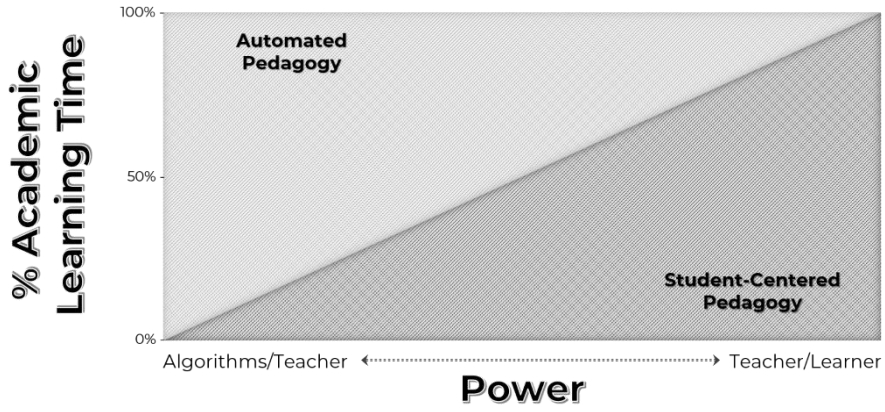
paradigm shift that values learner differences and harnesses technology to allow educator and learner to co-plan an individualized educational experience" (Lokey-Vega & Stephens, 2018, p. 7). Personalized learning is accomplished through "the mass customization of learning through a unique combination of automated and student-centered pedagogies" (Lokey-Vega & Stephens, 2019, p. 317).

Models of Implementation

Implementation of personalized learning is complex and challenging due to broadly varied definitions of PL stemming from broad theoretical roots. Yet, grappling with the many components of successful implementation ahead of time can create better outcomes for teachers and students alike (Burr, McCully, & Wicker, 1970). Lokey-Vega & Stephens (2019) developed the PLCF, which acknowledges this variation. Rather than identifying a singular model of personalized learning, they instead suggest that all models of personalized learning exist across a continuum. The Personalized Learning Continuum Framework (PLCF) illustrated below in Figure 1 allows for all models of personalized learning, despite varying theoretical tilts, pedagogical approaches, levels of technological inclusion, and distributions of power to exist across an infinite plane. It is essential to note that the PLCF is not aimed at making value judgements on any model of personalized learning. Rather, it is a tool to understand the variation that exists.

Figure 1

Personalized Learning Continuum Framework (PLCF) (Lokey-Vega & Stephens, p. 323, 2019).



The Personalized Learning Continuum Framework (PLCF) conceptualizes personalized learning as a congruence of pedagogical methods, academic learning time (ALT), and power distribution. Using the PLCF, researchers and practitioners seeking to implement personalized learning can understand, sort, and compare varying models using a common vocabulary of key terms, despite reviewing many models with varying definitions. This common language and situating of models can help to inform universally effective professional learning and training opportunities for all systems, schools, and educators who seek to actualize personalized learning regardless of localized definitions and model specificity.

In order to visualize all models of Personalized Learning, Lokey-Vega and Stephens plot four fictitious examples along the Personalized Learning Continuum Framework (PLCF) that represent the varying definitions and implementations that exist.

Table 2

Fictitious personalized learning models for purposes of PLCF illustration (Lokey-Vega & Stephens, 2019, p. 324)

	Model A	Model B	Model C	Model D
Percent ALT on automated pedagogies	100%	50%	20%	0%
Types of automated pedagogies	Online adaptive learning platform	Flipped content delivery	Classroom center with adaptive	N/A

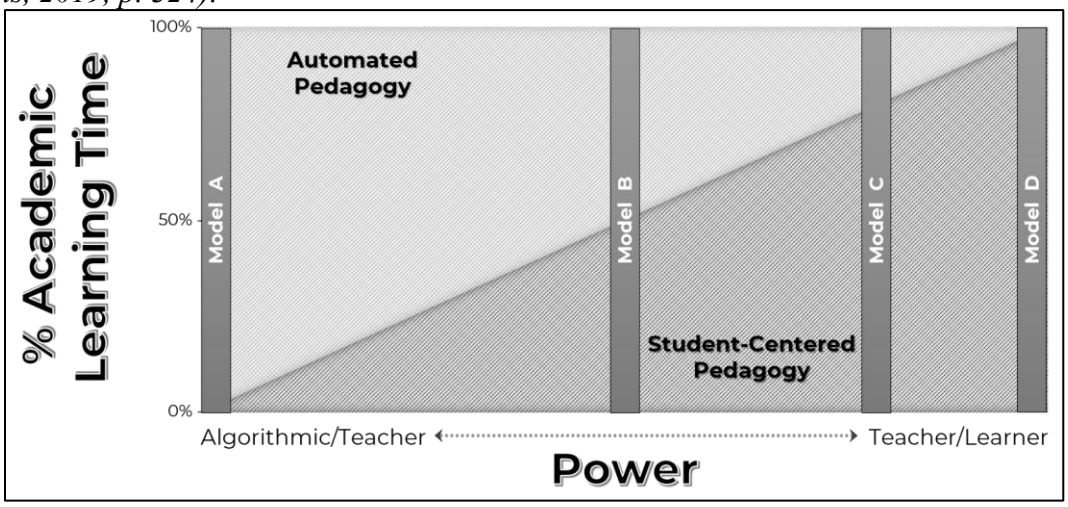
			learning platform	
Percent ALT on student-centered pedagogies	0%	50%	80%	100%
Types of student-centered pedagogies	NA	Project-based and small group instruction	Small group instruction, project-based, and collaborative	Co-planning, small-group, and project-based learning
Distribution of power	Algorithms	Teacher and student	Teacher and student	Student and teacher

These models can be charted on the PLCF as shown in Figure 2 below. On the far left of the continuum, a personalized learning model which allocates 100% of ALT to the automated pedagogy of adaptive learning tools authorizes significant power to the software and algorithm developers. In a teacher-led blended learning model, for example, the teacher may develop and assign content without the aid of an algorithm, therefore enacting authority over learning decisions. In contrast, personalized learning models that fall to the far right of the continuum allocate power between the teacher and learner in varied ways. These models on the far-right side will likely require abundant learner agency and well-practiced executive function, otherwise the teacher may be required to be responsible for significant portions of this individualized student-centered approach.

Myriad models of personalized learning will fall between the binary extremes on the continuum and leverage vastly original combinations of automated and student-centered pedagogies. Changing and shifting distributions of power between software, teacher, and learner should be expected. The opposing roots of both behaviorism and social constructivism can also be seen in individual models of personalized learning. Using the PLCF, any researcher, practitioner, or stakeholder could more readily explore the nature of any personalized learning model (Lokey-Vega & Stephens, 2019).

Figure 2

Fictitious Models Mapped on the Personalized Learning Continuum Framework (Lokey-Vega & Stephens, 2019, p. 324).



Role of Technology in Personalized Learning

Specifically addressing the inclusion of technology within personalized learning definitions and models is necessary. As with any other component of PL, technology can be integrated in alignment with a constructivist approach or be leveraged as a behaviorist lever towards learning. Three cases investigating the correlation between technology and personalized learning are described by Zheng (2018) as Digital Technology for General Education Purposes (DTGEP), Digital Technology with Enhanced Cognitive Support (DTECS), as well as Highly Intelligent Digital Technology (HIDT). HIDT, including Artificial Intelligence (AI) have the power thru data-mining technology to enable the system to trace the individual learners' performance, schema, knowledge structure, and more, while the system is able to make suggestions for personalized learning path based on those inputs. Personalized learning has become the most notable application of technology and big data in primary and secondary schools in the United States (Dishon, 2017). This extremely technocentric model of personalized

learning is one that has encountered push back from some that fear technology will eventually replace teachers.

Summit Public Schools is a school management company historically funded by the Chan Zuckerberg Initiative (Williamson, 2018) which leverages an adaptive learning software called the Summit Personalized Learning Platform. The use of adaptive instructional and assessment software, content management systems (CMS), as well as learning management systems, digital creation tools, etc., can create a robust digital ecosystem where learning can happen whenever and wherever: a key condition of personalized learning environments. At Summit, students complete online work for five hours each day (Edelman, 2018). The Summit model of automated pedagogies and high algorithmic power can be equated to Model A (Figure 2) on the PLCF. While this technology-dependent and driven model is a variation of personalized learning, it has come under fire from students, parents, and the media for being too reliant on technology. In fact, a recent article in US News and World Report indicates that the Chan Zuckerberg Foundation has discontinued funding of Summit (Camera, 2020).

A Montessori classroom (a model that has long be touted as an example of PL), has a place on the PLCF. One hundred percent of the academic learning time in a Montessori classroom focuses on student-centered pedagogies, and because the Montessori model does not leverage technology tools, nor platforms, the teacher and learner have full power over the learning environment. This model can be equated to Model D (Figure 2) on the PLCF. As illustrated in the examples above, technology holds great potential, but is not requisite for personalized learning to occur (APLS, 2012; Bray & McClaskey, 2017; Gates Foundation, 2014; Patrick et al., 2013; Zmuda et al., 2015).

Learner Roles in Personalized Learning

Other definitions, models, and implementations of personalized learning hinge greatly on students as co-contributors to the learning path, pace, and place. For students to activate that type of agency, they must be able to demonstrate self-regulated learning (SRL) and executive function (Diamond, 2012; McLaughlin & Lee, 2010; Zimmerman, 2002). Learning experiences which are made possible by social software tools (too many to list) are active and process based, and are, by nature, driven by learners' interests, therefore, they have the potential to activate self-regulated, independent learning (McLaughlin & Lee, 2010). Other ways to support the development of SRL and EF include computer-based training, certain school curricula, and training in aerobics, traditional martial arts, yoga, or mindfulness (Diamond, 2012). Other technology enabled and analog strategies for increasing student motivation within a personalized learner-centered environment can support students as they develop their capacity for executive function and self-regulation within a personalized environment (Ferlazo, 2017; Dweck, 2006; Ryan & Deci, 2000). Most classrooms have students with a wide range of abilities and experiences (Lokey-Vega & Stephens, 2018; Ferguson, 2001). Personalized learning is a unique way of addressing this variety in that it ensures students' learning is determined with their own learning preferences and needs in mind. Focusing on individual differences as assets, personalized instruction aims to help all learners achieve mastery (Basham et. al., 2016; Lokey-Vega & Stephens, 2018, 2019; Ferguson, 2001). Learners in these environments feel empowered to proactively determine their future (Ferlazzo, 2017). Personalized learning has the potential to help all students succeed, and it is important for policymakers to understand the bright spots of practice and research in order to make informed decisions that support the implementation of personalized learning for historically underserved students (Ray, Sacks, & Twyman, 2017).

Educator Roles in Personalized Learning

Despite many educators and administrators acknowledging the power and potential of personalized pedagogy, few are implementing it within a structured pilot or action research study (Patrick, 2015). This has limited the potential impact on learners, who research shows are in desperate need of a new approach to 'school' (Van Damme, 2016). A contributing factor to this problem is that in-service educators may learn about personalized learning in isolation, without ever having experienced it themselves as a learner, but most never study personalized learning at all (Pane et al., 2015). This disconnect between expected practice, and support for developing the explicit skills required for educators to actualize these expected practices is not a new one (Darling-Hammond & Oaks, 2019). In 1970, Burr et al., proposed an approach to curriculum design in a middle school setting aimed at harnessing personalized learning needs for unit development. In this approach, personalized learning is viewed as a) the total environment for learning, b) the interests and other variables of individual students, c) the teaching-learning situation and d) the participation of students in the planning, doing, and appraising of their learning experiences (Burr et al., 1970). The authors conclude that those wishing to personalize learning should first have a concrete understanding of what it means to design for PL and have a personal commitment to "make it work". Burr et al., also state that educators interested in implementing personalized learning should also acknowledge that the teacher will be playing many roles. In 1970, those many roles included instructional design, data collection and utilization, adaptive curriculum design, and more. In 2020, some of those "many roles" a teacher must play in a personalized learning environment are accomplished by leveraging technology (Lee, 2014).

In a case study on implementation, Bingham et al. (2018), found that there are three main challenges encountered by schools implementing PL: a) in many cases, neither robust infrastructure nor adequate technology hardware are provisioned'; b) success measures inside of schools implementing personalized learning were not in alignment with how outside stakeholders define student success; c) teacher preparation and development approaches did not yet align with teacher need areas. Traditional "one-size-fits-all" professional development for educators seldom models or represents an exemplar of how to implement sound pedagogy, nor does it meet individual teacher needs (Carolan & Guinn, 2007; Klonsky, 2002; Miller, 2010; Otaiba et al., 2011; Sands & Barker, 2004 as cited in Lin & Kim, 2013, p. 3-4).

Aspiring to improve teaching and learning does not mean a complete disregard for best practice, though we should refine and iterate (Friend et al., 2017). This type of transformation takes time and requires the development of effective teacher professional learning opportunities and coursework, which supplies experiential modeled exposure to a personalized learning environment (Darling-Hammond, 2019). Guided by writers, philosophers, and theorists of the past (Vygotsky, Emerson, Rousseau, Dewey, Piaget, Burr), and other more contemporary researchers, educator preparation programs can imagine and design opportunities for educators to develop their ability to enact successful personalized learning environments. Despite ongoing implementation of PL, the promotion of student's personalized learning becomes difficult when personalized learning for teachers is not available (Lin & Kim, 2013). With little guidance or agreement on exactly how to support educators with professional learning for personalized learning, it is difficult to enact successfully (Bingham et al., 2018; Karmeshu & Nedungadi, 2012).

Evaluating Personalized Learning Pedagogy

To inform the design of effective professional learning for personalized learning, exploring the existing surveys on teacher practice and implementation related to personalization is essential. Surveys that measure teacher beliefs and perceptions of learner-centered and personalized environments offer perspective on teacher experiences however depend greatly on the definition of personalized learning to which each instrument is aligned (e.g., Akos et al., 2011; Woolley et al., 2004). The Constructivist Learning Environment Survey measures student-centeredness, autonomy, incorporation of prior knowledge, and negotiated curriculum, which when combined can reflect effective personalized learning (Johnson & McClure, 2004; Taylor et al., 1997). This and similar instruments, though, were designed prior to the expectation of ubiquitous technology in education that has transformed the reality of teaching and learning. The LoTI Digital-Age Survey (Mehta & Hull, 2013; Moersch, 1995) measures technology integration as well as examining constructivist teaching practices; however, this survey aligns with a more teacher-directed or automated pedagogical vision of teaching and learning than what personalized learning advocates call for (Lokey-Vega & Stephens, 2019). A design and development study by Olofson et.al. (2018) emerged to create a tool measure teacher practices situated within the personalized context. The researchers formulated and initially administered a survey to 232 middle grades teachers in 2016, and another 165 middle grades teachers in 2017, the resultant survey is effective in determining teacher self-perception, and researchers call for more use of this survey in future research. Karmeshu & Nedungadi (2012) also investigated a plan for modelling educational innovation and diffusion of personalized learning within teaching. In this (rare) empirical study of early-adopter teachers (N = 295) from 18 senior secondary schools in India, a continuous and comprehensive evaluation plan (of a unique personalized

learning framework) is in place. This study found that the most vital factor in the success of personalized learning adoption is in service teacher training programs for existing teachers (Karmeshu & Nedungadi, 2012; Rogers, 2003).

Educator Standards for Personalized Learning

Research indicates that teachers are being evaluated in many ways for their ability to actualize personalized learning without first being provided with clear standards of practice and modeled opportunities for professional growth. In response to this realization, Lokey-Vega & Stephens (2018) name a collection of nine essential conditions for personalized learning. These conditions are a) Prioritized Executive Function, b) Growth Mindset, c) Individual Path, d) Flexible Content, e) Learner Voice, f) Authentic and Adaptive Assessment, g) Dynamic Communication, h) Expanded Collaboration, and i) Mastery Dispositions. This taxonomy is intended to be comprehensive and inclusive, however it is the nature of this new personalized paradigm that there will be iteration and refinement over time (Lokey-Vega & Stephens, 2018). In fact, these "essential conditions" were further refined by a Georgia Professional Standards Commission task force, and in 2019, a set of educator standards for personalized learning in the State of Georgia was created (GaPSC Rule 505-3-.108). Georgia is currently the only state in the United States to have formalized educator standards for personalized learning, prioritizing future effort.

Table 3

Georgia Personalized Learning Standards (Ga. Comp. R. & Regs. 505-3-.108, 2019)

Standard	Description
Standard 1: Prioritized Executive Function	The candidate explicitly teaches students the skills of executive function (self-regulation,

	emotional responsibility, task completion, working memory, cognitive flexibility, time management, reflection, etc.), teaches practices of metacognition, and prepares the learning environment to promote learner agency.
Standard 2: Learner Agency	The candidate teaches and encourages learners to advocate for their needs, preferences, and interests to plan and drive their learning.
Standard 3: Asset-Based Dispositions	The candidate uses asset-based language and classroom practices to serve all learners.
Standard 4: Growth and Mastery Mindset	The candidate defines learning as an ongoing progression by embracing a growth and mastery mindset, rejecting the binary of success and failure.
Standard 5: Authentic and Adaptive Assessment	The candidate co-plans with the learner to collect evidence of mastery using varied and data-rich performances that are on-going, authentic, flexible, and relevant.
Standard 6: Flexible Educational Resources	The candidate provides the learner access to flexible resources when co-planning unique ways to master competencies. These include but are not limited to the resources available in the digital content ecosystem.
Standard 7: Individualized Path	The candidate prepares learners to be aware of competency-based learning progressions and to make informed choices in co-planning a unique pathway and pace towards mastery of the curriculum.
Standard 8: Dynamic Communication	The candidate facilitates communication that flows multi-directionally from all stakeholders to meet learner needs in a variety of flexible formats.
Standard 9: Expanded Collaboration	The candidate values learners as equal contributors in the planning process.
Standard 10: Life-Long Professional Learning	The candidate perceives his/her own learning as a life-long pursuit.

It is noteworthy that of the ten standards for educator effectiveness in personalized learning environments, technology is not mentioned. This is not to discount technology as valuable in a PL environment, but rather in line with the PLCF conceptual framework to allow for all educators, regardless of PL model to have the ability to achieve these standards (Lokey-

Vega & Stephens, 2019). The flexibility that technology brings to personalized instruction can help teachers contextualize their teaching practice for student diversity and student accountability for learning (Smith & Throne, 2009). However, the availability of technology itself does not ensure effective technology integration for personalized instruction. Because of this, there has been more focus on the need for professional development that helps teachers learn to utilize technology for personalized instruction (Fok & Ip, 2006).

Professional Development for Personalized Learning

Lin & Kim (2013) don't suggest standards, but instead propose guidelines for designing personalized professional development called *Professional Development for Personalized Learning* (PD4PL) that can support any personalized professional learning endeavor. They list the models previously used in teacher professional development to promote personalized learning, which included Mentor Model (Carolan & Guinn, 2007), Peer-Coaching Model (Klonsky, 2002), Community Coaching Cohort Model (Miller, 2010), Three Approach Model (Sands & Barker, 2004), Coaching Model (Stover, et. al., 2011). It also includes a list of strategies that address the identified challenges; a) the lack of time, b) the lack of continuous support, and c) the lack of knowledge required for personalization to occur. The guidelines provided to inform future development of "PD4PL" include a) developing teachers in context, b) utilizing many means of continuous support (both face to face and virtual), and c) building a personalized professional learning model so that teachers have an exemplar when they return to their own classrooms and attempt implementation (Lin & Kim, 2013).

Summary of the Problem

A careful review of the literature and research yields and understanding that while work to define PL is ongoing, diffusion and implementation is already underway. Perhaps the most vital component to long-term success, educator professional learning for personalized learning, is an area that has yet to be developed to its potential (Lee, 2014). The body of academic effort includes multiple methodologies, leveraging both quantitative and qualitative traditions and encompassing a variety of settings. Additionally, the academic effort around personalized learning is littered with many publications that while not research studies, are still peer-reviewed and add context. By including educational theory and the connections to seminal thinking around personalized learning, we can see that we are not actually at the infancy of a new progressive education movement, but rather find ourselves in the awkward teenage years of self-discovery and improvement. The studies and publications reveal that much work has been done in attempting to define personalized learning, with even more effort directed to investigating implementation. Of paramount value is the realization of the gap which was identified in several studies; there is little research on effective models of educator professional learning for personalized learning. This gap acts as the very springboard for investigating the professional education available to educators wishing to enact personalized learning. Arnesen et al. (2019) have begun this important research, however their study addresses pre-service teacher candidates exposed to a one-hour course. In chapter three, a phenomenographical case study is described in detail which explored in-service teachers' experiences with personalized teaching and learning in an instructional technology graduate course.

Despite many educators and administrators acknowledging the power and potential of personalized pedagogy, research underscores that few are implementing it with fidelity (Patrick, 2015). This lack of fidelity has limited the potential positive impact on learners, who research

shows are in desperate need of a new approach to school (Yost et al., 2009; Van Damme, 2016). Implementation fidelity can be accomplished through an educator professional learning and capacity and confidence building effort (Carolan & Guinn, 2007; Hattie; , 2012). Currently, in-service educators may learn about personalized learning in isolation, without ever having experienced it themselves as a learner, and most never study personalized learning at all (Lin & Kim, 2013; Pane et al., 2015). This disconnect between expected practice, and support for developing the explicit skills required for educators (and learners) to actualize these expected practices is not a new one (Darling-Hammond & Oaks, 2019). A disparity in the amount of time spent in professional learning pursuits and the outcomes seen in the evolution of pedagogy is a challenge many aim to address. Professional learning designed specifically for personalized learning is an area in which additional research is needed (Fok & Ip, 2006; Karmeshu & Negundi, 2012; Lin & Kim, 2013; Lokey-Vega & Stephens, 2018).

Chapter 3 Methodology

While there are many areas ripe for renewal within the educational system, this study specifically addressed an approach to the diffusion of personalized learning as it pertains to teacher professional learning and capacity for implementation. Chapter three provides a detailed description of this study, and the methodology employed by the researcher. A statement of the problem under study and the research questions that will address that problem through this study are first provided, followed by a description of the researcher's worldview. Next, a description of the study context is provided, and data collection and analysis details are offered. Finally, chapter three ends with a discussion of the strategies for trustworthiness and ethics discussed. This chapter prepares the reader to understand all the essential components of this study prior to reviewing the results of the study in chapter four.

This study examined a meta-learning phenomenon in which in-service educator participants learn about what personalized learning is, theoretically, and experience what it feels like to learn in a personalized environment. It aimed to discover how to support the enactment of personalized learning by providing effective learning opportunities to in-service educators. Existing academic literature on personalized learning primarily focuses on one of two topics: a) identifying the core components of effective personalized learning environments and/or b) measuring the impact on student outcomes and success. A clear gap emerges in discovering how best to support the pedagogical transition of educators to effectively implement personalized learning. While Arnesen et al. (2019) have begun this important research, their study addresses pre-service teacher candidates exposed to a one-hour course. Supporting personalized learning practices in this early stage is ideal, however for the millions of educators already in-service across the country, a path towards personalized learning needs to be made clear.

Worldview

Guba (1990) describes a paradigm or worldview as "a basic set of beliefs that guide action." One's view of the nature of reality and the nature of knowledge are keystones to interpreting any study as they provide a lens through which to view the study from the eyes of the researcher themselves. I acknowledge that there is an inherent transformative tilt on my past, current, and future worldview as any innovation or transformation in the public education sector involves politics and a political change agenda to confront social oppression on behalf of all P-20 learners, at whatever levels it occurs (Mertens, 2010). Progressive pedagogies, such as personalized learning, can be situated in a constructivist view of knowledge. This worldview asserts that because knowledge is constructed by the learner it cannot be decontextualized and fixed outside the learner but must be constructed through action in the world. Since the learner is central to the construction of knowledge in the social constructivist worldview, student-centered pedagogies (central to a personalized learning environment) are inherently custom or personal in nature (Fostnot & Perry, 1996; Matthews, 2003). A belief that there should be a link between the researcher and participants allows space for the lived experience of the participants and the researcher which are socially and historically situated. As an original designer of the course, the researcher taught the first section of the course offered in the Summer of 2018, and then assisted in revisions to the course structure and content. Inherent to this relationship is the acknowledgement that power and trust play a role, and so those factors will be discussed. The researcher pursues societal and systemic transformation and elevates choice (their own and that of others) in utilizing methods, techniques, and procedures of research that accomplish these purposes (Creswell & Poth, 2018).

Study Context

This study focused on learners and instructors in one fully online graduate elective course on personalized learning. As described in the review of literature, personalized learning is not a singular nor static model. There are myriad designs and methods of teaching that would fall under the umbrella of PL. The design of this course aligns with a constructivist and progressive model of personalized learning in line with Vygotsky (1978) and Dewey's (1923) theories, rather than a behaviorist and technocentric alignment. The positioning of this course on the PLCF is described in greater detail in this chapter, as well. Though this course is fully online, it is designed to leverage personalized learning pedagogy while candidates learn about personalized learning in a variety of ways. Teacher-participants have control over many aspects of learning.

For educators to meet the demands of schools and districts who are innovating and aiming towards more personalized learning experiences, they must shift their approach and have access to effective experiential learning. For this to be accomplished, providers of educator preparation and professional development must be presented with research-based options for modeling, coaching, and supporting educators and leaders as they participate in and learn about personalized learning. A good way to achieve this is to capture the voice of teachers who are trying to navigate implementation while in this course. In addition, the role of the instructor in the course under study is also an interesting one and worthy of researching. Capturing the instructor's perceptions of their students' experiences can help the triangulation of data and the composite generated by the instructor(s) based on their facilitation of personalized learning, and their perceptions and experiences after co-planning with learners will be included as well. The instructors' experiences in teaching this course on personalized learning are of "special interest",

as this perspective helps the researcher understand the complexity of the course (Stake, 1995; Stake, 2005).

Research Questions

Each of the research questions provided respond to either the case study and/or the phenomenographical nature of the study. Within each question, topics of interest are also provided which are subordinate questions to consider that add to the richness of the study in the ability to triangulate data. By focusing on two main questions, with topics of study within each, the study remains "embraceable", something that the researcher can get their arms around without being too broad, or too narrow (Stake, 2010).

RQ1: How do in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning?

Topics of interest:

-PL Components that are easiest for teachers to understand

-Emerging questions and concerns of participants regarding PL design

-Evolution of understanding of PL

RQ2: How does ITEC 7600 help in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning?

Topics of interest:

-Contextual factors that enable and impede teachers understanding and designing PL.

-Additional experiences that help teachers understand and design PL.

Course Design

The design and development of the course under study was accomplished by two instructors collaboratively and serves as a PL primer-an introduction to the Georgia Personalized

Learning Standards (Table 3). As noted in Chapter Two, these standards were developed by a state professional learning commission task force in response to the increase in implementation of personalized learning across the state. To date, Georgia is the only state to have such standards for educator practice, and there is only one institution (an R2 public university in Georgia) offering this and two subsequent courses which develop these educator competencies and award an endorsement certificate or elective credits, depending on the degree or program in which each graduate student is enrolled. No matter the student status, the objectives of this course remain the same: (1) compare and contrast various visions and definitions of personalized learning, (2) evaluate and plan the use of technologies that support personalized learning environments, (3) explain a mastery philosophy of teaching and provide a list of key classroom strategies that demonstrate this philosophy of teaching, (4) and identify the essential conditions of personalized learning within the student's realm of influence and devise a plan for change that addresses short-term and long-term goals.

The unique combination of elements described in this section illustrate the stance of the two original designers, who align to a social-constructivist view of personalized learning. In aligning this course to the PLCF (originally introduced in Figure 2), one could situate it near "Model C". This positioning indicates a split of roughly eighty percent of the design representing a constructivist approach, and twenty percent of the course design leveraging behaviorist aligned activities. The inclusion of instructor/learner co-planning, learner chosen demonstration of mastery, and socially interdependent generation of content and resources signal that the learner retains much of the power, with the instructor leveraging student-centered pedagogies such as offering choice and opportunity for self-assessment. This course if fully online and leverages automated pedagogy in the form of intelligent agents within the LMS, as well as other

behaviorist components (self-check quizzes). However, the percentage of Academic Learning Time and power assigned to those elements is minimal.

The course includes six modules: (1) Intro to Learning in PL Environments, (2) Varying Visions of PL, (3) Technology for PL, (4) Mastery Philosophy in PL, (5) PL Planning, (6) and Post Reflection. Each module includes a video introduction, module objective and tasks as well as a self-check quiz which serves as a completion checklist with true/false answer format. The self-check quiz is identical for each module and intelligent agents within the D2L Brightspace learning management system are used to only allow a new module to open when current module is completed as indicated by the self-check quiz. An additional intelligent agent is in place which emails students who have not entered class for 7 days.

In modules one and six, the major assignments are a pre and post reflection on teacher-learners understanding of personalized learning. These assignments provide an opportunity for reflective growth. There are not rubrics associated with these assignments. For modules two, three, four, and five assignments are aligned to course objectives, described, and a mastery rubric is provided. To offer an illustration of a module assignment, the module two "Personalized Learning Comparison Assignment Rubric" is provided in Appendix B. Any readings and resources posted within the course are recommended, not required. The discussion board open for each module acts as a crowd-sourced repository of literature, research, and reference material that is gathered and shared by teacher-learners in the course. Complete course information is available in the Course Syllabus offered as Appendix C.

Teacher-Learner and Instructor Co-planning

Vygotsky notes the value of an instructor engaging with a learner to understand their "current conceptions" on a topic as a basis for helping them increase their understanding

(Vygotsky, 1978). The careful inclusion of requisite co-planning sessions where instructors and teacher-participants conference facilitated this engagement. Co-planning sessions were used to plan individual assignments, review evidence of mastery, check in on progress, set goals, and have deep discussions is a powerful tool to model personalized learning (Carolan & Guinn, 2007; Sands & Barker, 2004; as cited in Lin & Kim, 2013). Each co-planning session concluded with the learner documenting the session on an Google Form exit ticket which teacher-learners to capture notes from the session, indicate an agreed upon due date for evidence of mastery, as well as providing a response to the statement "I feel confident that I am ready to demonstrate mastery of this module's competencies" on a five point Likert scale where one is "not true at all" and five is "very true". These co-planning sessions support an instructional design which is infused with as much learner choice over path and pace as is possible, and the collection of these components start to form the personalized ecosystem which acts as a learning environment and an exemplar to those taking the course.

Research Design

This study followed an interpretive approach to research. A qualitative methodology was selected for this study as it elevates the voice of the participants as most important. The aim of the study was to impact educator professional learning for personalized learning and capturing participant voice is the best way to generate professional learning (Darling-Hammond et al., 2009). A qualitative methodology allowed for the researcher to have a personal relationship with the content and participants, and for there to be some emergent flexibility in the design of research following "naturalistic inquiry" (Lincoln & Guba, 1985). However, Hatch (2002), argues that novice and beginning researchers begin with a solid plan, so an inquiry guide was

created with specific interview protocol, as well as a chart to map alignment between data sources, research questions, and informants.

The research design employed constitutes a combination of case study and phenomenography. This combination leveraged what Marton (1986) describes as the empirical research tradition designed to answer questions about thinking and learning, with case studies which provide in-depth investigation of individuals experiencing a phenomenon within its real-life context in order to provide a descriptive and exploratory analysis of a person, group or event (Glesne, 2016; Glaser & Strauss, 1967). Phenomenographic studies intend to "know students" through a small set of idealized types and do this by identifying the qualitative variation in the ways that those students relate to, conceive, or experience some aspect of learning (Bowden, 2005; Bowden and Walsh, 2000; Marton 1981; Marton & Booth, 1997). The implementation of a phenomenographical case study helps the researcher identify the different ways in which participants have experienced the phenomenon under study, and the implications of them experiencing it within a unique setting. Simply conducting either a phenomenography or a case study wouldn't help the researcher reach a deep understanding of the phenomenon under study—learning personalized learning in a personalized bounded system (the graduate course).

Leveraging multiple methods of data collection within the constructivist paradigmatic positioning calls for a qualitative case study. In order to also capture the individual phenomena held by each participant within the very specific case described in this study, a phenomenographical design is also requisite. Other phenomenographical case studies were reviewed for context and form, yet none specifically addressing teacher-learner experiences in meta-learning personalized learning were found. Additionally, no study was located which speaks to the instructors' perceptions of the student experience in a phenomenon such as this.

Stake explains (1995, p. xi) that "Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances." (Stake, 1995). For this reason, a composite is included in this study which focuses on the instructors' perceptions of their students' experiences.

Composite: Instructors' Perceptions of Their Students' Experiences

How do instructors describe the experiences of their students' understanding of PL, and ability to design PL as it evolves during a six-week graduate-level education course on personalized learning?

Topics of Interest

-Critical assignments or course interactions that enable and impede students' understanding and designing PL

-Additional experiences that help teachers understand and design PL

For this phenomenographical case study, the aim is on describing the overall phenomenon as well as including qualitatively detail-rich cases. Following the phenomenographical and case study designs, interviews were conducted individually with those who have experienced the phenomenon under study. The generated case provide insight into the experience of learners (who are also in-service educators), as well as the experiences and perceptions of facilitating professors in the composite. The graphical representation of the key elements of research design below (Figure 3), developed using the Hopscotch Model (Jorrín-Abellán, 2016, 2019), provides additional details for data collection. The following sections in chapter three will describe in detail each of the components included in this visual.

Figure 3

Visual Representation of the Elements of the Study

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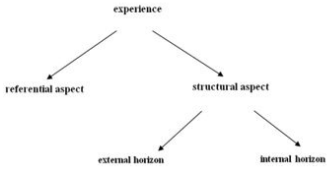
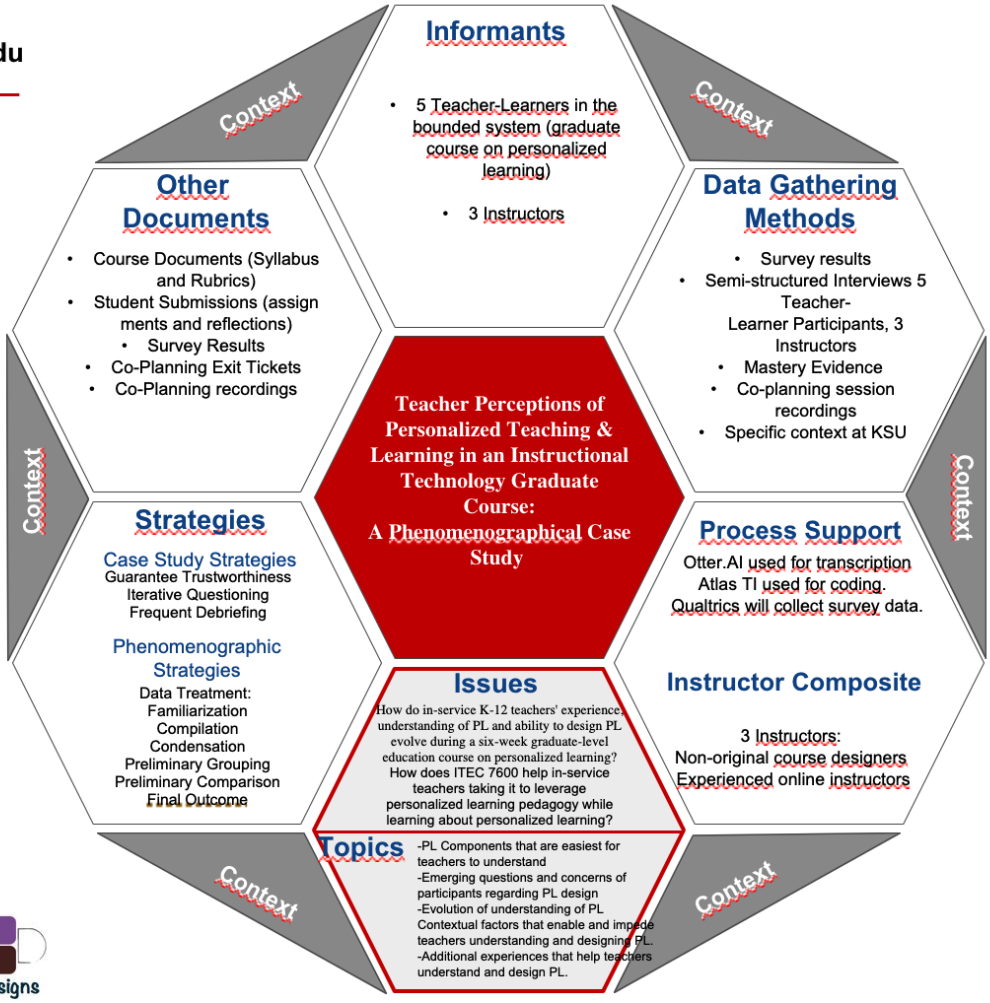
Context of your Case

In 2018, a graduate elective in the Department of Instructional Technology was designed to serve as an elective and course one in an endorsement program for personalized learning. This course covers introductory content and an overview of the standards of Personalized Learning in the State of Georgia. This fully online course is designed to leverage personalized learning pedagogy while candidates learn about personalized learning.

Figure 1. The anatomy of experience (adapted from Marton and Booth, 1997, p. 88)





Hopscotch
Create Qualitative Research Designs

Participant Selection and Description

The participants in this study were selected from a group of sixty K-12 educators that were pursuing a fully online graduate degree or endorsement program at a public University in Georgia and were enrolled in ITEC 7600 in Summer 2020. This course has been taught three previous times to over one hundred learners. Participant selection began immediately after participants digitally consented to participate in the study.

Though all sixty teacher-learners who were currently enrolled in ITEC 7600 were initially invited to participate in this study, only eight responded to the survey. This response rate of thirteen percent is low; However, given the context of a global pandemic and a level of

uncertainty for the future, this rate is understood. For many educators, participating in a research study which would require a commitment of time (albeit minimal) during these trying times was not feasible. From the group of eight that consented to the study, a homogeneous purposive sampling method was applied to identify five teacher-learner participants that had minimal experience enacting personalized learning according to survey results, which resulted in six participants. After several failed attempts to schedule interviews, one participant had to be removed from the study. The resulting five participants are described below.

Description of Participants

The participants of this study included five graduate students pursuing degrees in instructional technology. None of these educator-learners had experienced any formal or informal professional learning about personalized learning before their enrollment in ITEC 7600. Despite never receiving formal learning about or experience in personalized learning, all participants indicated some existing assumptions about personalized learning. Participants range in years of teaching experience, as well as content area expertise. Participants are all female in-service educators distributed across the elementary, middle and high school levels. Bethany is an international educator teaching at a primary school across multiple content areas. Most of her students are non-native speakers of English. She came into teaching as a second career and has no prior experience with learning about or teaching in a personalized learning environment. Bonnie is a veteran Reading teacher in a middle school. Kristina is a mid-career high school Science teacher who teaches resource biology to special education students. Kylie teaches middle school Math and Marsha teaches French at the high school level. Both Kylie and Marsha are early in their teaching career. Participants all demonstrated in initial survey results and their lack of any prior formal or informal experience in learning about personalized learning. Participant information is organized in Table 4 below.

Table 4

Participant Information

Participant Pseudonym	Years of Teaching	Content Area Expertise	Grade Band	Prior PL Experience
Bethany	Induction	International English Educator	3-5	No
Bonnie	Veteran	Reading	6-8	No
Kristina	Mid-Career	Science (Special Education)	9-12	No
Kylie	Early-Career	Math	6-8	No
Marsha	Early-Career	World Language	9-12	No
Instructor Composite	Varying	Department of Instructional Technology Faculty	Graduate Online	No

In addition to the learner-participants, this study also incorporates the perspectives of the faculty in the Instructional Technology Department who teach ITEC 7600. Three faculty were interviewed, and their collective experience and voice will be represented in these findings as a composite. The instructors of this course are all experienced researchers and have also experience teaching in an online graduate environment. None of the instructors were original designers of this course, nor do they focus on personalized learning as their area of research interest. Both the learners and the instructors participate in the shared phenomenon of experiencing this course in the only College of Education at the only University in the nation to currently endorse educators in personalized learning. The instructors under study were neither the original designers of the course, nor researchers in this study, however the instructors are professors who teach fully online instructional technology courses.

The in-service educators participating in this course were in some cases learning about personalized learning for the first time, while others may have already attempted to enact PL in

their classrooms depending on the local educational and socio-political contexts. Selecting from among the participants a group of individuals who have minimal self-reported confidence and/or experience in learning about or practicing personalized learning eliminated some bias that may have existed with others who have had experiences (both positive and negative) with PL. Within this homogeneous purposive/purposeful sampling, the participants all shared the same or similar trait of inexperience, as well as other characteristics (career, graduate student, etc.) which allowed the researcher to select "information rich cases" or those that we can learn the most from to study (Patton, 2007). Having minimal exposure to PL outside of the course, the teacher-learners under study made up just such an information-rich case. The maximum variation technique was applied within the homogeneous group selected to offer variation of grade level and subject areas represented in order to be information rich.

Data Collection

A survey adapted with permission from Olofson et al. (2018) was administered to understand teacher practices that support personalized learning as well as to conduct purposive sampling of study participants (Appendix A). The original survey was developed to measure teacher practices for personalized learning in a middle school setting. These practices were organized into the categories of whole group learning, customized learning, personalized assessment, out-of-school learning, supportive communities, family engagement, and technology integration to support personalized learning. In the adaptation for this study, several practices were removed which did not directly corelate to the standards of personalized learning which frame the course under study. From the data, the researcher generated thick descriptions, engaged in interpretation, and triangulated the findings. Thick descriptions allow readers of the study to gain a sense for what the studied experience would convey (Stake, 1995). To develop an

in-depth understanding of the case under study, multiple forms of data must be collected (Creswell, 2013). In this study, a thick description of the phenomenon under study was accomplished by collecting the following data:

a) **Co-Planning Conversations**

Teacher-learner participants in the course as well as instructors consented to having their co-planning interactions recorded.

b) **Collection and analysis of Course Assignments**

The researcher harvested consenting participants' course assignment submissions from D2L. The Pre and Post Reflection assignments, module assignments, as well as the culminating assignment 'Personalized Learning Plan' were included in the data collected.

c) **Semi-Structured Interviews**

Individual participants were identified and scheduled to participate in no more than two thirty-minute semi-structured interviews occurring at the end of the course. Additionally, the instructors were interviewed individually once for up to one hour at a point in the course which is convenient for them. These interviews were held via secure video conferencing platform or phone which allowed for digital recording and were uploaded for transcription to Otter.ai (Otter.ai Web). The full interview guide is provided in Appendix D.

No additional assignments were required of those participating in the study. The instructors of the course were not given access to a list of consenting participants. These course assignments were aligned to research questions and the data owner in Table 5 below and

descriptions and rubrics for each assignment/activity can be found in the course syllabus (Appendix C).

Table 5

Data Sources Aligned to Research Questions

Research Question	Data Source	Course Assignment/Activity
RQ1: How do in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning?	Teacher-Learners	Pre-Reflections
RQ1: How do in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning?	Teacher-Learners	Post-Reflections
RQ1: How do in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning?	Teacher-Learners	Personalized Learning Plan
RQ1: How do in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning? RQ2: How does ITEC 7600 help in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning?	Teacher-Learners and Instructor	Co-Planning Session Recordings
RQ2: How does ITEC 7600 help in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning?	Teacher-Learners	Teacher-Learner Interviews

Composite: How do instructors describe the evolution of their students' understanding of PL, and ability to design PL as it evolves during a six-week graduate-level education course on personalized learning?	Instructor	Instructor Interview

Data Analysis

Qualitative research benefits from multiple sources of data like interviews, documents, and observations in order to triangulate data. Specifically, in a phenomenographic case study, data from semi-structured interviews is essential in order to offer the interviewees several ways to describe the phenomenon under study and to articulate their experiences (Akerlind, 2005: Green, 2005). Creswell (2013) notes, "Case studies often end with conclusions formed by the researcher about the overall meaning derived from the case" (p.99). In this study, the researcher developed meaning from the experiences of learners in a graduate course on personalized learning. Interviews and co-planning sessions were recorded and transcribed with Otter.ai. All other data are text based and were uploaded directly for data analysis using ATLAS.ti (ATLAS.ti 8 Mac) which leverages algorithmic computing power to analyze all text data uploaded. Organizing data was my first work as a researcher. I generated primary documents and grouped them into families. Next, coding began, and followed the "in vivo coding" strategy (Glaser & Strauss, 1967), which allows for the language used by the interviewees and participants to create initial open codes. These open codes were used to generate thematic and segment maps as well as any other pertinent data visualizations that aided in the final reporting of results in this study. A key component of a phenomenography is the process of analyzing data gathered in the study (González, 2010). Steps one and two of the González approach are the open coding phase. Steps

three and four are equivalent to axial coding, followed by selective coding in step five. Step six is specific to a phenomenography. In this final phase, the different ways in which a phenomenon is experienced in a cohort as well as how the researcher has interpreted those experiences are derived.

Step 1. Familiarization step: the transcripts were read several times in order to become familiar with their contents. This step corrected any mistakes within the transcript.

Step 2. Compilation step: The second step required a more focused reading in order to deduce similarities and differences from the transcripts. The primary aim of this step was to compile teachers' answers to the certain questions that have been asked during interviews. Through this process, the researcher identified the most valued elements in answers.

Step 3. Condensation step: This process selected extracts that seem to be relevant and meaningful for this study. The main aim of this step was to sift through and omit the irrelevant, redundant or unnecessary components within the transcript and consequently decipher the central elements of the participants' answers.

Step 4. Preliminary grouping step: the fourth step focused on locating and classifying similar answers into the preliminary groups. This preliminary group were reviewed again to check whether any other groups show the same meaning under different headings. Thus, the analysis presented an initial list of categories of descriptions.

Step 5. Preliminary comparison of categories: this step involved the revisions of the initial list of categories to bring forth a comparison among the preliminary listed categories. The main aim of this step was to set up boundaries among the categories. Before going through to the next step, the transcripts will be read again to check whether

the preliminary established categories represent the accurate experience of the participants.

Step 6. Outcome space: in the last step, the researcher sought to discover the outcome space based on their internal relationships and qualitatively different ways of understanding the phenomena. The phenomenographic outcome space describes the different ways, in which a phenomenon is experienced in a cohort. It also describes the different ways, in which a researcher has interpreted how a phenomenon is experienced in a cohort.

Trustworthiness Strategies

In conducting qualitative studies, four criteria should be considered by researchers in pursuit of trustworthiness (Shenton, 2004; Guba, 1981). The first of these criteria is credibility (in preference to internal validity). In this study, the researcher seeks to confirm that all findings are in line with reality and with what informants in the study believed/shared. In order to accomplish this task, the adoption of well-recognized research methods ensures a procedural failsafe is in place. Studies conducted which leverage a phenomenographical case study methodology provide a rich ecosystem of exemplars ensuring congruence (Woollacott et al., 2013). The combination of two well-known methods in qualitative research help to ensure the credibility of this study if in fact they are well conducted.

This study also leveraged several diverse data collection methods for triangulation. The combination of different data collection methods (interviews, assignments/reflections, member checking) from different informants the student participants (of key importance) and instructors at different times created a thick description of the phenomenon under study and the selected cases (Guba, 1990). An examination of literature and previous research as well as a complete

description of the background, qualifications, and experience of the researcher is included as well. Another specific tactic to ensure trustworthiness and participant honesty is that the primary researcher did not enroll their own students until after final grades were submitted, meaning that there is no power of the researcher to impact course outcomes for the student participants in this study, nor for the instructors whom were not supervised by the researcher in any capacity.

Perhaps of paramount importance to this and any study is that it denotes transferability (in preference to external validity/generalizability), or the potential impact findings of this study have when applied to other situations. Such application of findings to the wider population should be the goal of any qualitative research, and in the case of this study, there is valuable insight to be gained in review of the details and descriptions presented. In fact, a primary reason for selecting a phenomenography is to promote the "Naturalistic Generalization" (Stake, 2005) of the findings gathered in this study by seeking deeply personal and relatable experiences of participants which readers can connect with and align to their own realities. Much background data and a thick description of the context and phenomenon in question ensure this transferability.

All processes within this study are reported in detail, and an in-depth methodological description, and the overlapping methods employed ensure dependability (in preference to reliability). Should any future researchers wish to repeat this work, it would be possible to do so. Strengthening the dependability of this study is the inclusion of an externally validated survey instrument created by a preceding study. To ensure that findings are the result of the experiences and ideas of the informants rather than the characteristics and preferences of the researcher, several strategies are employed. First, as the researcher, I admit that my assumptions are that

participants in this study will share personal experiences and feelings regarding participating as a student in a personalized learning course which may change their own assumptions and/or practice. In fact, prior to conducting this research, I have experienced first-hand the impact of a similar phenomenon on my own practice and assumptions about learning, teaching, and professional development.

Confirmability (in preference to objectivity) is also strengthened by recognizing this study's shortcomings and seeking "opportunities for scrutiny of the project by colleagues, peers and academics"... is welcomed as is "...feedback offered to the researcher at any presentations (e.g. at conferences) that are made over the duration of the project" (Shenton, 2004, p. 67). Triangulation, an in-depth methodological description, as well as the use of an audit-trail (Hopscotch Model) will help me ensure the confirmability of my study. Diagrams will be included to demonstrate added confirmability, as well as the triangulation of data to reduce the effect of investigator bias.

Ethics

In line with university requirements, this study was reviewed by the Institutional Review Board (IRB) prior to initiating any research activities. Initial informed consent was provided and acknowledged by participants, and every effort was made to ensure that participants were not harmed, and that their privacy was maintained. All learners and instructors were initially recruited for this study. Recruitment of learner-participants occurred within the online learning management system via announcements and course notifications. A Qualtrics survey (Appendix A) is leveraged to obtain initial informed consent, as well as to identify those willing to

participate in the data collection process. While consent is not inclusive of data, it was collected first, and these procedures were tied to the survey data collection as well.

Consent for participation was collected as soon as possible after IRB approval was granted. A D2L course announcement, as well as an email from instructors provided the invitation to participate in the study. Potential participants were provided a digital copy of the attached consent form and a cover letter with a link to a Qualtrics consent form in this D2L announcement. This consent was collected electronically using Qualtrics. Within the Qualtrics consent questions, participants were invited to participate in all, some, or none of the study. The informed consent described this for the participants. If participants consented to allow the researcher to use their course assignments, survey responses, or participate in an interview, the participant provided a name and contact information.

Once instructors were invited to participate, it became apparent that though there was a willingness to participate, there were hesitations and concerns. Something that the researcher had not fully understood or planned for was the dynamic of power implicit to the relationships among the instructors (all colleagues) within an academic department. There were some concerns that could be easily addressed, and others which required a rethinking of the role that the instructor voice would play within the study. For this reason, a composite is offered rather than the individual perspectives of the instructors.

An ethical decalogue generated by the researcher provides insight into the commitment and understanding of ethical standards (Glesne, 2016). The decalogue provided below was generated by the researcher to synthesize the ethical considerations for this study.

1. Maintaining a solid and sound research design and methodology is so vital to maintain an ethical study. Ensuring that the methodology and procedures are in line with your selected design will keep guardrails on your study and help participants know what to expect.
2. Informed consent is essential in ensuring an ethical study. It should be well-written, comprehensible, accessible by all participants, and offered at multiple points should the study require adjustments.
3. Do no harm: Remain committed to eliminating any threats to participants in your study. Take steps to ensure that above all, they experience to harm (physical, mental, emotional, social, etc.)
4. Confidentiality must be maintained. Do not share any participant information that may come via interview, survey, or other data collection that isn't scrubbed for all personal information and take steps to ensure that even when it is impossible to remain anonymous, participant information is kept confidential.
5. Reliable coding practices and data collection tools eliminate ethical violations by not eliminating or over exaggerating any one data point or participant.
6. Reflection can assist researchers in identifying obstacles or challenges to ethics in real-time as well as in review of the study at large. This audit trail is requisite, not just preferred.
7. A relationship of trust between the qualitative researcher and the informants/participants is essential and maintaining this healthy research relationship can be achieved by using clear protocols, reviewing expectations, allowing for a partnership approach to the research environment and eliminating as much is possible, the power dynamics at play.

8. Be true to qualitative research, understand its structure and its limitations. There are subscriptions in qualitative research when ethics are involved that differ from a quantitative study, and these are important to note and continuously study and refine.
9. Gaining internal review board approval will hold a researcher's planned practices against an ethical requirement and signal to participants that the study is approved to this end.
10. Accessible and equitable research instruments and data collection protocols ensure that all participants are represented appropriately. These surveys, focus groups, and interview questions should be written in a way that is culturally responsive, and free from bias.

Timeline

This study took place in the summer of 2020. During the spring of 2020, a prospectus was provided to the researcher's dissertation committee for review, edits, and approval. A concurrent IRB application was submitted and approved. Activities of the study including participant selection, data collection, interviews, transcription, and initial qualitative analysis took place between May 2020 and July 2020. Study findings and final data interpretation and analysis were completed in August and September of 2020, allowing for submission of the study as a dissertation for defense in October 2020. Table 6 below provides a study timeline.

Table 6

Study Timeline

March 2020	**April 2020**	**May 2020**	**June 2020**	**July 2020**	**August 2020**	**Sept 2020**	**October 2020**	**November 2020**
*Draft of Prospectus *IRB App	*Edit *Submit Proposal	*Study Begins	*Data Collection *Participant Interviews	*Data Collection *Participant Interviews	*Data Interpretation and Analysis *Drafting Findings	*Draft Findings *Edits	*Final Edits *Submit Final	*Defense *Submission to digital commons

Limitations and Strengths

The researcher recognizes this study has limitations: (a) my role as an original designer of the course under study may create bias. The study reflects a small population who participate in a very specific phenomenon. This is actually a strength, as this is a phenomenographical case study focused on the qualitatively different ways individuals experience the phenomenon. The resulting research reveals new insights regarding professional learning for personalized learning, and a qualitative research tradition was chosen as it allows for a small sample size. Using purposive sampling the researcher will gather detailed personal insights from educators who experience the course as their first exposure to personalized learning (Patton, 2007). Identifying and working to eliminate my own biases as one of the original designers of the course will be necessary, however, as such, my desire to make iterations and improve the course are motivation for gaining honest and constructive insight from participants. The strengths of this study include: a) a well-designed study with triangulation of data; b) thick descriptions of experiences and perceptions provided by the participants, both of which allow for transferability of the research to other contexts (Guba, 1990); c) the innovative nature of the research design proposed investigating personalized meta-learning.

Chapter 4 Findings

In this chapter, an overview of the thematic findings of the study are provided, and specific data is shared. Over the course of the study, the three major themes that were uncovered in the data were Teacher-Learner Knowledge of Personalized Learning Components**,** Questions and Concerns about Personalized Learning, and the Context and Experiences that Enable or Impede Personalized Learning. Each of these themes have various categories within them, and are informed by all participant experiences, learners and instructors alike. The findings of this study will be presented thematically. Each of the themes is described, most importantly through the participants' voice, and quotations are used to support the any analysis made. These themes are then grouped into categories and presented as the 'outcome' space.

Theme 1: Teacher-Learner Knowledge of Personalized Learning Components

In order to understand the ways in which K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning it is essential to look at the components of personalized learning as they emerge in the data. The components of personalized learning in this analysis were derived from the standards for personalized learning that learners are held accountable for within their state. It is important to note not only that learners experience these components, but that they show their understanding and ability to incorporate these components into their own thinking and planning for personalized learning. They also simultaneously participated in the course as learners and demonstrated that level of conceptualization at the same time as they were experiencing these components modeled. These three data points can be triangulated to determine ease of understanding.

Asset-Based Dispositions

The first component of personalized learning under review is Asset-Based Dispositions which is defined as action, language or speech that expresses value for individualities, differences, and diversity of peers and other educators rather than emphasize differences as deficits. This component was not found in the course materials, and when it did appear present in interviews, it was reflective about participant's own practice or strengths. In her interview, Martha mentions this component when she stated, "I believe that there is no such thing as learning being impossible or that kids learn better than others" (MC Interview). She went on to describe herself as an "outside the box person. I think outside the box, I do everything outside the box. And it's hard for me to see inside the box... when I'm teaching, I always relate better to those that are outside the box in that moment, where most people is a child that can't learn but me I believe that all children can learn." This relates to seeing her difference in preferred modality, and her individual attributes not as a hindrance to her success, but as a vehicle to connect and expand the opportunity to succeed for her students. Bethany, in reflection, talked about her own background in visual arts, viewing it as an asset to her success in the course. Specifically, she didn't find the creation of varied mastery artifacts "particularly challenging". None of the other teacher-learners or instructors provided any mention or evidence of an asset-based disposition. The data analysis process calls the researcher to not only look at what is presented, but also, what is missing.

Authentic and Adaptive Assessment

The next component of personalized learning is Authentic and Adaptive Assessment, which is defined as collecting evidence of mastery using varied and data-rich performances that are on-going, authentic, flexible, and relevant. Instructor Three noted,

> …there are a lot of ways to showcase their mastery of learning in the course. And I think that is very helpful. We don't have one like, 'cookie cutter' for all the artifacts, they can choose different media, different modality. They can do a video, a paper pamphlet eBook…there are a lot of ways that they were able to show their mastery in the standard and also show their creativity.

Learners in the course included choice-based mastery assessment in many of their assignments, and from the beginning of the course, conceptualized this component and incorporated it into their own developing visions for personalized learning, even if practically activating this component may be difficult in reality. Kristina mentioned in her assignment on mastery philosophy that "multiple versions of mastery assessments available so that students don't take the exact same version multiple times". Additionally, in her post-reflection, Bethany illustrates her thinking about assessment in a personalized environment saying,

> ...thinking about like giving them a final assignment, and then having them come to me with their ideas, was a new thing for me. Because usually what we would do it feel is like, Okay you guys we're gonna talk about your plant adaptation, you can make a PowerPoint or make a poster, you get to choose... so now it's like, we're going to do plant rotations. Tell me what you want to do, and I like the idea of having to like fill out a Google form and then I could call them up, talk about their idea. And then hopefully send them off to, to go work on it.

Dynamic Communication

Another PL component is Dynamic Communication, which requires facilitating communication that flows multi-directionally from all stakeholders to meet learner needs in a variety of flexible formats. It was not until the final assignment and when it became required did

any learner indicate an emerging understanding of this key component. Martha used a series of 'I can...' statements in her personalized learning plan and included the following: "I can give them multiple avenues of communication and opportunities for an on-going conversation." Bonnie, was reflective in her interview about the course as a model for dynamic communication, saying that instructors "had different appointments no weekly one we could log on and plan through what that project was". Bethany appreciated communication in the format of feedback which was, in her words, "so incredibly prompt and quick". Though learners seemed to appreciate the communication within the course, which is strategically dynamic, they did not focus on incorporating dynamic communication at a high level in their own practice within their own plans and assignments.

Expanded Collaboration

Expanded Collaboration is the next component of personalized learning and is coaching learners to effectively collaborate using tools and strategies to acquire real-time feedback and data, while building relationships that foster success, and commit to timely personal interaction (co-plan, monitor progress, provide feedback, reflect and celebrate, etc.). Instructor One reflected,

> Co-planning is there even just to relieve the students' fears that they're not picking the right thing, because I think one of them in a co-planning session, maybe she did it, like on the visions maybe, I think she didn't pick a good source for the vision, because it didn't have enough information. And, she didn't know that until she got feedback that she wasn't comparing and contrasting, and then she's like, 'Well, I didn't, you know, I don't have enough to go on or whatever'.

Without this essential piece of co-planning, there aren't natural opportunities for collaboration within a learning environment between the learner and the instructor. Instructor Two said, "The co-planning guide helped provide a framework for what co-planning could look like in a K-12 environment. Many found this to be helpful and their work demonstrated that they were trying to apply it." Kristina sees herself planning for co-planning collaboration in the future saying, "...conferencing, kind of like what y'all did with us, but maybe not as frequently but like major like midpoint of the semester, you know, just to check in with students", would be possible in her context.

Flexible Education Resources

Providing the learner access to flexible resources when co-planning unique ways to master competencies. These include, but are not limited to, the resources available in the digital content ecosystem. Flexible Education Resources is another essential component to personalized learning. During her interview, after the course, Bethany shared,

> I've been like trying to do some more like looking at Khan Academy, how to use formative assessments to make small groups, you know, I'm assuming based on what's happening the kids aren't going to be able to go and like play games together because we're having to limit close interaction. So being able to offer them like online games or one-person math games and like, I don't know I haven't figured it all out yet, but I think my main focus is going to be math because I think that's an easy place to start. And from what I've seen from Khan Academy, the like technology tools it offers will, like, make my life a little bit easier and give the kids direction.

Bethany is beginning to see that leveraging tools like the adaptive assessments offered by Khan Academy will allow learners some flexibility and release her from creating individualized plans.

Within the course, Instructor One noted some learner resistance to the flexibility of resources required, recommended, and offered. She mentions, “I think some of them also felt insecure about the quality of the resources they chose and weren't sure if they were quality or not. So, if there's something to fix it might be a checklist of how do we know a source is credible and quality.” Bonnie, in her final plan says “I must provide an assortment of tools for my students to choose how they will master their learning. I need to allow them to choose things that interest them. Also, students will be allowed to repeat content as needed or try different content options to succeed.” The balance between providing all, some, or none of the resources to learners and learners choosing their own resources can be aligned to the PLCF domain of power. This continuum is but one indication of how varied each approach to personalized learning can be. The connection Bonnie made between the tools, choice, and a mastery mindset is a natural one, and leads into the next component.

Growth and Mastery Mindset

A Growth and Mastery Mindset is also a critical component of personalized learning, and one that many of the learners notice and approach early in the course. It is defined as a perspective or attitude toward learning that views it as an ongoing progression of continuous growth and improvement towards new understanding and mastery of interdependent competencies, rather than an end point of either success or failure. As noted by Bonnie in her assignment during the second week of the course, “Students have a deeply ingrained fixed mindset that prevents them for opening up to the possibility of growth mindset. This could be challenging because their attitude could affect their performance and progression towards mastery.” Instructor Two notes,

> Based on their comments shared with me during co-planning, they seemed to enjoy the mastery learning assignment the most because it was something new to them. They also began to perceive ML as a necessary component of PL. Several students shared their concern of implementing ML in a traditional K-12 classroom. We talked about how k-12 students could be allowed time to work on mastery, but that they would need to move to the next unit after a period of time in order to work on learning all of the required standards in the class or grade level.

Martha notes a similar sentiment in her final assignment, the personalized learning plan, saying,

> My school has adopted standards-based grading and both courses I teach are a part of the International Baccalaureate/Middle Years Programme with high expectations. Even though students have experience with this type of grading in previous levels, it is still an adjustment for both students and parents. Even though grading expectations and guidelines are explained at the beginning and throughout the course, students can get frustrated with their performance or the different forms of grades they are receiving.

In these examples, it is clear that developing a mastery philosophy is a constant work in a personalized learning environment, and one in which even learners need development. There is an excitement about enacting a mastery path of learning, but hesitation about systems and policies that do not align.

Individual Path

One of the most identifiable characteristics of personalized learning is that it allows for an Individual Path, where learners are aware of competency-based learning progressions and make informed choices in co-planning a unique pathway and pace towards mastery of the curriculum. Kristina, in her mastery philosophy assignment, speaks about a flipped learning

model, and how an individual path can be demonstrated as learners “can review content as many times as needed”. Kristina also connects an individual path to mastery in that “the traditional model, scheduling of lessons and content is typically based around a pacing guide designed to address all the material within a certain time frame, usually tied to state testing. With mastery learning, the students' pace is what sets the schedule.” The option of an individual path is one component that motivated at least one learner to sign up for the course. Kylie said that her “biggest interest was, like, a self-paced kind of format, it was really like, something that really drew me in.” Kylie continued by saying,

> I think that not a specific assignment, but, the layout of the course where like, kind of a conditional release, the mastery, when we did the unit over mastery learning. That really helped me understand, and the course really, I feel like exemplified like, you master this concept you move on to the next concept. There are different kinds of strategies to be implemented within personalized learning. So, like the mastery learning was probably my favorite group.

Kylie’s reflection in her interview showcases the interconnected nature of the components of personalized learning. Where, in this case, individual path and mastery are intertwined. It can be determined that individual path, because it was experienced from day one of the course, is one of the first components to be understood by learners. It is also clear that individual paths are difficult to manage without the other components in place. Instructor Two described her experience with individual path somewhat challenging, stating that “sometimes the grading is hard to keep up with. It's because people are at different places along the way and you don't want to hold them up.”

Learner Agency

When the teacher and/or instructor in the environment assumes an imbalanced proportion of responsibility for being the agent of action, then true Learner Agency cannot develop. Learner Agency is defined as the process by which learners advocate for their own needs, preferences, and interests to plan and drive their learning. Bonnie describes this necessary agency in her interview saying "I mean it's more than just ownership they've got to drive and got to make that push of desire, you know, to experience, to be a true experience, and not just check the box but to learn the material." In the technology tools for personalized learning module, Kristina sees the ability of technology tools, when included intentionally, to empower agency in students saying that leveraging a mind mapping tool, "provides students with an opportunity to generate questions of their own, so that when they return to class, they have specific questions and concerns they can address with their instructor about the content." Bonnie shed light on the need for students to not only be required participants, but to be motivated intrinsically to become the driving agent of action in their own learning journey. At times, as noted by Instructor Three in her interview, learners "do not review the syllabus, even though all of those things are laid out. Many students did not really look through that" which led to some difficulties for some. This provision for agency does not ensure the activation of agency, after all. Sometimes this can be due to deficits in the ability of learners to activate the skills of executive function, the las component of PL.

Prioritized Executive Function

The final component of personalized learning is tied to each of the others. It is a necessary foundation upon which all other components are built, and as such it has been prioritized. Prioritized Executive Function is an umbrella term for the complex cognitive processes that serve ongoing, goal-directed behaviors (i.e. Meta-cognition, self-regulation, etc.).

Many of the core processes of personalized learning rely on learners' executive function skills. Kristina notes in her ideas for supporting learners in their development of executive functioning in her personalized learning plan. "What I'm hoping to try to do is model as much as I can. When we get back, especially the executive functioning, and those kinds of things, because these kids typically are not good time managers." In her interview, Kristina goes into more detail,

> Really looking for more ways to give them choices. You try to do that as much as you can. Anyway, but realizing that it's not just giving them a set of activities that they can choose from that they can just, you can say here is your end game, you decide how you want it to look. And that I'm always a little nervous about doing that with them, but I really want to try to do more of that in the future when we come back.

This reluctance to give up power is natural when executive function skills are lacking in your learners. Upon finding this example repeated in different ways by several participants, another thematic grouping emerged.

Acquisition Timeline

The progression of understanding and designing and incorporating the components of occurred at different points for each participant. In seeking to map out this acquisition path, the researcher created a matrix view of each component of personalized learning. Eliminating the interviews, and only focusing on the first indication of conceptual mastery, the variation among learners is evident. The qualitatively different ways that each participant experienced teaching and learning about PL are clear to see. Below, in Table 7 is a breakdown of the acquisition timeline as found in the data for each participant aligned to the six-module course progression. It is important to note that there is no requirement for the order in which learners move through course modules two, three, four, and five, only that they must complete a module demonstrating

mastery prior to the content for any other modules to open for them. The following codes are used for the PL components; Growth and Mastery Mindset (GMM), Authentic and Adaptive Assessment (AAA), Asset Based Dispositions (ABD), Flexible Educational Resources (FER), Expanded Collaboration (EC), Dynamic Communication (DC), Individual Path (IP), Learner Agency (LA), and Prioritized Executive Function (EF).

Table 7

PL Component Conceptualization Timeline

Participants	Module 1 Pre-Reflection	Module 2 Visions of PL	Module 3 Technology for PL	Module 4 Mastery Philosophy	Module 5 PL Plan	Module 6 Post-Reflection
Bethany	GMM	AAA EC LA EF	FER			
Bonnie	LA			GMM	FER DC	
Kristina	IP			GMM AAA EC IP		
Kylie	GMM LA EF		EC IP		DC	
Marsha	GMM		AAA		DC EC LA EF	

Four participants, Bethany, Bonnie, Kylie, and Marsha, all showed an understanding of one or more components of personalized learning before ever embarking on the course. Of the components found early on, Growth and Mastery Mindset occurred most often. This data confirms that in this participant group, Growth and Mastery Mindset is the PL Component which is easiest to understand. Prior to any formal instruction on the concept, teacher-learners could

conceptualize it and align it as essential to PL. The continuing evolution of teachers' understanding of the components of PL based on their course assignments is also provided.

Asset-Based Dispositions was a missing component of PL in the evidence of mastery for all learners for the entire collection of assignments. It was included in some interviews, but never in the duration of the course through assignments or coplanning. The maximum number of components that any participant mastered, based on conceptual evidence, was six. This course serves as an introduction and does not require mastery of every standard.

Theme 2: Questions and Concerns About Personalized Learning

Many of the questions and concerns of participants regarding the design of personalized learning are found in the pre and post reflections of learners, as well as in learner interviews which took place at the culmination of the course. In all cases, these questions and concerns can be aligned to one or more of the following codes: Implementation: Risks and Challenges, Implementation: New Perspectives, Role of the Teacher, and in some cases, even in Prior Knowledge/Experience, specifically as it pertains to participants' preliminary questions and thoughts about personalized learning. Any prior knowledge that participants have constructed about personalized learning could impact underlying motivations for taking this course and these assumptions are often addressed as questions as they develop a deeper understanding of PL. For example, Marsha came into the course from a context that created an assumption about mastery. During her co-planning sessions, and through the module on Mastery, she was able to ask questions and gain clarity. In her interview, she had the following to say,

> We are Google Chrome County, and we're at the stage where we think that because we are one to one, we know everything. And that's it. When we don't realize that it's a tool, right, like before I started this program with instructional technology, I did not know. I

> didn't know that there was more to personalized learning. They don't ever talk about having to integrate technology standards and making sure it's rigorous and making sure that we're using the tool to produce engagement And, you know, creativity, right, and measure mastery.

Her statement sheds light on a concern about her own district approach and context which emerged for her once a level of understanding about PL was met. Marsha also addressed concerns she had with the attitudes of some of her teaching peers,

> I will promise you this as a candidate in this program it is a headache, when I get back to school and I hear teachers talk and, and in ways that just don't make sense they say things like, "well, how am I supposed to be able to teach online and teach in the classroom. How am I supposed to plan for these kids and those kids, too?" OK. That's not what you're doing, it is personalized, you're giving children what they need, whether they online or at home, you can do both at the same time and know those children that are online, do not need another teacher. If they are on your roster you can make it happen. You can do it.

Although not a concern with the content or understanding, this example illuminates a concern relative to the environment in which she will attempt to enact PL.

These concerns about implementation (risks and challenges), were evident in both the context and perspectives of the learners themselves, in their review of various visions of personalized learning, and, also by the instructors in the course. One of the instructors said, “I think that sometimes the grading is hard to keep up with. It's because people are at different places along the way and you don't want to hold them up.” Another instructor, speaking about questions or concerns raised by her students, shared, “Some students did indicate that they

thought it would be difficult to implement co-planning in K-12." Kylie's context raised implementation concerns for her as well. She shared,

> I see the challenges like I am on board with personalized learning, but I am aware of the challenges that are presented in the county that I teach. I feel it's very micromanaged and you know with curriculum and pacing guides and all this…things and you have district assessments, then I could see where there would be difficulties in implementing personalized learning.

These new perspectives of implementation occur through the process of unlearning and deconstructing existing assumptions, which does include some questioning and concern, but also includes excitement at new possibilities. Even in her moments of concern, Marsha still remains hopeful that when educators know better, they do better.

> Teachers who have not been through this class before don't know how it's (learning) gonna look different for everyone and how it is going to be different, because as teachers we want to be in control. Yeah, but really, we've got to let go, and we've got to communicate with the kids to lead us where to go.

This question or concern over the role of the teacher in a personalized learning environment was consistently found as learners addressed their practice. Kylie, when asked about her shifting perspectives, shared,

> I guess as a teacher, I feel like we can be very controlling just because it's in our nature, and there is, you know, there's great benefits from releasing control and giving the learner freedom …

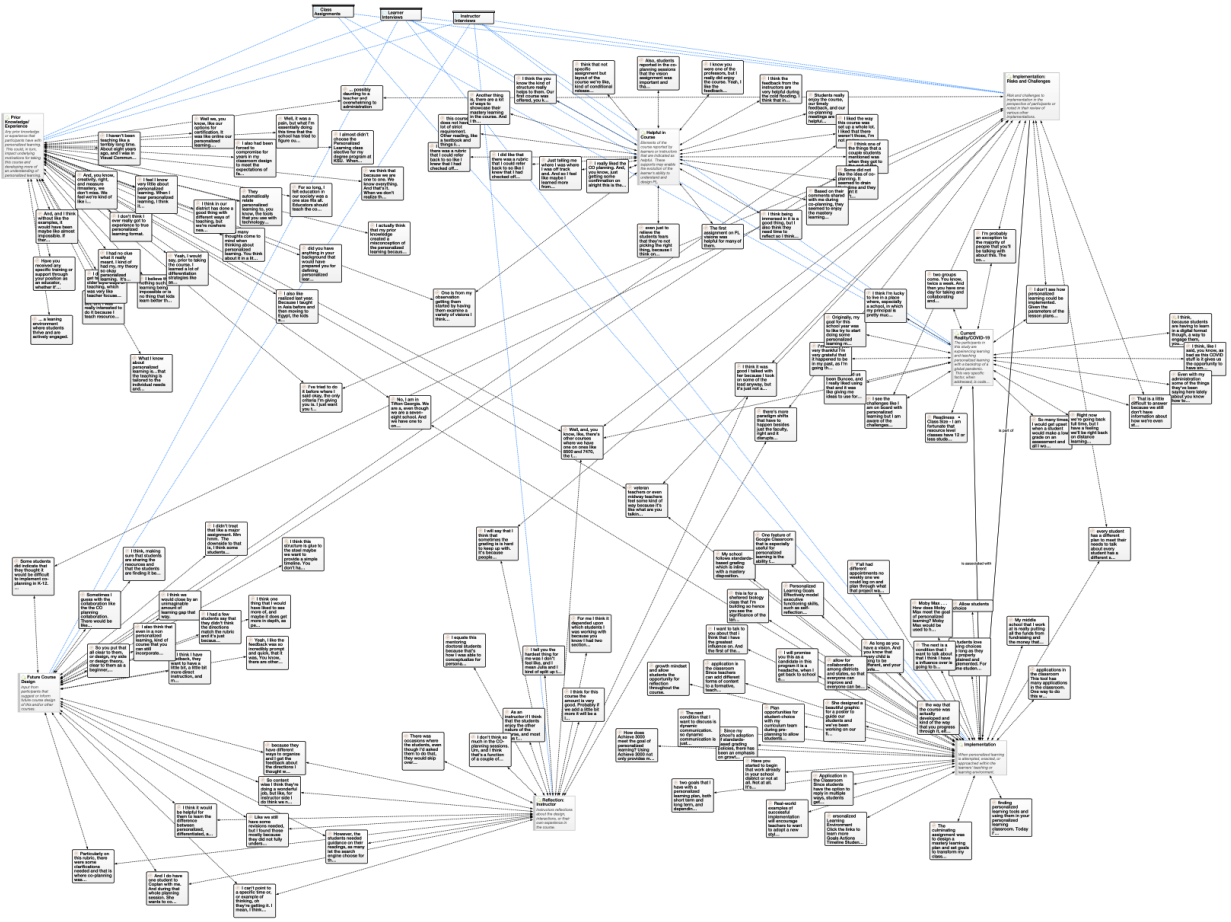
Kylie shared these thoughts at the end of the course. She had to address her role as a teacher throughout the semester and in each module. Acknowledging this shift in perspectives is also to

acknowledge that along the way, her assumptions and beliefs were challenged through questions, and at times, concerns.

In order to demonstrate the triangulation of data within this theme, a network view is provided below showcasing the overlap among learner interviews, course assignments, and instructor interviews.

Figure 4

Network View of Theme Two Data Analysis



Theme 3: Context and Experiences that Enable or Impede Personalized Learning.

The participants in this study are experiencing this course within a very specific context. They bring with them their own prior knowledge, experience, and assumptions, as well as the

contextual factors that contribute to the current reality of their local school, the district, and the state. They each experienced this course within the national and global context of a pandemic, and this research would be incomplete if it didn't include the ways in which Covid-19 impacted teachers' growth in their understanding of personalized learning, and ability to design for it. Learners in this course also indicated some elements of the course (whether through design or challenges encountered or helpful components) that had an impact as well.

Prior Knowledge and Experience

In all that we do, the very specific ways we experience life, our own previous experiences, play a role. It was, then, very important to understand the prior knowledge and experiences of participants in this course. Not only does this include preconceptions of personalized learning, but deep trenches of belief and one's own philosophy of teaching and learning. These ruts in the cognitive road of learners in this course were some of the most challenging elements for them as they formed new paths of thinking and action. Kylie indicated a misconception that raised questions for her at throughout the course, saying,

> I actually think that my prior knowledge created a misconception of personalized learning because coming into the course, I really didn't understand the difference in personalized learning and differentiation, and this is actually something that I talked about I think, in my initial video and in my reflection video because I really thought that it was like, you know, you differentiate the work and make it personalized.

Another learner, Bethany, brought some prior experience which developed a motivation in her that gave her momentum in the course,

> I also like realized last year, because I taught in Asia before and then moving to Egypt, the kids are very different. They're not as studious. So, I had, I had a lot of lower kids

> than I've had before. And I was like, after the first-year teaching, I was like man I really don't feel like I am giving them all that I can.

Bethany experiences interesting challenges in her current teaching environment, not only because she is teaching abroad, but also due to her students learning English at the same time they are learning all the content.

> Originally, my goal for this school year was to like try to start doing some personalized learning. My like big goal is math workshops, but obviously this year didn't go as planned, so that didn't really happen. So now it's like well maybe next year, I can start to implement that. And it was just an inner goal of like how can I really help by low students achieve more but also like my high students like to give them so they're not bored, like I just I felt like I wasn't really getting to address my low kids and I wasn't really getting to address my kids, and it kind of makes you feel like sort of shitty as a teacher.

Bethany's concerns were heightened by the lack of clarity around even the format for how the school year would begin, saying at the time of her interview in June that "So we don't know if it'll start online and then move to hybrid or just start hybrid."

Current Reality

Similar contextual uncertainties were presented by participants within the current global pandemic reality. Kristina indicated that she also was in a bit of a holding pattern as far as the start of school was concerned, "Right now we're going back full time, but I have a feeling we'll be right back on distance learning at some point." Kylie shared frustration that she is being required to utilize preformatted lesson plans. When asked about how planning for personalized

learning may look for her this year, her response was, “I'm probably an exception to the majority of people that you'll be talking with about this. The county that I work in is doing digital. And we actually are being forced to use county made lesson plans.” She continued to express how this context would challenge her ability to design personalized learning experiences, saying,

> I don't see how personalized learning could be implemented. Given the parameters of the lesson plans were being given and required to implement and being digital, it'll still be digital. And I'm sure there will be like, discussion boards as the format of collaboration. I'm just not sure what that looks like right now.

Despite all the challenges of uncertainty and shifting expectations Covid-19 brought, some participants expressed some excitement around what possibilities can be found. Kylie shifted her perspective and shared,

> “I think, because students are having to learn in a digital format though, a way to engage them, you know, during this time would be a personalized learning approach just because, you know, that's how you're going to get their attention and real them in and really hold them accountable for their learning.”

Bethany stated, “I think, like I said, you know, as bad as this COVID stuff is it gives us the opportunity to have smaller class sizes as opened up so many possibilities.” Marsha shared her perspective in supporting leaders at her school with their rollout of a new online system, saying, “I'm actually just very thankful I'm very grateful that this course happened to be in my past, as I'm going through this program. And then COVID-19 happens because it does make sense to me it makes more sense to me.”

Context of Course Design

Within the context of the class itself, there were contextual factors (assignments, formats, conditions, etc.) that were classified by participants as either helpful or challenging. Perhaps one of the most frequently reported factors that enabled learners to better understand and design personalized learning was that the course itself was a model of personalized learning. A principal mechanism the course which modeled and accomplished personalized learning was co-planning. Sharing her experience, Kristina stated,

> I really liked the CO planning. And, you know, just getting some confirmation on alright this is the direction I think I want to go, okay yeah, I think that's a good idea. So now I'm gonna keep going. And I really liked it. If I wasn't on target with something y'all gave the assignment back saying, 'here fixed this'. Yeah, that was the best part of the whole thing, that specific feedback.

The helpfulness of timely feedback and the ability to connect with instructors was noted by instructors during their interviews as well,

> I think the feedback from the instructors is very helpful during the co-planning. I think that instructors, ourselves, are very clear with our expectations, what is in the rubric, the criteria, and we have been explaining everything to them and students were able to ask questions to clarify. This is different from other courses where they just maybe have the instructions, and the blueprints, but they don't have a chance to really ask questions and to get clarification about what the instructors feel about particular things…very targeted very concrete feedback…what needs to be worked out, and they have the opportunity to communicate to ask questions.

Kristina shared her initial hesitation, but eventual appreciation for co-planning within the course, saying, "I enjoyed it and like I said it was, it was different than anything I've ever done and…it

was intimidating to me at first, the co-planning and all that. But it ended up being okay I am on the right track like if it was welcomed instead of feared." Bethany also found that the feedback supported her understanding and ability to design PL, sharing,

> I really did enjoy the course. Yeah, I like the feedback was so incredibly prompt and quick, that it was, you know, there are other classes kind of take a little bit longer and it can get frustrating because you don't know if you're on the right track.

Another enabling contextual factor indicated by both learners and instructors as helpful was the mastery model adopted within the course, as well as the module covering mastery mindset content. One instructor stated,

> There are a lot of ways to showcase their mastery of learning in the course. And I think that is very helpful. We don't have one like cookie cutter for all the artifacts, they can choose different media, a different modality…they can do a video, a paper pamphlet, an ebook…there are a lot of ways to show their mastery of the standard and also show their creativity.

Kylie shared that the mastery model and individual path was helpful to her, saying,

> I think that the layout of the course where like, kind of conditional release, the mastery, when we did the unit over mastery learning. That really helped me understand, and the course really, I feel like exemplified like you master this concept you move on to the next concept that there are different kind of strategies to be implemented within personalized learning. So, like the mastery learning was probably my favorite group. I know I keep saying it but just the most enjoyable part for me was being able to like you know if I had work for another course to do, like this is a class that I'm like, okay, well I know that I can get this done but it doesn't have to be done by, you know, Thursday or something.

Kristina also spoke about the mastery progression through the course saying,

> I was worried that it wasn't going to feel as structured but it didn't it, you know, even though it was a lot more freeform I keep using that term but it was a lot more freeform that had the structure, you know, and. And I did kind of like that. Your modules wouldn't open until you were finished with one that was kind of nice.

In reference to the collaborative nature of generative course materials that are uploaded by learners in the course, one instructor stated, “the students needed guidance on their readings, as many let the search engine choose for them based on what displayed on the first search page. Guidance on effective search techniques may be needed.” Another noted, “I think some of them might need a little bit more direct instruction, and the explanation.”

Additional learner feedback on the course design was provided by Bethany, who, when asked about areas of the course that could be improved, offered the following about co-planning sessions,

> I guess with the collaboration like the co-planning collaboration…there would be like a ton of people in one session waiting and I don't know if that would be possible and I know it's like hard for people to mingle… The idea is like, as they finish, they get on right but maybe if there was like a way to make conference prescheduled…

Kristina explained it in the following way,

> I liked the way this course was set up a whole lot. I liked that there weren't those, I'm not saying that discussions are pointless, because there are the time and the place for them, but I feel like in some classes, they just put them in to put them in, and there weren't unnecessary things in this course. If it was there, it had a purpose. And I really liked that. I was worried that it wasn't going to feel as structured but it didn't it, you know, even

> though it was a lot more freeform I keep using that term but it was a lot more freeform it had the structure, you know, and I did kind of like that. Your modules wouldn't open until you were finished with one that was kind of nice.

The course as a very specific context and phenomenon was supportive of participants future design of personalized learning because they had now participated in a modeled implementation. Bonnie found the design a bit shocking at first, saying, "I think in our district has done a good thing with different ways of teaching, but we're nowhere near personalized learning. I mean when I take this course, I was like whoa, this is foreign." Marsha considered this, sharing,

> I can have the conversation with teachers around me that maybe are not going through this, or did not have this class, and understand it better. And I'm kind of looking forward to sharing the information but at the same time I feel like teachers that have not had this type of class or training that they are apprehensive because it's overwhelming.

Bonnie also spoke of using the model of the course, and her experience within it, to design her own classroom.

> I just set up different modules like, you know, like our course was set up just allowing the kids, you know, this is where we've got to be at the end by this date, just how you get there, and just let them own their, their learning….I let the kids walk through it at their own pace, with an end date in mind. Y'all had different appointments so weekly we could log on and plan through what that project was. The last one that we did, I tried to jump ahead before co-planning, and then I was like, 'Oh, I made it so much easier once we get through all the importance of how to go through it'.

During her interview, Kylie said something that began to inform this theme from the student perspective. She stated,

> I also think that even in a non-personalized learning kind of course that you can still incorporate the mastery learning by releasing modules as they're mastered, you know, not necessarily timestamps, but more so like, you understand this you showed mastery, so now you can move on to the next unit. I think we would, I think we would close by an unimaginable amount of learning gap that way.

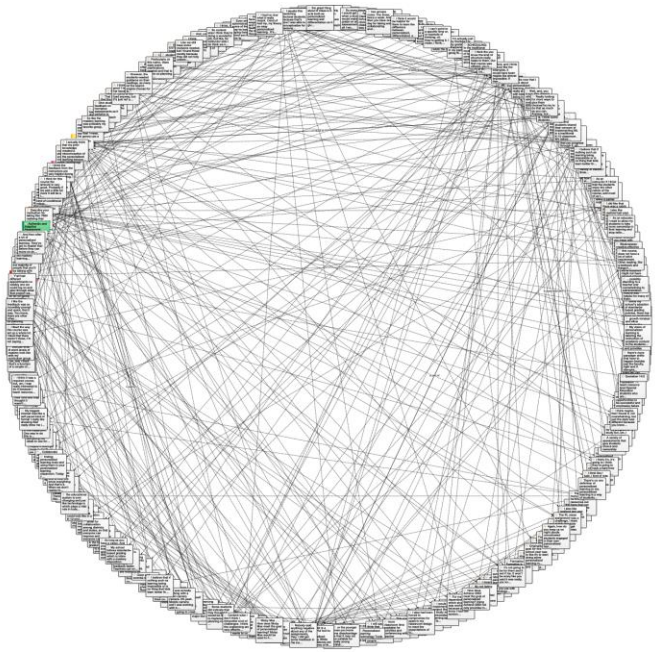
She continued by saying, "You know, it would be awesome to see more of that happen, I think I would have been a more fulfilled student had I had those experiences more often."

Data Interpretations to Answer Research Questions

In this chapter, the three major themes that were uncovered in the data were supported with evidence. Figure 5 shows an overall network view of the analysis conducted where three document groups are represented; learner interviews, course assignments, and instructor interviews. This illustrates the density of the analysis conducted.

Figure 5

Overall Network View of Data Analysis



The following table (Table 8) aligns these themes and categories to the research questions and representative statements.

Table 8

Data Interpretation Matrix

Research Question:		
How do in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning?		
Theme 1: Teacher-Learner Knowledge of Personalized Learning Components		
Sub-Categories	Definitions	Representative Statements from Teacher-Learners and Instructors
Asset-Based Dispositions	Action, language or speech that expresses value for individualities, differences, and diversity of peers and other educators rather than emphasize differences as deficits.	*"I believe that there is no such thing as learning being impossible or that kids learn better than others."*
Authentic and Adaptive Assessment	Collecting evidence of mastery using varied and data-rich performances that are on-going, authentic, flexible, and relevant.	*"…There are a lot of ways to showcase their mastery of learning in the course. And I think that is very helpful. We don't have one like, 'cookie cutter' for all the artifacts, they can choose different media, different modality. They can do a video, a paper pamphlet eBook…there are a lot of ways that they were able to show their mastery in the standard and also show their creativity."*
Dynamic Communication	Facilitating communication that flows multi-directionally from all stakeholders to meet learner needs in a variety of flexible formats.	*"I can give them multiple avenues of communication and opportunities for an on-going conversation."* *"I can have conversations discussing what mastery means and the steps it takes to get there."*

Expanded Collaboration	Coaching learners to effectively collaborate using tools and strategies to acquire real-time feedback and data while build relationships that foster success, and commit to timely personal interaction (co-plan, monitor progress, provide feedback, reflect and celebrate, etc.)	*"Co planning is there even just to relieve the students fears that they're not picking the right thing, because I think one of them in a co planning session. Maybe she did it, like on the visions maybe. I think she didn't pick a good source for the vision, because it didn't have enough information. And she didn't know that until she got feedback that she wasn't comparing and contrasting and then she's like, Well, I didn't, you know, I don't have enough to go on or whatever."*
Flexible Education Resources	Providing the learner access to flexible resources when co-planning unique ways to master competencies. These include, but are not limited to, the resources available in the digital content ecosystem.	*"I've been like trying to do some more like looking at Khan Academy, how to use formative assessments to make small groups. You know, I'm assuming based on what's happening the kids aren't going to be able to go and like play games together because we're having to limit close interaction. Right. Being able to offer them like online games or one person math games and like for the hire, I don't know I haven't figured it all out yet but I think my main focus is going to be math because I think that's an easy place to start. And from what I've seen from Khan Academy, the like technology tools it offers. Well, like make my life a little bit easier and give the kids direction."*
Growth and Mastery Mindset	A perspective or attitude toward learning that views it as an ongoing progression of continuous growth and improvement towards new	*"Students have a deeply ingrained fixed mindset that prevents them for opening up to the possibility of growth mindset. This could be*

	understanding and mastery of interdependent competencies, and not an end point of either success or failure.	*challenging because their attitude could affect their performance and progression towards mastery."*
Individual Path	Learners are aware of competency-based learning progressions and make informed choices in co-planning a unique pathway and pace towards mastery of the curriculum.	*"I would say that with personalized learning I just. My biggest interest was like a self-paced kind of format I really like showing that really drew me in."*
Learner Agency	Learners advocate for their own needs, preferences, and interests to plan and drive their learning.	*"I can give students some choices in my classroom whether that is through multiple means of expression or engagement."* *"I mean it's more than just ownership they've got to drive and got to make that push desire, you know to experience to be a true experience and not just check the box but to learn the material."*
Prioritized Executive Function	An umbrella term for the complex cognitive processes that serve ongoing, goal-directed behaviors (i.e. Meta-cognition, self-regulation, etc.).	*"What I'm hoping to try to do is model as much as I can. When we get back, especially the executive functioning, and those kinds of things, because these kids typically are not good time managers."*

Research Question:		
How do in-service K-12 teachers' experience understanding of PL, and ability to design PL evolve during a six-week graduate-level education course on personalized learning?		
Theme 2: Questions and Concerns about Personalized Learning		
Sub-Categories	Definition	Representative Statements from Teacher-Learners
Reflection	Statements of reflection by the participants on their understanding of and ability to design PL. (Metacognition)	*"I really, I would really love to incorporate more personalized learning in my classroom. It has increased my confidence that I would not say that, you know, I was able to create a personalized learning course. I don't know if I'm at that level that degree*

		of confidence but um, you know, I see the challenges like, I am on board with personalized learning, but I am aware of the challenges that are presented like in the county that I teach."
Role of Teacher	Describes the role of a teacher (educator) in a personalized learning environment	*"As an educator, I need to allow my students to take more ownership in their learning and stop telling me what I want them to produce the end, and allow them to be creative, and to truly show me what they know."*
Implementation: Risks and Challenges	Risks and challenges to implementation in the perspective of participants or noted in their review of various other implementations.	*"Every student has a different plan to meet their needs to talk about that, and every student has a different schedule and they personalize it to meet each student's needs and I thought, wow, that's amazing. I can only imagine the work that must go into that."*
Implementation: New Perspectives and Plans	New perspectives, understandings, or plans for implementing personalized learning in participants' own environments.	*"After the readings and videos in Module One and two and through my research of comparing personalized learning. I have a better understanding of what personalized learning is. There's no one definition of personalized learning to me, personalized learning is a way of students being able to choose the way they show what they know. Students can decide when, where and how to share what they have learned."*
Prior Knowledge/Experience ***Motivation**	Any prior knowledge or experience that participants have with personalized learning. This could, in turn, impact underlying	*"We are Google Chrome County, and we're at the stage where we think that because we are one to one, we know*

	motivations for taking this course and developing more of an understanding of personalized learning.	*everything. And that's it. When we don't realize that it's a tool, right, like before I started this program with instructional technology, did not know. I didn't know that there was more to personalized learning They don't ever talk about having to integrate technology standards and making sure it's rigorous and making sure that we're using the tool to produce engagement And, you know, creativity, right, and measure mastery."*

Research Question:

How does ITEC 7600 help in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning?

Theme 3: Context and Experiences that Enable or Impede Personalized Learning

Sub-Categories	Definition	Representative Statements from Teacher-Learners
Challenging in Course	Elements of the course reported by learners or instructors that are indicated challenges. These challenges may impede the evolution of the learner's ability to understand and design PL.	*"The PL vision assignment was a challenge. I think mainly because they had to get used to the idea …"* *"I would say enjoyable, but challenging would be creating the artifacts just because I think I would overwhelm myself with creating these artifacts because I'd be like, Okay, I'm going to create a PowerPoint and I want to go into so much depth. But I did like that there was a rubric that I could refer back to so like I knew that I had checked off all elements of you know the requirements."*
Current Reality and Current Reality/Covid	Any indication of current reality of teaching. Any mention of Covid-19, pandemic, or 'new normal'.	*"Right now, we're going back full time, but I have a feeling we'll be right back on distance learning at some point. Um, so*

		what I'm hoping to try to do is model as much as I can." *"I think, like I said, you know, as bad as this COVID stuff is it gives us the opportunity to have smaller class sizes as opened so many possibilities."*
Prior Knowledge/Experience	Any prior knowledge or experience that participants have with personalized learning. This could, in turn, impact underlying motivations for taking this course and developing more of an understanding of personalized learning.	*"I actually think that my prior knowledge created a misconception of the personalized learning because coming into the course. I really didn't understand the difference in personalized learning and differentiation, and this is actually something that I talked about, think in my initial video and in my reflection video because I really thought that it was like you know you differentiate the work and make it personalized."*
Helpful in Course	Elements of the course reported by learners or instructors that are indicated as helpful. These supports may enable the evolution of the learner's ability to understand and design PL.	*"I really liked the co-planning. And, you know, just getting some confirmation on alright this is the direction I think I want to go okay yeah; I think that's a good idea. So now I'm going to keep going. And I really liked it. If I wasn't on target with something y'all gave the assignment back so here fixed this. Yeah, this is like that was the best part of the whole thing that specific feedback."*

Research Question:

How do instructors describe the experiences of their students' understanding of PL, and ability to design PL as it evolves during a six-week graduate-level education course on personalized learning?

ALL THEMES

Sub-Categories	Definition	Representative Statements from Instructors
Feedback	The act of giving or receiving feedback as a learner or as an educator. Feedback is part of Co-planning which is a component of Dynamic Communication.	*"Just telling me where I was where I was off track and. And so, I feel like maybe I learned more from the feedback part of it."*
Reflection: Instructor	Instructors reflections about the design, interactions, or their own experience in the course.	*"I think it would be helpful for them to learn the difference between personalized, differentiated, and individualized. Many didn't seem to understand this, and I needed to provide them with a resource to get them thinking about it. I believe they would have done a better job on their Technology for PL assignment if they had recognized the difference."*
Reflection	Student reflection on design, interactions and experiences in the course.	*"I liked the way this course was set up a whole lot. I liked that there weren't those, I'm not saying that discussions are pointless. Sure. Because there are the time and the place for them, but I feel like in some classes, they just put them in to put them in, and there weren't unnecessary things in this course, that everything was... If it was there, it had a purpose."*
Future Course Design	Input from participants that suggest or inform future course design of this and/or other courses.	*"Some students did indicate that they thought it would be difficult to implement co-planning in K-12. Perhaps co-planning would seem more doable in the K-12 classroom if after the first couple of times students could try the assignment on their own and then only co-plan to discuss*

	assignment feedback and revisions." *"I also think that even in a non-personalized learning, kind of course that you can still incorporate…"*

How in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning

The first of the driving research questions of this study explores how in-service K-12 teachers' experience, understanding of PL, and their ability to design PL evolve during a six-week graduate-level education course on personalized learning. Two themes emerged in the data that support answering this question, which were (a) Teacher-Learner Knowledge of Personalized Learning Components, and (b) Questions and Concerns about Personalized Learning. Within each theme, several sub-categories guided the qualitative analysis.

Teacher-Learner Knowledge of Personalized Learning

Teacher-Learner participants all indicated a lack of formal or informal training and/or professional development before experiencing ITEC 7600. It was interesting to find, as evidenced within the exploration of the first theme, that despite this lack of prior knowledge, some were very quickly able to envision and understand personalized learning. Though continuous growth occurred, and refinements were made, each was able to address some component of personalized learning even in their pre-reflections during the first week of the course. This indicated that the components of personalized learning are often congruent with best practices for teaching and learning and can be rooted in those practices for educators that may not have opportunities for learning about personalized learning. In the pre-reflections of several learners, 'differentiation' and 'customization' were provided as synonyms for personalized

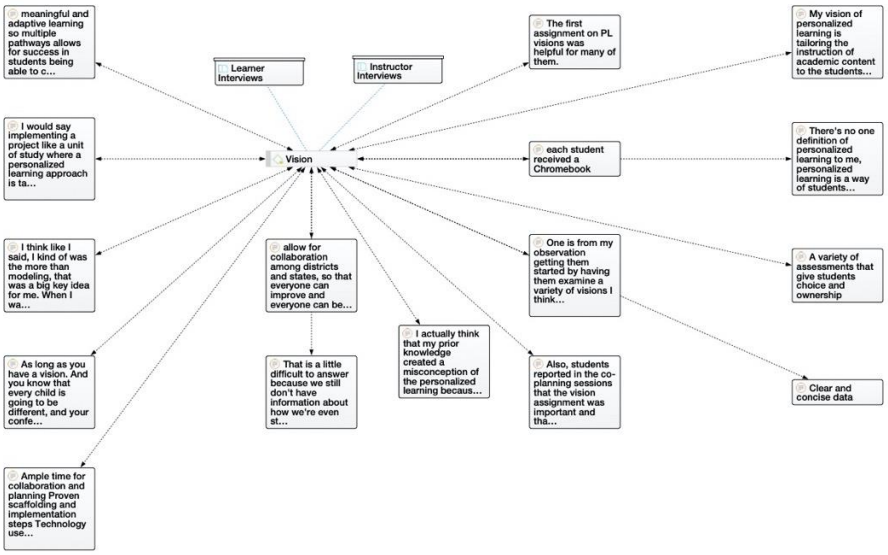
learning. Bethany says, “I feel I know very little about personalized learning. When I hear personalized learning, I think it is a type of learning that is differentiated instruction to meet the need of the learner.” Kristina stated in her pre-reflection,

> What I know about personalized learning is…that the teaching is tailored to the individual needs and abilities of the students. This can be through programs, tools, methods, strategies, experiences, or grouping. This form of teaching is completely student-centered and helps to guide all the decisions the teacher makes about the class. Another good word for it is ‘customized’.

Learners spent the first couple of weeks addressing this misconception and discovering the key difference as it pertains to the agent of action in each environment. After exploring various visions for personalized learning in the first module, there were no additional instances of the use of 'differentiated’ or ‘customized’ being used as a synonym for personalized learning. Both learners and instructors indicated in their interviews that the visions assignment deepened learners’ understanding of personalized learning. Below, another network view of the vision assignment along with quotations those assignments and indicating both the instructor and learner interviews as inputs.

Figure 6

Network View of Visions Assignment



This triangulation of data occurred in another module of learning as well. The module on mastery philosophy proved critical for understanding personalized learning. In this module, learners were able to explore mastery models of learning and progressions and reckon that with their existing philosophies and practices. For some, it became clear that though the appreciated and expected the mastery model within their learning journey in ITEC 7600 itself, to design for a mastery in their own environments was uncomfortable and challenging.

Another critical evolution happened during the technology tools for personalized learning module, during week three. Learners had realizations about the role of technology in a personalized learning environment and developed an appreciation for the tool supporting good personalized pedagogy, rather than the other way around. This finding relates to the PLCF conceptual framework discussed in chapter two, which allows for all educators, regardless of the availability of technology, to have the ability to achieve the personalized learning standards (Lokey-Vega & Stephens, 2019). The flexibility that technology brings to personalized instruction can help teachers contextualize their teaching practice for student diversity and

student accountability for learning (Smith & Throne, 2009). However, the availability of technology itself does not ensure effective technology integration for personalized instruction. The focus of this module was content which Fok & Ip (2006) call for, wherein teachers learn to utilize technology for personalized instruction. In their interviews and post-reflections, learners shared that more than the content of the technology module itself, the fact that there was only one module in the course which focused on technology opened their eyes to an even deeper understanding of personalized learning. A participant reflected on technology by saying,

> I thought I was going to be bored silly learning about how to employ adaptive programs like iReady and other technology in my classroom but instead I was immersed in substantive work like defining personalized learning and designing a mastery experience for my students. I learned about the characteristics of personalized learning and how to apply them to teach students the skills they need to be successful. Yes, there was one assignment that asked me to describe technologies that could be employed to assist in designing a personalized learning experience, but the majority of the class ignored technology in favor of pedagogical strategy.

Questions and Concerns About Personalized Learning

Understanding the evolution of learning would be incomplete without investigating the full progression towards mastery. The concept of personalized learning was new for all learners, and naturally, many questions emerged in their reflections and interviews, as well as in co-planning sessions with their instructors. Specific questions around content were less frequent than questions seeking clarity on rubrics and assignment requirements. When specific questions arose, they were often paired with concerns around teacher roles, risks and challenges to implementation, or prior knowledge or experiences that were not positive.

During a co-planning session, a learner asked the instructor for clarity on how to accomplish authentic assessment when they were required to administer standardized tests. While veiled as a question, the root of the inquiry was planted in a fear that implementation may be impossible. Another area of questioning was the evolving role of the teacher in a personalized learning environment. While there may have been some initial concern around the role teachers play in a personalized learning environment, it was clear that questioning the teacher role was supportive in the evolution of teacher-learners understanding and ability to design personalized learning. Prior knowledge and experience framed the expectations of teachers that they would be asked to do more with no additional time. Time, in fact, was a chief concern of all the learners, and they spent time addressing this challenge in their various assignments.

How ITEC 7600 helps in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning

The second research question of this study explores how ITEC 7600 helps in-service teachers to leverage personalized learning pedagogy while learning about personalized learning. A single theme emerged that supported answering this question; context and experiences which enable or impede personalized learning. Within the theme, several sub-categories guided the qualitative analysis, including what was modeled in the course, elements that were helpful or challenging in the course, and current reality. Current reality in the case of this study included the backdrop of the global Covid-19 pandemic and its impact on education.

Experiences Which Enable or Impede Personalized Learning

In addressing the question of how ITEC 7600 helps in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning, a focus was placed on the phenomenon of learning about personalized learning within a personalized course.

After careful review of learner and instructor interviews and reflections of the course, the researcher developed an understanding of how the experience of learning in a modeled personalized environment was equally, if not more critically influential, to the evolving understanding and ability to design it themselves as the content and assignments in the course. One participant said,

> I read the syllabus with excitement the first day and knew that this course was going to be challenging and transformative. The instructors promised to co-plan with me and let me decide how I would show mastery of the learning objectives. I got to decide how this course would progress for me and at the same time my instructors, (who were bound by normative university policies), would show me how to recreate this type of atmosphere in my own classroom which is bound by normative district policies.

This kind of reflection came to highlight the true value of the modeled professional development for teachers and builds upon the work of Lin & Kim (2013), who call for a personalized professional learning model by which teachers have an exemplar when they return to their own classrooms and attempt implementation.

Co-planning as a strategically designed component of the course was also very helpful to learners. One learner stated that while challenged by "creating the artifacts, just because I think I would overwhelm myself", co-planning offered the support to gain clarity and move forward. Another learner reflected on the mastery model adopted in the course and how it helped her progress. She said, "I also think that even in a non-personalized learning, kind of course that you can still incorporate mastery learning by releasing modules as they're mastered." One student spoke about this in the context of her own current reality,

> The co-planning was, like new in some ways... like with Writer's Workshop, you do a lot of co-planning with your kids. But, you know, as far as thinking about like, giving them a final assignment, and then having them come to me with their ideas, was a new thing for me. Because usually what we would do is like, 'Okay, you guys we're gonna talk about your plant adaptation, you can make a PowerPoint or make a poster, you get to choose.' I like the idea of having to like, fill out a Google form and then I could call them up, talk about their idea. And then hopefully send them off to, to go work on it. Like I said, you know, as bad as this COVID stuff is it gives us the opportunity to have smaller class sizes and has opened up so many possibilities.

In less significant ways, several modules of learning were found to be either challenging or helpful. For example, one learner shared,

> I think that, not a specific assignment, but the layout of the course where like, kind of conditional release, the mastery, when we did the unit over mastery learning...that really helped me understand, and the course really, I feel like exemplified like, you master this concept you move on to the next concept...that there are different kinds of strategies to be implemented within personalized learning.

The learners themselves didn't report many specific aspects of the course which were challenging. However, there were plenty of challenges awaiting them in their own contexts.

The reality and context in which many teachers' work every day is challenging, but in the year 2020, all of those 'normal' challenges were disrupted and amplified by the global Covid-19 pandemic. In some ways, being a learner in this course was perfect timing. One learner said,

> Even with my administration, some of the things they've been saying here lately about how to do this whole online system for the kids that are going to stay home and then the

> kids that are going to be here, just their mindset of thinking how it's gonna work is really weird to me. Like, it doesn't make sense to me because I have learned the correct way of how you personalize learning.

Another learner said this when reflecting on the course, "'I'm actually just very thankful. I'm very grateful that it happened to be in my past, as I'm going through that program...and then COVID-19 happens, because it does make sense to me it makes more sense to me."

How instructors describe the experiences of their students' understanding of PL, and ability to design PL as it evolves during a six-week graduate-level education course on personalized learning

Finally, findings illuminate how instructors describe the experiences of their students' understanding of PL, and ability to design PL as it evolves during a six-week graduate-level education course on personalized learning. The theme to emerge when addressing the data as it aligns to this question is future course design and facilitation, with sub-categories for feedback, instructor reflection, and course design.

During interviews with the instructors, several findings illuminated by learners in their assignments and interviews were confirmed. This triangulation of data focused on co-planning and the modeled nature of the course. As it pertained to co-planning, one instructor said,

> I think the feedback from us is very helpful during the co-planning. This is different from other courses where they just maybe have the instructions, and the blueprints, but they don't have a chance to really ask questions and to get clarification...the feedback we have been giving for all the artifacts has been helpful.

Another instructor indicated that students used co-planning time to get specific guidance on assignments, saying,

> I had a few students say that they didn't think the directions match the rubric and it's just because the directions were a general overview of what the assignment was the rubric had more details. The idea was the CO planning to bring out more of those details but for people that want to see it like that.

This was a recurrent theme for several instructors, who felt that "content wise I think [the students] are doing a wonderful job, but like, for the instructor side I do think we need to keep working on the rubric and making it more clear to the students, to avoid the confusion."

In this chapter, the data and findings of the study were reviewed as the aligned to the three major themes which emerged from the data set. These themes were Teacher-Learner Knowledge of Personalized Learning Components**,** Questions and Concerns about Personalized Learning, and Context and Experiences that Enable or Impede Personalized Learning. The findings of this study were presented thematically, and then addressed and organized in alignment with the research questions. In the next chapter, a discussion of these findings and the implications of this study are provided.

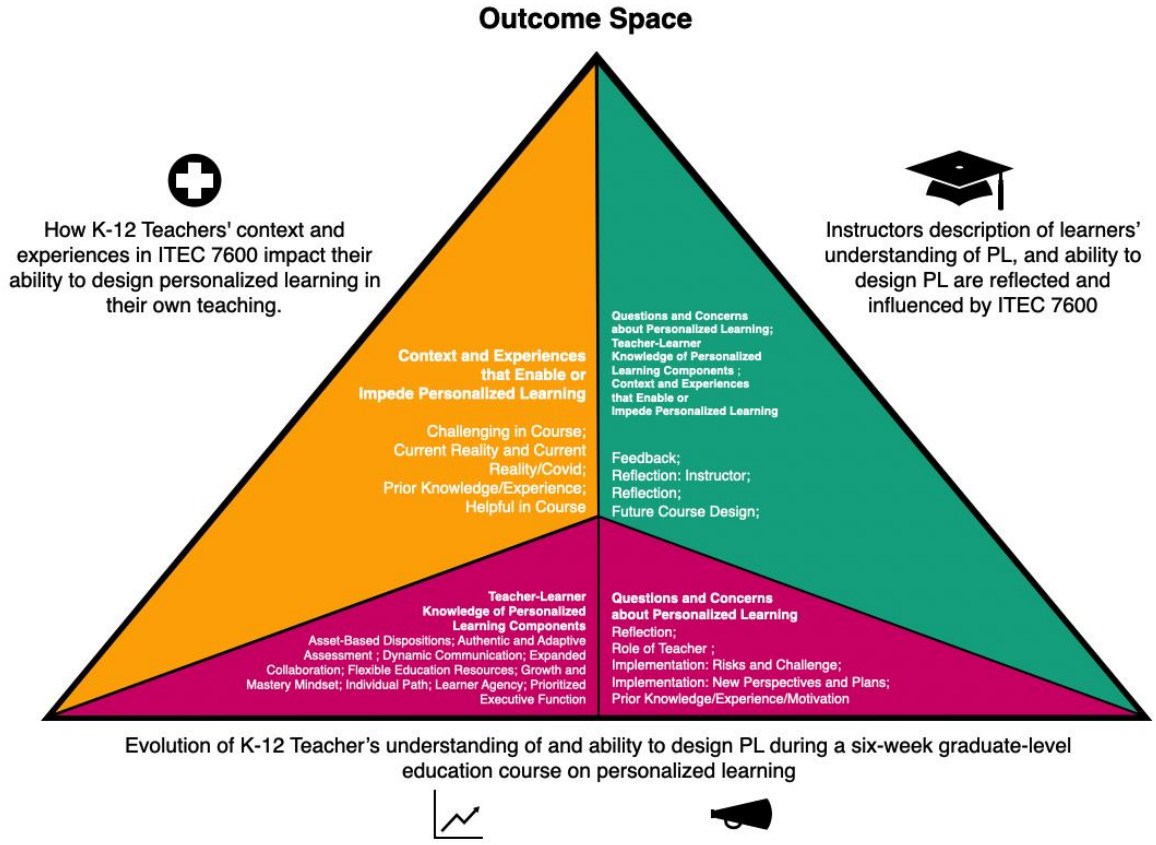
Chapter 5

In this, the final chapter, a summary of the research findings is provided along with a discussion of the findings as they relate to existing literature. Implications for current practitioners are discussed, and recommendations for future practice and research are offered. The purpose of this study was to explore how teacher participants experience teaching and learning personalized learning. While many have aimed to define personalized learning, and measure success in implementations, very few are focused on uncovering the best ways to prepare and support educators to accomplish personalized learning in their environments (Arnesen et al., 2019). Those who study the success of implementations conclude that educators aren't properly equipped to design and deliver personalized learning (Dishon, 2017). Despite this realization, little research on the best training practices for effective personalized learning has been conducted. This gap found in the literature guided the inquiry for this proposed study.

The findings of this phenomenographical case study are organized below into an outcome space in order to graphically represent the data analysis. The outcome space includes three qualitatively different categories which are (a) the ways that participants experience ITEC 7600, a six-week graduate-level education course on personalized learning, and subsequently evolve in their understanding and ability to design personalized learning in their teaching environment, (b) as well as the way that instructors describe these phenomena and (c) how K-12 teachers' context and experiences impact their ability to design for personalized learning in their environments. The themes described and sub-categorized in chapter four are included in this outcome space (Figure 7), as well. The driving research questions of the study are aligned to these categories, themes, and sub-categories found within the outcome space.

Figure 7

Outcome Space



Summary of Research Findings

The findings of this study indicate that educators who approach personalized learning, even with no prior experience, develop their ability to understand and design personalized learning on varying paths and at different paces. The data also supports that educators rely on their prior knowledge of research-based best practices in order to initially describe and identify personalized learning, and then work to align them to the components of personalized learning. Within the data, one component, Asset-Based Dispositions, was missing in every participant's course materials and assignments. This leads to additional questions and discussion below. In

addition to explicit instruction for conceptualizing and designing for personalized learning, the data suggests that participating in a modeled personalized learning environment is the most enabling factor in the growth of educators' knowledge of and skill in designing personalized learning. This finding is significant not only because of its implications, but also because it has been triangulated from teacher-learner interview, course material, and instructor interview data. These two significant findings are discussed in more detail below.

The Missing Component

Teachers' knowledge about the components of personalized learning evolved for each learner at a different rate and in a different order, even though some commonalities were found. The originality of everyone's journey, as illustrated in chapter four, is compelling. While some components of personalized learning were easier to understand or were found in learners' evidence of mastery earlier in the course, by the end of the course, all but one component of personalized learning were identified as 'understood'. The remaining component, asset-based dispositions was not evident in the data set as a component of PL in the course materials and was only evident in the interviews of two of the teachers after the course. Clearly, there is a gap in participants' ability to understand or more probably, to activate a disposition of being asset-based. A possible reason for this component being veiled within the course materials is that there is no inclusion of Culturally Responsive Teaching (CRT) within the course. Though the socio-political backdrop of the United States in 2020 is grappling with cultural issues, the intentional inclusion of this content, and how it connects to and supports an asset-based disposition is lacking. Given that 82 per cent of K-12 public school teachers in the USA identify as white, 50 per cent of students are of color and 20 per cent of students are living in poverty (USA Department of Education, 2015), ethnic minority and low income students are likely to have

teachers whose cultural backgrounds differ from their own. Identified by Irvine (2003) as cultural dyssynchrony, this mismatch contributes to inequitable experiences for students from diverse cultural and linguistic backgrounds. Personalized learning aims to address that inequity by authorizing every learner as an agent of action in their own success. It becomes imperative in such environments, that practitioners examine their how we beliefs. Courses like ITEC 7600 must support equitable pedagogy and positive student outcomes across all demographic groups by intentionally developing an asset-based disposition in teacher-learners.

The Magic of Modeling

Modeling a dynamic personalized learning environment in this course was found to be the most significantly helpful factor which enabled growth in understanding and the ability to design PL. In the data offered in the previous chapter, each participant indicated that enacting this model took a great deal of dedication from the instructors but carried with it a great deal of impact for the learners. One instructor indicated that the first assignment on PL visions was helpful for many of learners. However, she found that "the students needed guidance on their readings, as many let the search engine choose for them based on what displayed on the first search page. Guidance on effective search techniques may be needed." Instructors found that learners "enjoyed the other nature of the course" but reported feeling stressed about individual learner pacing, saying, "if they waited until the very end to finish all the rest of the modules, and I have a few students like that, I worry they won't finish on time, and that makes me feel stressed." In a similar phenomenon to K-12 teacher-learners, graduate faculty instructors also dealt with contextual factors which both enable and impede their ability to design personalized learning. One instructor said, "sometimes the grading is hard to keep up with. It's because people

are at different places along the way and you don't want to hold them up. It's a really intense course to teach in the summer."

Discussion of Findings Relating to Literature

The literature reviewed in chapter two supports that a key component to the successful implementation of PL is educator capacity. A way to increase capacity is through modeled experiences which align to a more social constructivist approach to personalized learning, as seen in the course under study and aligned to the PLCF. This study was original in that it gathered the experiences of K-12 Teachers as they participated in a six-week online graduate course on personalized learning which followed a personalized model of delivery. Gaps in the existing body of knowledge were filled by identifying the components of successful implementation of personalized professional development for personalized learning. Grappling with this topic before designing or developing future opportunities for educators can create better outcomes (Burr, McCully, & Wicker, 1970).

Researchers and practitioners have agreed that the confusion around personalized learning makes it difficult to translate into practice (Bingham et al., 2018; Gross & DeArmond, 2018; Watson & Watson, 2016). For many educators looking at existing implementations of personalized learning in other schools is the first way they move to conceptualization. There are so many claiming to enact personalized learning, and each implementation has variation across a multitude of domains (Patrick et al., 2015; Powell, W., & Kusuma-Powell, O. 2011). Authorizing any implementation as the singular representative example of personalized learning is irresponsible. Allowing any of these single specific models which were created in a micro socio-political context of one classroom, school, or district to define success can alienate other good practice and deter future implementation simply because variance exists. A broad

acceptance that a variety of models is required due to the nature of variation within each environment is provided within the course under study, and the plans generated by participants, when aligned with the conceptual framework offered by Lokey-Vega & Stephens (2019) in their PLCF show that this meta-learning method of professional development for personalized learning supports learners to develop models which represent the variety found in their individual contexts, rather than copying another model.

Implications for Current Practitioners

Practitioners seeking something to 'do now' in order to develop themselves for successful implementation of personalized learning should feel empowered to act as their own agent of action. Rather than waiting for those who are traditionally responsible for designing and developing what Lin & Kim (2013) called PD4PL, to grow in their abilities, they should seek out modeled personalized experiences, or simulations where available. Certainly, the elective course under review in this study is available, but it is currently the only of its kind available in the state, in the only endorsement/certificate program of its kind in the nation. Other options for immersion include personalized coaching or even co-developing your own experience. Reflecting on existing required professional development to find alignment (or the lack thereof) with the components of personalized learning as they align to the PLCF (Lokey-Vega & Stephen, 2019), can be tremendously powerful as a learning experience, too, if that is what is attainable for now. In whatever form, seeking professional development opportunities which provide a modeled PL experience while learning about PL will support your growth.

Recommendations for Future Research and Practice

As any researcher would attest, there are several areas of study which would have been exciting to explore but were outside the scope of this study. Specifically, a longitudinal study

which followed participants through an entire endorsement program for personalized learning would provide even deeper perspectives into the evolution and competence of K-12 Teachers to understand, design, and implement personalized learning. In addition to the activities of the courses and interviews, classroom observations could contribute a wealth of data to an expanded study. Several perspectives could be explored to illuminate aspects of the participants which were merely uncovered. School and district administrators would have much to add to the areas of context and expectations in place in each teachers' environment. These teaching realities would also be made richer with the inclusion of student voice, as an informant into the evolution of teachers' pedagogical shift towards personalized learning.

Given the findings of this study, there would be value in conducting a longitudinal case study which follows a cohort of teacher-learners seeking the full endorsement in personalized learning over the full three-course series currently offered. Additionally, a partnered action research study with an individual teacher pursuing a personalized learning endorsement would be a compelling study, as it would provide a deeper analysis and capture enactment and implementation of PL in a K-12 classroom. Additionally, a design and development study in which instructional design practices in higher education are reviewed and several courses are redesigned to align with a personalized model would provoke disruption towards more innovative and personalized experiences beyond K-12, where so much research energy and effort are currently devoted.

Any K-12 educator seeking to grow in their understanding of or ability to design personalized learning should be afforded a professional development experience which models the very personalized pedagogy and design it professes to teach. Designers of teacher professional development experiences (formal and informal) should be informed by research that

provides them with the captured voice and experience of the individuals for whom they are designing future opportunities.

Much of what participants shared in their reflections and feedback could be used to inform design and facilitation. This input from participants suggests or informs the future design of the course under study, or any other courses offered by institutions of higher education. In order to accomplish substantive adjustments to other courses, and even to this one, the voice of faculty, the instructors, must be represented. Instructors provided their insight from their personal interactions with students, as well as gave some view into the formal course feedback. A suggestion from one instructor was to include a planning document at the beginning of the course for each learner, where they could explain in detail each artifact, and align the course learning and projects to their final goal of forming a plan to design personalized learning. She said, “giving them an overview and explaining in detail what each artifact is and how much time you will need might be helpful to students.”

Understanding that those faculty instructing this course had little to no prior experience with personalized learning is vital to understanding their experiences. All did have, however, prior experiences that contributed to their understanding and preparation to teach in a personalized environment. When asked to reflect upon the course and their experiences within it, rather than the design of the course in general, one offered her perspective as, “I equate this to mentoring doctoral students because that's how I was able to conceptualize for personalized.” Instructors deal with contextual factors which enable or impede their ability to understand and design personalized learning. In speaking about the workload and pedagogical shifts required, one instructor said,

> ...when you start to make a change into the kind of teaching you're doing like this, it's only this program, or this course…there are more paradigm shifts that have to happen besides just the faculty, and it disrupts a lot of the other structure if it's not the totality of your experience.

Policymakers and education administrators ought to seek first to enact what is effective. As found in this study, in the case of personalized learning, what is most effective in supporting K-12 Teachers' understanding and design of personalized learning is a modeled meta-learning experience. As more individual schools, districts, states, and nations begin to enact personalized learning, there is now a study for designers to review, and an opportunity to hear about the experiences of those who participated in this type of meta-learning in their own voice.

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Appendices

Appendix A

Initial Participant Survey adapted from Olofson et al., 2018: Teacher Practices for Personalization Survey

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Start of Block: Informed Consent

Welcome to the research study!

We are interested in understanding the impact of ITEC 7600 'Personalized Learning in Technology Rich Environments' on educator practice and perception. All course content can be studied by a non-evaluative researcher, and will maintain your anonymity. In the survey, you will be presented with information relevant to your experiences and perceptions of personalized learning and asked to answer some questions about it. Please be assured that your responses will be kept completely confidential.

The study should take you around 10-15 minutes to complete. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail stephanee.stephens@kennesaw.edu.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

By clicking 'I consent' below: You acknowledge that your participation in the study is voluntary, you are 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason. You agree to allowing your responses to this survey to be reviewed, and by request of the researcher, you agree to respond to clarification requests. I understand that participation is voluntary and that I may withdraw my consent at any time without penalty. You agree to participate in this study as a student in ITEC 7600. All course content can be studied by a non-evaluative researcher and will maintain your anonymity. I understand that participation is voluntary and that I may withdraw my consent at any time without penalty. You agree to participate in an interview if asked, with a non-evaluative researcher. I understand that participation is voluntary and that I may withdraw my consent at any time without penalty.

By clicking 'I do not consent' you do not agree to participate in any part of this study and you this survey will immediately end.

- ○ I consent, begin the study (1)
- ○ I do not consent, I do not wish to participate (2)

Skip To: End of Survey If Welcome to the research study! We are interested in understanding the impact of ITEC 7600 'Pe... = I do not consent, I do not wish to participate

Skip To: Q1 If Welcome to the research study! We are interested in understanding the impact of ITEC 7600 'Pe... = I consent, begin the study

Page Break

Q1 Contact Information: Name

_____

Q2 Contact Information: Email

_____

Q3 Contact Information: Phone

_____

Q4 Contact Information (Please drag to rank preference)

- ○ Phone (1)
- ○ Email (2)
- ○ Both (3)

Q10 Do you teach in a school/district that is implementing personalized learning?

- ○ Yes (1)
- ○ No (2)
- ○ Unsure (3)

Have you ever taken another course/participated in professional development where personalized learning was the main topic of focus?

- ○ Yes (4)
- ○ No (5)

Q5 Growth and Mastery Mindset: Defines learning as an ongoing progression by embracing a growth and mastery mindset, rejecting the binary of success and failure.

	This is a very poor description of my practice. (1)	This is a poor description of my practice. (2)	This is neither a good not a poor description of my practice. (3)	This is a good description of my practice. (4)	This is a very good description of my practice. (5)
GMM1: I identify causes of learner struggles, prescribe solutions, and co-plan with learners to set short and long-term goals for growth (1)	○	○	○	○	○
GMM2: I design and implement adaptive tools, strategies and learning experiences to support growth towards mastery for all learners. (2)	○	○	○	○	○
GMM3: I create opportunities for students to monitor their own pace and progress and persevere towards mastery, embracing mistakes as learning opportunities (3)	○	○	○	○	○

Q6 Executive Function and Learner Agency: Practices to support individual students in self-assessment of learning and performance.

	This is a very poor description of my practice. (1)	This is a poor description of my practice. (2)	This is neither a good not a poor description of my practice. (3)	This is a good description of my practice. (4)	This is a very good description of my practice. (5)
EFLA1: I create opportunities for students to identify their own strengths and needs (1)	○	○	○	○	○
EFLA2: I create opportunities for students to set meaningful goals (2)	○	○	○	○	○
EFLA3: I create opportunities for students to document evidence of progress toward their goals (3)	○	○	○	○	○
EFLA4: I create opportunities for students to self-assess (e.g. reflect, analyze) progress to adjust their plans for learning (4)	○	○	○	○	○
EFLA5: I create opportunities for students to manage time and self within the classroom (5)	○	○	○	○	○

Q7 Expanded Collaboration and Authentic Communication: The current emphasis on personalization, flexible pathways and the power of technology create new opportunities for communication and collaboration of learning outside of the traditional school day and building.

	This is a very poor description of my practice. (1)	This is a poor description of my practice. (2)	This is neither a good not a poor description of my practice. (3)	This is a good description of my practice. (4)	This is a very good description of my practice. (5)
ECAC1: I create opportunities for students to plan out-of-school learning related to their interests (1)	○	○	○	○	○
ECAC2: I create opportunities for students to access instructional materials from outside of the classroom (2)	○	○	○	○	○
ECAC3: I create opportunities for students to find out-of-school collaborators (peer or adult) with similar learning goals or interests (3)	○	○	○	○	○
ECAC4: I create opportunities for students to work with out-of-school facilitators (e.g., mentors, community members, after school providers, coaches, personal learning networks) (4)	○	○	○	○	○
ECAC5: I create opportunities for students to use evidence from out-of-school learning as evidence of academic progress (5)	○	○	○	○	○

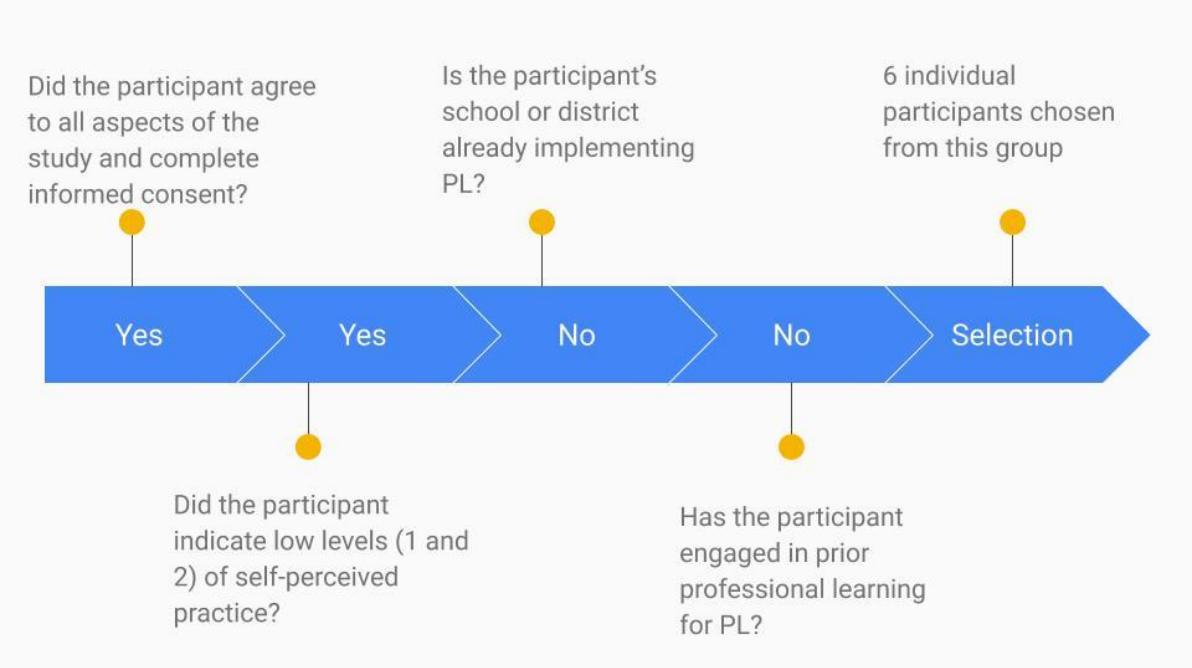
ECAC6: I create opportunities for students to receive feedback on their learning from out-of-school experts (share work broadly for feedback) (6)	○	○	○	○	○
ECAC7: I create opportunities for students to develop the skills needed to learn successfully in out-of-school settings (7)	○	○	○	○	○

Q8 Technology for Learning: Practices and norms to support learners in using appropriate technology to enhance all elements of the personalized educative experiences.

	This is a very poor description of my practice. (1)	This is a poor description of my practice. (2)	This is neither a good not a poor description of my practice. (3)	This is a good description of my practice. (4)	This is a very good description of my practice. (5)
TL1: I create opportunities for students to use technology to pursue their personal plan for learning (1)	○	○	○	○	○
TL2: I create opportunities for students to use technology to extend their learning beyond the classroom (2)	○	○	○	○	○
TL3: I create opportunities for students to use technology to manage their project work (3)	○	○	○	○	○
TL4: I create opportunities for students to use technology to generate evidence of proficiency in multiple ways (e.g., videos, podcasts, dynamic presentation) (4)	○	○	○	○	○

End of Block: Informed Consent

Participant selection will be based upon the following decision process:



Appendix B

Personalized Learning Comparison Assignment Rubric

Course Objective: Compare and contrast various visions and definitions of personalized learning at 80% proficiency as measured by a rubric.

Assignment Description: Find four visions, white papers, or conceptualizations from different organizations that define and describe personalized learning. You may or may not choose to use some provided in the course readings. Using these four documents compare and contrast their similarities, differences, strengths, and weaknesses. *Individual Path:* You must propose a plan to your instructor and seek approval on how you will show mastery of these competencies before beginning your assignment. Co-plan with your instructor the artifact you plan to create. *Individual Pace:* You will also need to co-plan with your instructor on a reasonable submission date for this assignment given your long-term goals of course completion. *Mastery Philosophy:* You must earn at least a "proficient" rating on all criteria to pass the assignment. If you do not pass the assignment, your instructor will guide you in either revision of the assignment or revision of your plan to show mastery.

Suggestions: You may use any tool or medium you like to show competency in analyzing visions of personalized learning. You might make a video, write a paper, make a podcast, or any other medium of communication. To go above expectations, you might create your own images, infographics, animation, or engage in social media or share your thoughts with local school leaders. You may choose to develop more than one artifact to show mastery of all competencies in this assignment. It is up to you, the learner to initiate a plan to share with your instructor of how you will demonstrate competency of the criteria below.

Competencies	Not Proficient	Proficient/Mastery	Above Expectations
Learner can choose **reputable sources** about personalized learning.	Less than four visions of personalized learning were selected or cited. OR less than four are from respected organizations/authors. OR less than four are inclusive of K-12 education. (0 points)	Four different organizational visions of personalized learning, or books about personalized learning published by a reputable publisher were selected and cited in the assignment. The organizations or authors are respected in the field of K-12 education. (16 points)	More than four different organizational visions of personalized learning were selected and cited. AT least four of the organizations or authors are respected in the field of K-12 education. (20 points)
Learner can **compare** characteristics of multiple personalized learning visions or definitions.	The comparison highlights less than six similarities or complementary relationships accurately. (0 points)	A comparison is provided that accurately highlights at least six similarities or complementary relationships. These similarities or complementary relationships are each between two or more of the various visions of personalized learning. (16 points)	A comparison is provided that accurately highlights more than six similarities or complementary relationships. Or in addition to the text/verbal comparison, relationships are conceptualized through a unique visual/drawing/picture. (20 points)
Learner can **contrast** characteristics of multiple personalized	An analysis of contrast highlights less than six	An analysis of contrast is provided that accurately highlights at least six	An analysis of contrast is provided that accurately highlights more than six

learning visions or definitions.	differences or contradictory relationships accurately. (0 points)	differences or contradictory relationships. These differences or contradictory relationships are each between two or more of the various visions of personalized learning. (16 points)	differences or contradictory relationships. Or in addition to the text/verbal analysis, relationships are conceptualized through a unique visual/drawing/picture. (20 points)
Learner can discuss the **strengths and weaknesses** of various visions and how they might impact change in practice.	Less than four strengths are discussed. OR less than four weaknesses are discussed. Or how the strengths and weaknesses affect practice is not discussed. (0 points)	At least four strengths and at least four weaknesses of the personalized learning vision documents are discussed. Additionally, how these strengths and weaknesses could or could not affect practice in K-12 education are discussed. (16 points)	More than four strengths and more than four weaknesses of the personalized learning vision documents are discussed. Additionally, how these strengths and weaknesses could or could not affect practice in K-12 education are discussed. (20 points)
Learner can articulate and support an **individual vision** of personalized learning.	A vision is either not unique or not supported by readings. (0 points)	A unique vision of personalized learning is described. The vision is rationalized and supported by student-selected or class-provided readings. (16 points)	A unique vision of personalized learning is described. The vision is rationalized and supported by student-selected or class-provided readings. In addition, the learner effectively distributes and promotes his/her vision through social or local media. (20 points)
TOTAL POINTS			
MASTERY DEMONSTRATED	Did the learner score at least proficient on all competencies required in this assignment?	YES-The learner may move forward with current plans or initiate co-planning for next learning objective.	NO-See recommendations for revision and growth in the row below. Learner and Instructor may need to meet to co-plan.
RECOMMENDATIONS FOR REVISION			

Appendix C

ITEC 7600 Course Syllabus

Bagwell College of Education

Department of Instructional Technology

ITEC 7600 Personalized Learning & Technology Rich Environments | Summer 2018

Instructor

XXX

Virtual Office Hours:
TBD

I prefer to keep all contact with students WITHIN BrightSpace (formerly Desire2Learn) email. Emails and phone messages will be returned within 24 hours. If you need to contact your adviser, please use standard Kennesaw email rather than D2L email.

Class Sessions & Semester Credit Hours

This course is a three-credit hour course.

This is a fully online course. There are no face-to-face sessions.

Critical University dates

Classes start: TBD
No class: TBD
Drop date without academic penalty: TBD
Last day of classes: TBD
Finals end on: TBD
Grades reported: TBD
For the university calendar visit: http://www.kennesaw.edu/registrar/calendars/
Optional Synchronous Sessions TBD

Prerequisites

Candidates must be admitted to a KSU EPP graduate, certificate, or endorsement program to take this course, or approved by the ITEC department.

Required Text(s):

This course will take advantage of Open Educational Resources, many listed in the Bibliography section with an asterisk. Additionally, the course will require instructor-created resources to minimize costs for students. To learn more about efforts in Georgia to reduce college costs, visit http://affordablelearninggeorgia.org/

Catalog Description

This course introduces classroom teachers to personalized learning in technology rich environments. Candidates will learn to compare and contrast various visions and definitions of personalized learning, evaluate and plan the use of technologies that support

personalized learning environments, explain a mastery philosophy of teaching, identify the essential conditions of personalized learning, and devise a plan for change toward personalized learning that addresses short-term and long-term goals. This course provides the candidate with a broader initial understanding of how personalized learning came about and where it is likely going in the future of schools.

Purpose / Rationale

Technology, especially the smartphone, has changed consumer and employer expectations. Adaptable systems that celebrate and serve individualities are becoming the norm. Industries such as medicine are moving to a consumer-focused, personalized system based on our DNA that is both more efficient and increasingly effective. Additionally, as consumers, we expect a personalized experience, one that is supported by huge processing power to enable immediate, media-rich, and archivable interactions. These changes are affecting the skills required by the workforce, and impacting industry growth. In order for states to develop future adults who are adaptable to this ever-changing workforce demand, statewide changes in the K-16 education systems that mirror the changes of personalization we see in other industries are necessary. Current educational systems and processes often serve as a barrier to unleashing the true potential of educators and learners. To date, we have not harnessed the full capabilities of stakeholder individualities or the power of technology to optimize education systems. In order to educate adaptable college and career ready young-adults, systems of education must change the paradigm. Systems throughout the US are innovating tools and processes of Personalized Learning as a solution. Personalized Learning is an educational paradigm shift that values learner differences and harnesses technology to allow the educator and learner to co-plan a unique educational

experience. Since Personalized Learning is an educational paradigm shift, it cannot be reduced to simply a new initiative or instructional strategy. A paradigm shift implies a change to the values on which the education system is built and therefore the roles of all stakeholders in the system must also change. Personalized Learning is an ideal for which educational institutions may strive. Experts have identified nine essential conditions for effective change toward more personalized education systems including: Prioritized Executive Function, Growth Driven, Individual Path, Flexible Content, Learner Voice, Authentic and Adaptive Assessment, Dynamic Communication, Expanded Collaboration, and Mastery Dispositions. While these conditions do not include technology explicitly, the advancement of the Internet, educational technologies, and information systems have made Personalized Learning scalable and play a key role in its implementation. Educators must become familiar with the emerging shift toward Personalized Learning and design plans for individual and system change.

Conceptual Framework – Collaborative Development of Expertise in Teaching and Learning

Our vision as a nationally recognized Educator Preparation Program (EPP) is to remain at the forefront of educator preparation. Informed by responsive engagement in collaborative partnerships, we advance educational excellence through innovative teaching in an ever-changing global and digital learning environment. Our mission is to prepare educators to improve student learning within a collaborative teaching and learning community through innovative teaching, purposeful research, and engaged service. The essence of our vision and mission is captured in the theme Collaborative Development of Expertise in Teaching, Learning and Leadership, which was adopted in 2002 to express concisely the fundamental approach to educator preparation at KSU.

The EPP at Kennesaw State University is committed to developing expertise among candidates in initial and advanced programs as teachers, teacher leaders and school leaders who possess the capability, intent and expertise to facilitate high levels of learning in all of their students through effective, research-based practices in classroom instruction, and to enhance the structures that support all learning. To that end, the EPP fosters the development of candidates as they progress through stages of growth from novice to proficient to expert and leader. Within the EPP conceptual framework, expertise is viewed as a process of continued development, not an end-state. To be effective, teachers and educational leaders must embrace the notion that teaching and learning are entwined and that only through the implementation of validated practices can all students construct meaning and reach high levels of learning. In that way, candidates are facilitators of the teaching and learning process. Finally, the EPP recognizes, values and demonstrates collaborative practices across the college and university and extends collaboration to the community-at-large. Through this collaboration with professionals in the university, local communities, public and

private schools and school districts, parents and other professional partners, the EPP meets the ultimate goal of bringing all of Georgia's students to high levels of learning.

EPP Diversity Statement

The Educator Preparation Provider (EPP) believes all learners are entitled to equitable educational opportunities. To that end, programs within the EPP consist of curricula, field experiences, and clinical practice that promote candidates' development of knowledge, skills, and professional dispositions related to diversity identified in the unit's conceptual framework, including the local community, Georgia, the nation, and the world. Curricula and applied experiences are based on well-developed knowledge foundations for, and conceptualizations of, diversity and inclusion so that candidates can apply them effectively in schools. Candidates learn to contextualize teaching and draw effectively on representations from the students' own experiences and cultures. They learn to collaborate and engage with families in ways that value the resources, understandings, and knowledge that students bring from their home lives, communities and cultures as assets to enrich learning opportunities. Candidates maintain high expectations for all students (including English learners, students with exceptionalities and other historically marginalized and underrepresented students), and support student success through research-based culturally, linguistically, and socially relevant pedagogies and curricula.

Use of Technology

Technology Standards for Educators are required by the Professional Standards Commission. Telecommunication and information technologies will be integrated throughout the master teacher preparation program, and all candidates must be able to use technology to improve student learning and meet Georgia Technology Standards for Educators. During the courses, candidates will be provided with opportunities to explore and use instructional media, especially microcomputers, to assist teaching. They will master use of productivity tools, such as multimedia facilities, local-net and Internet, and feel confident to design multimedia instructional materials, create WWW resources, and develop an electronic learning portfolio.

Instructional Technology Department Policies & Statements

Incomplete Grades: An "I" indicates an incomplete grade for the course, and will be awarded only when the student has done satisfactory work up to the last two weeks of the semester, but for nonacademic reasons beyond his/her control is unable to meet the full requirements of the course. The course requirements must be completed, as agreed upon between the student and the faculty member, by the end of the next semester or term student is enrolled. If the student fails to enroll within one calendar year from the end of the semester or summer term in which the "I" was originally assigned and does not complete the course requirements, then the "I" will be changed to an "F". The "F" grade is assigned for a course which awards letter grades of "A", "B", "C", "D", or "F") and the cumulative and adjusted grade point average will be recalculated accordingly or, the "I" will be changed to a "U" (for a pass/fail course which awards a grade of "S" or "U"). Upon completion of the course requirements within the specified time limits, a final grade will be assigned on the basis of the student's total performance. An "I" cannot be removed by re-enrolling in the course. An "I" cannot be removed by re-enrolling in the course.

Academic Integrity Expectations: The KSU Graduate Catalog states "KSU expects that graduate students will pursue their academic programs in an ethical, professional manner. Any work that students present in fulfillment of program or course requirements should reflect their own efforts, achieved without giving or receiving any unauthorized assistance. The work completed in this class should be original work for the purposes of this class only and not course work submitted in any other class. Potential conflicts related to duplicative work should be discussed with the instructor. Any student who is found to have violated these expectations will be subject to disciplinary action by the university and/or the Professional Standards Commission, which authorizes teachers' certification to practice in the state of Georgia.

Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Graduate Catalog. Section II of the Student Code of Conduct addresses the University's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/ intentional misuse of computer facilities and/or services, and misuse of student

identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University Judiciary Program, which includes with an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement."

Additional Academic Support: Instructor will be available for consultations via email, phone, or online meetings by appointment for those who need extra help beyond scheduled synchronous meetings. Students have access to the KSU Writing Center and Student Support Services. Links are provided in BRIGHTSPACE.

Support For Students With Disabilities: If accommodations are required, students should send documentation to the instructor immediately. Accommodations can be made only after the instructor has been notified. Accommodations for future assignments will be made within 3-5 days of receipt of documentation. If you have not already done so, please register with KSU Disabled Student Support Services, the office responsible for coordinating accommodations and services for students with disabilities. If you need assistance in locating this information, please contact your instructor or look in the "Resources" section of your online class materials. BRIGHTSPACE is fully accessible for all learners. See their ADA compliance statement at: http://www.brightspace.com/about/accessibility/.

Communication Policy: Students can expect the instructor to respond to their emails or phone calls delivered between 8 a.m. Monday and 8 a.m. Friday within 24 hours. Instructor will respond to communication delivered between 8 a.m. on Friday and 8 a.m. on Monday before midnight on Tuesday or before. The instructor will notify students in advance via BRIGHTSPACE mail if response time may be jeopardized by professional travel or other rare, extenuating circumstances. Students are expected to adhere to the same response schedule when answering communication from the instructor or classmates. Students should also notify the instructor and classmates on the rare occasion when professional travel or other extenuating circumstances, such as illness or emergencies, would disrupt the response schedule. All correspondence/assignment submissions should be conducted through BRIGHTSPACE. Use instructor's alternate email only in times of technical difficulty or to increase odds of a quicker answer to a question. Please forward your BRIGHTSPACE mail and announcements to an email address that you check daily.

Course Objectives

This course is designed to meet the following objectives: Candidates will:

1. Compare and contrast various visions and definitions of personalized learning at 80% proficiency as measured by a rubric.
2. Evaluate and plan the use of technologies that support personalized learning environments at 80% proficiency as measured by a rubric.
3. Explain a mastery philosophy of teaching and provide a list of key classroom strategies that demonstrate this philosophy of teaching at 80% proficiency as measured by a rubric.
4. Identify the essential conditions of personalized learning within the student's realm of influence and devise a plan for change that addresses short-term and long-term goals at 80% proficiency as measured by a rubric.

ISTE Standard for Coaches

3. Digital Age Learning Environments: Technology coaches create and support effective digital age learning environments to maximize the learning of all students.

Personalized Learning Standards of Practice:

Prioritized Executive Function

Learner takes responsibility for his/her learning through the acquisition and practice of executive function.

Instructional Designer designs curricula that supports learner acquisition and practice of executive function. This requires the Instructional Designer to consider the cognitive development of the learner.

Facilitator teaches the skills of and provides an environment that allows learners to practice executive function. This requires the Facilitator to measure and report learner executive function for the purpose of growth.

Growth Driven

Learner is monitoring their own pace and progress to co-plan short and long-term goals for growth.

Instructional Designer employs a mastery philosophy in the design of adaptive learning experiences to support a growth-driven model.

Facilitator can diagnose cause of learner struggles within competency acquisition for individual learners, prescribe a solution, and co-plans with learners to set short and long-term goals for growth.

Individual Path

Learner chooses a challenging path and current competency of focus through co-planning and consideration of content interdependencies.

Instructional Designer organizes competencies based on interdependency and provides learners with multiple paths toward mastery.

Facilitator uses data of previously assessed competencies to co-plan current and future learning paths.

Flexible Content

Learner seeks out or selects content from a curated menu of educational resources that address the competency of focus.

Instructional Designer curates, mines, creates, and organizes high impact educational resources and makes them accessible to learners. The Instructional Designer employs engaging pedagogies and research-based best practices of instructional design.

Facilitator monitors and observes the effectiveness of educational resources in real-time and suggests or seeks out alternatives as needed.

Learner Voice

Learner voices preferred modalities, talents, and interests when co-planning experiences that support competency mastery.

Instructional Designer embeds flexibility for learner voice to influence learning systems.

Facilitator considers learners' preferred modalities, talents, and interests when co-planning experiences that support competency mastery.

Authentic and Adaptive Assessment

Learner identifies, documents, and defends formal and informal learning experiences to build an assessed portfolio as evidence of competencies mastered.

Instructional Designer considers multiple means of demonstration when designing assessments aligned to competencies.

Facilitator assesses learner's experiences (formal and informal) in both formative and summative ways as they align to acquisition of competencies. Assessment strategies should be varied but also include intent and focused observation.

Dynamic Communication

Learner capitalizes on opportunities to communicate with educators, peers, and parents as he/she advocates for her/himself and the learning community in the pursuit of continued growth.

Instructional Designer effectively communicates curricula to ensure that resources are leveraged for best outcomes.

Facilitator models and nurtures effective communication strategies.

Expanded Collaboration

Learner effectively collaborates in all classroom interactions such as co-planning and peer-to-peer time.

Instructional Designer collaborates using tools and strategies to acquire real-time feedback and data from learners, educators, and parents which will inform ongoing content iteration.

Facilitator collaborates effectively with learners to co-plan learning paths, and commits to timely personal interaction with individual learners.

Mastery Dispositions

Learner values his/her own individuality as an asset to learning as well as the diversity of peers and educators. The learner rejects the success/failure binary to focus on personal growth by learning from mistakes and perseverance.

Instructional Designer practices responsive design in a way that values diverse learner characteristics as assets. Educator values and participates in learning communities and/or networks for ongoing professional learning.

Facilitator believes all students can learn any competency given adequate resources and time and values diverse learner characteristics as assets. Educator values and participates in learning communities and/or networks for ongoing professional learning.

Course Requirements

1. ASSIGNMENT 1: Personalized Learning Comparisons (100 points)

Find four visions, white papers, or conceptualizations from different organizations that define and describe personalized learning. Using these four documents compare and contrast their similarities, differences, strengths, and weaknesses. Design and develop an artifact that demonstrates you can proficiently compare and contrast various visions and definitions of personalized learning. (See rubric: Personalized Learning Comparisons)

2. ASSIGNMENT 2: Technologies for Personalized Learning: (100 points)

Identify four technology tools that can support personalized learning. Design and develop an artifact that demonstrates you can evaluate and plan the use of technologies that support personalized learning environments. (See rubric: Technologies for Personalized Learning)

3. ASSIGNMENT 3: Mastery Philosophy: (100 points)

Design and develop an artifact that demonstrates your ability to explain a mastery philosophy of teaching and provide a list of at least 6 key classroom strategies that demonstrate this philosophy of teaching. (See rubric: Mastery Philosophy)

4. ASSIGNMENT 4: Personalized Learning Plan: (200 points)

Design and develop an artifact that demonstrates your ability to identify the essential conditions of personalized learning within your realm of influence and the standards of practice that align to those essential conditions and devise a plan for change that addresses short-term and long-term goals. (See rubric: Personalized Learning Plan)

5. READINGS QUIZZES (50 points each (4) – Total of 200 points)

Candidates will take (4) quizzes over assigned readings. Questions will ask candidates about the main points of the readings; address essential questions related to the readings; and/or address how the readings could be applied in their local setting.

6. DISCUSSION FORUMS (20 points per activity (4) = Total 80 points)

Discussion forums will be used as a peer review environment. Candidates will post ideas or drafts of the 4 main assignments listed above for peer feedback. Candidates are expected to make an original post and provide substantive feedback to at least two peers. NO RUBRIC

Your instructor may alter this component. Please see you instructor for additional information.

8. PRE- and POST- VIDEO REFLECTION (50 points each Total 100 Points)

Candidates will respond to the prompt "What I know about personalized learning is…" twice: once before the start of the coursework, and once following completion of the coursework. Candidates may choose any tool for this reflection including Flipgrid, YouTube, or another video technology that meets the requirements of the assignment.

Your instructor may alter this component to include or substitute to a tool. Please see your instructor for additional information.

Note: Additional points may be earned through an extra credit quiz covering this syllabus, if you instructor decides to offer it. No student is entitled to take such a quiz and the opportunity is limited as the instructor deems appropriate.

GRADES (880 Total Possible Points)

S 80%-100% on every assignment
U Below 80% on any single assignment

*rounding percentage points up or down is at the discretion of the instructor per individual student

NOTE: Feedback and grades will be made available to students within 5 -10 days of submission.

Appendix D

Interview Guide

Teacher-Learning Interview

This interview is really meant get a picture of what your experience in ITEC 7600 is like, what were your motivations for taking this course, your prior knowledge or experience with personalized learning, and how it may have changed through participating in this course. I've created a basic guide highlighting areas I want to address, but I am really interested in your experiences as a learner in this course because I think those who develop educator professional learning for personalized learning should be informed by educators like you…and if we can create more opportunities for teachers to experience personalized learning, they may be better able to create those environments for learners…

Motivation for Professional Growth

What first initiated or "sparked" your interest in personalized learning?

In what ways have your teaching beliefs and philosophy evolved with your understanding of personalized learning?

Can you tell me about your education and how it influenced your vision of personalized learning?

What kinds of support have you received in your path to learning about personalized learning?

Were there specific courses and training that helped you?

What kinds of support have you received in your path to learning about personalized learning?

What was the trigger for you to implement personalized learning in the classroom?

In what way does the school culture support your effort?

In what way does the school culture impede your effort?

What made you select this course?

What aspects of your personality have contributed to this growth?

What aspects of your school/district have contributed to this growth?

What outside factors have contributed to this growth?

Learning Experience

How would you describe your confidence level in your knowledge/implementation of the elements of personalized learning prior to this course?

What particular assignments or interactions in the course helped you in terms of understanding personalized learning understanding?

What particular assignments or interactions in the course were particularly enjoyable for you?

What particular assignments or interactions in the course were particularly challenging for you?

What additional assignments or interactions would be helpful for you as you continue to develop your ability to understand and implement personalized learning?

What else would you like to share about your experience in this course?

Vision of Personalized Learning

What was your vision of personalized learning prior to your experience in this course?

How has your vision changed?

Can you describe for me an outstanding example of personalized learning in a classroom?

How do you feel that illustrates your vision?

What are some other components or factors that have impacted or affected your vision?

Personalized Learning Implementation

What current strategies do you use in your classroom regarding personalized learning?

Walk me through your instructional planning process now.

How do you see that process shifting in the future?

How should technology be used in a personalized learning environment?

How are decisions to use technology (how, why, when) made, by whom?

How do you cope with the range of skills of your students?

What strategies did you use to plan for individual student needs prior to this course?

What strategies might you use to plan for individual student needs after this course?

How did you assess students vs. plan to assess moving forward?

What excites you about implementing personalized learning?

What is concerning to you about implement personalized learning?

Instructor Interview

Instructor Interview Guide

This interview is really meant get a picture of what your students experience as learners in ITEC 7600 is like. I've created a basic guide highlighting areas I want to address, but I am interested in anything you would like to add, because I think those who develop educator professional learning for personalized learning should be informed by instructors like you who have first-hand experience…

Learning Experience

- ❖ What assignments or interactions in the course helped your students in terms of understanding personalized learning understanding?
- ❖ What assignments or interactions in the course were particularly enjoyable for your students?
- ❖ What assignments or interactions in the course were particularly challenging for your students?
- ❖ What additional assignments or interactions would be helpful for your students as they continue to develop their ability to understand and implement personalized learning?
- ❖ What else would you like to share about your students' experience in this course?

Question Alignment Map

Research Question	Informant	Interview Questions
RQ1: How do in-service K-12 teachers' experience, understanding of PL and ability to design PL evolve during a six-week graduate-level education course on personalized learning? Topics of interest: -PL Components that are easiest for teachers to understand -Emerging questions and concerns of participants regarding PL design -Evolution of understanding of PL	Teacher-Learners	• What first initiated or "sparked" your interest in personalized learning? • In what ways have your teaching beliefs and philosophy evolved with your understanding of personalized learning? • Can you tell me about your education and how it influenced your vision of personalized learning? • What kinds of support have you received in your path to learning about personalized learning? • Were there specific courses and training that helped you? • What kinds of support have you received in your path to learning about personalized learning? • What was the trigger for you to implement personalized learning in the classroom? o In what way does the school culture support your effort? o In what way does the school culture impede your effort? • What made you select this course? • What aspects of your personality have contributed to this growth?

		• What aspects of your school/district have contributed to this growth?
		• What outside factors have contributed to this growth?
		• What current strategies do you use in your classroom regarding personalized learning?
		• Walk me through your instructional planning process now.
		• How do you see that process shifting in the future?
		• How should technology be used in a personalized learning environment?
		  o How are decisions to use technology (how, why, when) made, by whom?
		• How do you cope with the range of skills of your students?
		  o What strategies did you use to plan for individual student needs prior to this course?
		  o What strategies might you use to plan for individual student needs after this course?
		• How did you assess students vs. plan to assess moving forward?
		• What excites you about implementing personalized learning?
		• What is concerning to you about implement personalized learning?

RQ2: How does ITEC 7600 help in-service teachers taking it to leverage personalized learning pedagogy while learning about personalized learning? Topics of interest: -Contextual factors that enable and impede teachers understanding and designing PL. -Additional experiences that help teachers understand and design PL.	Teacher-Learners	• How would you describe your confidence level in your knowledge/implementation of the elements of personalized learning prior to this course? • What particular assignments or interactions in the course helped you in terms of understanding personalized learning understanding? • What particular assignments or interactions in the course were particularly enjoyable for you? • What particular assignments or interactions in the course were particularly challenging for you? • What additional assignments or interactions would be helpful for you as you continue to

		develop your ability to understand and implement personalized learning? • What else would you like to share about your experience in this course? • What was your vision of personalized learning prior to your experience in this course? • How has your vision changed? • Can you describe for me an outstanding example of personalized learning in a classroom? ○ How do you feel that illustrates your vision? • What are some other components or factors that have impacted or affected your vision?
Composite: Instructors' Perceptions of Their Students' Experiences How do instructors describe the experiences of their students' understanding of PL, and ability to design PL as it evolves during a six-week graduate-level education course on personalized learning? Topics of Interest: -Critical assignments or course interactions that enable and impede students' understanding and designing PL -Additional experiences that help teachers understand and design PL	Instructors	❖ What assignments or interactions in the course helped your students in terms of understanding personalized learning understanding? ❖ What assignments or interactions in the course were particularly enjoyable for your students? ❖ What assignments or interactions in the course were particularly challenging for your students? ❖ What additional assignments or interactions would be helpful for your students as they continue to develop their ability to understand and implement personalized learning? ❖ What else would you like to share about your students' experience in this course?