A Personal Professional Learning Cohort

Cultivating a Community of Practice to Lead School District Change

By

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A Dissertation in Partial Fulfillment
of the Requirements for the Doctorate of Education Degree

Approved October 2018 by the
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December 2018

ABSTRACT

The purpose of this study was to examine the effectiveness of the community of practice model in providing professional development to improve K-12 teacher's knowledge, skills, self-efficacy with regard to the implementation of personal learning. The study also examined the extent to which the community created value for individuals and the organization. The study employed two theoretical frameworks: Bandura's theory of self-efficacy and Wenger's communities of practice.

The study employed a concurrent mixed methods approach. Eighteen teachers participated in a 9-month blended learning professional development focused on the implementation of personal learning. Participants took pre and post self-efficacy tests. In addition, qualitative data was collected from feedback surveys, online postings, a research journal, and individual interviews.

The teachers demonstrated greater levels of self-efficacy with regard to the implementation of personal learning after their participation in the professional development community. Teachers reported increased confidence with regard to personal learning in the areas of planning, risk-taking, implementation, making modifications for continuous improvement, and sharing their knowledge with others. The teachers also reported learning about themselves, their students and colleagues, as well as gaining knowledge of content related to teaching, and personal learning. Participants reported the development of a variety of skills including design and problem-solving skills, technology skills, and facilitation and PL strategies. They also reported changes in certain dispositions such as flexibility and open-mindedness. The community created value for both the individuals and the organization.

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INTRODUCTION AND CONTEXT

Education may be perceived either retrospectively or prospectively. That is to say, it may be treated as a process of accommodating the future to the past, or as a utilization of the past for a resource in developing the future.

—John Dewey, 1944, p. 91.

This study explored one school district's attempt to reform education by implementing personal learning. Personal learning is currently among one of the nation's leading educational reforms, yet there is no agreed upon definition of the term and there has been little support offered to districts and teachers in the implementation of the initiative (Murphy, 2017; Pane, Steiner, Baird, & Hamilton, 2015). This paper identified the district's challenges in and process for developing a common language associated with personal learning. It also explored barriers to the implementation of personal learning identified by the district's teachers and principals. Finally, this study examined the effectiveness of an innovation designed to cultivate a community of practice to provide professional development to teachers to improve their knowledge, skills, and self-efficacy with regard to the implementation of personal learning. The study also assessed the extent to which the community created value for individuals and the organization.

National Context

Over time, there have been frequent calls for educational reform in the United States. For example, in 2005 Achieve, Inc. published a study in which recent high school graduates, their college instructors, and their employers cogently argued the need for

more rigorous courses and higher expectations in high school, which served as one major impetus for the development of the Common Core State Standards (Achieve, 2005). The report indicated that as many as two in five recent high school graduates recounted gaps between the education they received in high school and the overall skills, abilities, and work habits required of them in college and in the work force. Most reported a gap in at least one subject or skill. College instructors and employers confirmed these assessments and estimated that similar numbers of graduates were inadequately prepared to meet their expectations. (Achieve, 2005).

College and career readiness has become an urgent priority of the nation's education agenda because the global, knowledge-based economy of today requires a better-educated workforce than previous generations. In the 20th century manufacturing economy, a high school graduate was able to earn a middle-class wage (Symonds, Schwartz, & Ferguson, 2011). In 1973, individuals with a high school diploma or less made up 72% of the nation's workforce, and by 2007, despite a substantial increase in the overall number of jobs available, the percentage of jobs held by individuals with the same levels of education had fallen to 41%, with 59% of jobs requiring some level of postsecondary education (Symonds et al., 2011). This trend is expected to continue. By 2020, according to Symonds et al., 65% of all jobs will require some form of postsecondary education or training. In addition, 11% of all jobs are predicted to require a master's degree or higher; 24% will require a bachelor's degree; 12% will require an associate's degree; and 18% will require some postsecondary training or industry credential but no formal degree (Carnevale, Smith, & Strohl, 2013).

A closely related concern has been that the United States has an alarming number of low-performing students, which can have severe consequences for both individuals and the national economy. Students who were identified as low performers by the age of 15 were more likely to drop out of school and were less likely to maintain better-paying, more rewarding jobs (The Organisation for Economic Co-operation and Development (OECD), 2016). Further, a country's long-term economic growth is compromised when a large proportion of the population lacks basic skills. The Program for International Student Assessment (PISA) defined low performance as scoring in the lowest achievement level on the mathematics, reading, and/or science assessments (National Center for Education Statistics, 2016). Although the number of low-performing students in science in the United States decreased by approximately 6% between 2006 and 2012, the number of low performers in mathematics and reading has remained consistent since 2003 (OECD, 2016). In 2012, an OECD report indicated 26% of students in the United States were low performers in mathematics, higher than the OECD world average of 23%. Further, the report showed 17% of students were low-performing in reading, 18% were low performers in science, and 12% were low performers in all three of these subjects. Approximately 1 million 15-year-old students in the United States were low performers in mathematics, and more than 500,000 students were low performers in all three subjects (OECD, 2016). Low-performing students were not evenly distributed across the country; they were often highly concentrated in urban and impoverished areas. To provide some context for this, about 37% of 15-year-old students in the United States attended schools where 30% or more of the students were low performers in mathematics, about 12% attended schools where half or more of the students were low

performers in mathematics, and about 1% attended schools where 80% or more of the students were low performers (OECD, 2016).

The most recent National Assessment of Educational Progress (NAEP) report also documented that the gap between high and low-achieving students widened on a national math and science exam (National Center for Education Statistics, 2017). In addition, averages for fourth and eighth-grade students on the National Assessment of Educational Progress were mostly stagnant between 2015 and 2017 (U.S Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress, 2017). Scores for the bottom 25% of students dropped slightly in all but eighth-grade reading with scores for the top quartile rising slightly in eighth-grade reading and math (U.S Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress, 2017). Nationally, only 37% of fourth-graders were considered proficient in reading, and just 40% reached this benchmark in math on the 2017 exam (U.S Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress, 2017). Thirty-six percent of eighth-grade students were considered proficient in reading, and just 34% in math (U.S Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress, 2017). Moreover, the tests showed continued, large, achievement gaps between the nation's white and non-white students as well as between economically disadvantaged children and affluent children, an indication that the nation's disadvantaged students are not improving academically despite federal laws and funds aimed at increasing their achievement.

Another recent report, *Building a Grad Nation: Progress and Challenge in Raising High School Graduation Rates*, has also raised concern about graduation rates across the country. Although the nation's overall high school graduation rate has reached an all-time high of 84%, a concerning phenomenon is occurring: The number of schools with low graduation rates is actually growing (Civic Enterprise & the Everyone Graduates Center, 2017). Between 2015 and 2016, the number of schools defined by federal law as having a low-graduation-rate, which includes schools of 100 or more students where fewer than two-thirds earned diplomas in four years, rose from 2,249 to 2,425 (Civic Enterprise & the Everyone Graduates Center, 2018). In just one year, 176 additional schools qualified as "graduation danger zones" (Civic Enterprise & the Everyone Graduates Center, 2018).

To address this plethora of education concerns, several policy and reform recommendations have been made. One of the most popular of these reforms has been "personal learning" (PL). In 2012, the U.S. Department of Education offered a series of federal grants known as Race to the Top grants, to address deficits in college and career readiness and low performing students (U.S. Department of Education, n.d.) The first priority of these grants was the development of personalized learning environments. To be eligible for the grants, applicants had:

> to create student centered learning environment(s) that are designed to: significantly improve teaching and learning through the personalization of strategies, tools, and supports for teachers and students that are aligned with college and career-ready standards (as defined in this document); increase the effectiveness of educators, and expand student access to the most effective

> educators in order to raise student achievement; decrease the achievement gap across student groups; and increase the rates at which students graduate from high school prepared for college and careers.(U.S. Department of Education, 2012, p. 1)

In 2014, the Next Generation Learning Challenges (NCLG) offered $7.2 million in grants to schools who developed plans to launch personalized, competency-based programs (Next Generation Learning Grants, 2014). NGLC was founded by EDUCAUSE in partnership with the Council of Chief State School Officers (CCSSO), the authors of the Common Core, the International Association for K-12 Online Learning (iNACOL), the League for Innovation in the Community College, and the Bill and Melinda Gates Foundation.

In 2015, the RAND Corporation completed a study of 62 school districts that received NGLC grants to implement personalized learning to support implementation of college-ready standards. RAND found there were positive effects on student performance in reading and mathematics and that the lowest performing students made substantial gains relative to their peers (Pane, et al., 2015). In a more recent follow-up study, Pane, et al. (2017) identified several benefits associated with PL including more one-on-one time with teachers and students, the use of flexible grouping strategies based on student data, and modest gains in test scores. Students attending a PL school scored 3 percentile points better than a student with average test scores in a traditional school (Pane et al., 2017). The gains occurred in both reading and math but only the math scores were statistically significant (Pane et al., 2017). In addition, students in PL schools who started the year academically behind also made up slightly more ground than comparable students in

traditional schools (Pane et al., 2017). Finally, Pane et al. (2017) found a cumulative improvement in student test scores after schools completed their second year of implementing PL.

Policy-makers included more assessment flexibility in the federal Every Student Succeeds Act (ESSA) in 2015 hoping to prompt more personal learning innovation at the state level (Murphy, 2017). In fact, about 20 states have included elements of personalized learning in their Every Student Succeeds Act plans, but Chip Slaven, of the Alliance for Excellent Education, stated that states' ESSA plans have not met overall expectations for innovation in schools, particularly in the area of personal learning (Murphy, 2017, par 7). This is largely because no clear and consistent definition for personal learning exists nor has the federal government provided any additional guidance for designing policies, practices, and supports to promote personalized learning. Brian Stack, a New Hampshire principal whose district refers to itself as a personalized district, stated, “You can’t just decide one day that you want to do personalized. It’s a philosophical shift of pretty much all aspects of your organization” (Murphy, 2018, par 15). When asked about the lack of states’ specificity in some of the state personal learning plans, Lillian Pace, the Senior Director of National Policy at Knowledge Works said, “They set up a vision in their plan, and they say they’re working on figuring out how to do it” (Murphy, 2018, para 38). Some of this figuring out seems to be designed around a wait and see approach. Kenneth Klau, the Director of the Office of Digital Learning at the Massachusetts Department of Elementary and Secondary Education, said Massachusetts is “in a learning mode; we’re taking the opportunity to learn from what other states are doing” (Murphy, 2018, par 39). Still other states, are relying on their local

districts, schools, and classrooms to figure this out. Michael Watson, Chief Academic Office for the Delaware Department of Education, stated, "We should be designing policies and practices to allow for personalized learning to happen, but the locus of control is in the classroom and the school" (Murphy, 2018, par 42)

These various calls for reform, funding tied specifically to the goal of personalizing education for students, the inclusion of some type of personal learning vision in the ESSA plans of almost half of the states, and the RAND report's evidence on personalized learning has encouraged some districts in the United States to include personal learning in their strategic plans, mission statements, and professional development agendas, but there is a real lack of clarity and consistency about what PL really means. At the district administration level, conceptualizations of personalization have been based largely on the grant requirements and the guiding principles of the sponsoring institutions, vendor descriptions, and the preferences of local constituents.

Local Context

In the quest to modernize education, many school districts have updated their mission statements and goals to include the personalization of learning for students. Given this development, I explored how one district is addressing these changes. The Clayfield Township Schools is a comprehensive public-school system serving students in pre-kindergarten through twelfth grade in New Jersey.[1] The district serves just under 4,000 students and is in the second highest socio-economic category (of four) as classified by the New Jersey Department of Education. The district consists of eight schools including a K-12 alternative school serving students from surrounding counties in

[1] All proper nouns related to the research site and participants are pseudonyms.

addition to local residents. The district has approximately 350 classroom teachers. The Clayfield Township Schools adopted the following mission statement in 2014-2015 to reflect a new approach to education:

> **2014-2015 Mission Statement.** The Clayfield Township Schools promotes Pre-K-Grade 12 education and a shared responsibility among students, educators, administrators, parents and the community. The Clayfield Township Schools strives to create a safe, caring, and rigorous learning environment responsive to *the individual needs and interests of our students* offering programs of studies consistent with the Common Core State Standards, New Jersey Core Curriculum Content Standards, and *21st Century College and Career Readiness*. Central to our programs are *relevant, real-world learning experiences* that stimulate and encourage curiosity, effective communication, *goal setting* and problem-solving skills while providing opportunities that promote creativity, *self-expression*, physical/emotional wellness and an appreciation of diversity. All students are provided with personalized learning experiences, critical thinking and technology skills needed to become thoughtful, responsible and productive citizens making contributions in local and global contexts fostering respect and accountability in all of their actions (Clayfield Township Schools, 2013).

Consistent with the mission statement, the Board of Education adopted the following goal which was also put into effect for the 2015-2016 school year, "The district staff will begin a multi-year journey seeking to ensure the implementation of PERSONALIZED LEARNING through identification of existing practices and/or pieces of evidence capturing the essence of key mission statement phrases" (Clayfield Township Schools,

2013; capital letters in original). In the fall of 2015, the Board of Education requested a quarterly update on the progress of the district toward the accomplishment of the goal.

When concepts in education are put into operation, a system often engages in a process to definition the term and its practice through consensus. As a new assistant superintendent working with a new interim superintendent, I had no knowledge of the district's progress with regard to the goal. Therefore, I set out to conduct some preliminary research by asking principals to report on the implementation of the personalized learning progress and activities in each of their schools. They in turn asked their teachers.

I discovered that the principals and teachers were submitting reports that demonstrated very different understandings of personalized learning. One principal described building penguin houses as personalized learning but could not articulate why such an activity was "personalized." Another principal provided examples in which students were provided choices in their learning, such as choosing their own project topic. A third principal listed "virtual field trip" as an example of personalized learning but offered no further explanation or criteria for making this determination. I returned to the mission statement and goals to determine how personalized learning was defined, and no specific definition was present in the document. The statement referenced characteristics such as individual needs, real world learning experiences, and goal setting, but not a clear definition. Further complicating matters, at one of the Board of Education meetings, there was some controversy about the identification of students for both the gifted education and basic skills programs. One of the Board members wanted to know

why we needed either program if we were implementing personalized learning for students.

As the administrator responsible for implementing this goal and for exploring whether implementing personalized learning could alleviate the need for gifted and basic skills education; I needed to better understand how principals and teachers were defining personalization and the ways in which their definitions influenced their practice. Further, for the district there was a clear need for developing a common language for personal learning as well as cultivating ways to help teachers infuse personalization into their practices.

Previous Cycles of Action Research

In this section I discuss two cycles of action research. In cycle 1, I conducted individual interviews with principals and in cycle 2, I conducted individual interviews with teachers. In both cycles, my goal was to develop a better understanding of the way in which both principals and teachers conceptualized personal learning.

Cycle 1. Early in this research program, I solicited building principals in the district for individual interviews and selected three principals based on their diverse characteristics in an attempt to obtain a representative sample of the building principals in the district. The research was explained to the participants and verbal consent was obtained. I scheduled interviews at the convenience of the principals and met each principal in his or her office to answer the following questions:

1. How would you define personalized learning?
2. What are some examples of personalized learning in your school?

3. When you think about personalized learning in the classroom, what would teachers be doing?
4. When you think about personalized learning in the classroom, what would students be doing?
5. How do you explain personalized learning to parents?
6. What professional development have your teachers received with regard to personalized learning? What supports or professional development do you think teachers need to implement personalized learning?
7. How do you embed personalized learning into the teacher evaluation process?
8. How do you balance the desire to implement personalized learning with district and state requirements regarding standards, curriculum, content, etc.?
9. What barriers exist to implementing personalized learning?
10. What comments or questions do you have?

These interviews were recorded, transcribed, and analyzed using Strauss and Corbin's (1990) constant comparative method from grounded theory. From these data, I developed eight assertions that are presented in Table 1.

Table 1

Theme-related Components, Themes, and Assertions

Themes	Theme-related Components	Assertions
Personalized Learning Conceptualization	-option to choose -Choose the topic -Choose how they're going to develop a topic -choose what they want to learn -know the child (interests/strengths) -curriculum, strengths, interests (marry these) -voice in choice -preferred learning styles -pacing -choice	Although principals had different conceptualizations of personal learning, they all prioritized student choice in their explanations and emphasized the importance of knowing something about the students such as interests, strengths, or learning styles.
Student Roles	-students generate topics they are interested in and what a class would look like -latitude -active participants -design their own learning experiences -all over the classroom -not necessarily sitting in their seats or desks -working on different things -investigation -researchers -create an action plan	Principals view student roles in a personalized learning environment as active in which they are designing and creating based on their own talents and interests, resulting in students working on different projects at the same time
Teacher roles	-facilitator -guide -learner -let go -let go of control -not the disseminator of information -doesn't construct the learning experiences -not teaching -take a step back	Principals view the role of teaching in a personalized learning environment to be supportive in nature such as a guide, coach, support, helper, or facilitator, and not the center of the learning experience as it is in a

	-empower kids -supporting, furthering, prompting the students -coach -Not teaching -not at the front -on the side -helping -guiding	traditional learning environment.
Personalization examples	-not happening Choice and options within a project but not "I get to choose what I want to learn" -children wanted to research what adults did in the building and they did -children were interested in pilgrims, Native Americans, and Thanksgiving so the teachers provided them with resources and they gathered information -probably not -not at that level -there are elements of it, i.e. choice -still teacher directed	Some principals will admit that personalized learning is not happening in their schools. Students exploring their own interests with teacher assistance was viewed as an example of personalized learning.
Barriers	-need time to research -K-2 building has different needs; examples tend to be middle or high school -no flexibility in time -mandates -other standards -big, big thing; overwhelming -we model a top down approach in working with teachers -expect uniformity in classes -it's a process -it's going to take a very long time Grade level is a factor; developmental issues between a 3rd grader and a 7th grader -7th graders are already used to how they learn; still new for a 3rd grader	Time is a barrier in the implementation of personalized learning both in terms of teachers not having enough preparation and thinking time in their days to the length of perceived time required to effectively implement a personalized approach. Other mandates and standards and assessment requirements make it difficult to

	-other requirements -only one PD this year -don't know how to do it	implement personalized learning because people are unclear how to achieve both. Principals see their own grade levels as barriers in comparison to other grade levels where they see implementation as being easier.
Needs	-book study -speaker -research -need to see what it looks like at their level -baby steps -freedom -connection -breaking it down into manageable pieces -coaching them -supporting them -training	Teachers need professional development that is chunked into manageable pieces including opportunities for research, book studies, speakers, studying examples particular to their grade levels, and ongoing support to be able to implement personalized learning.

Assertion 1. *Although principals had different conceptualizations of personal learning; they all prioritized student choice in their explanations and emphasized the importance of knowing something about the students such as interests, strengths, or learning preferences*. In every interview, the principals emphasized student choice in their definitions of the concept. One principal defined it as follows,

> I think personalized learning at the highest level is when students have the option to choose what they want to learn and they get to pick and choose the topic that they want to learn. For example, they want to learn about the physics behind the

> skateboarding. They can then learn that and choose how they're going to develop a project or some sort of way to demonstrate their learning of that specific topic. Students have the option to choose what they want to learn, personalizing it for themselves.

The other principals also included choice in their definitions as one of the first things they referred to and then again in referencing examples and in discussing different aspects of personalization throughout the interview. Another principal stated, "I think that a functional definition has to do with when a kid, a child has voice in choice in terms of what they're going to learn, preferred learning styles in terms of how they learn it." The principals' definitions also included emphasis on knowing students in terms of their interests, strengths, and learning styles. For example, one principal said, "Personalized learning would be an approach to teaching where you need to know the child, their interest, their strengths, the curriculum that you need to teach and try to marry all of those things in order the further the child's academic strengths while still engaging them in a project or learning that they are interested in."

Assertion 2. *Principals viewed student roles in a personalized learning environment as active in which they are designing and creating based on their own talents and interests, resulting in students working on different projects at the same time.* One principal described the student role in a personalized learning environment as one in which "students (are) all over the classroom not necessarily sitting at their tables or desks." One principal concluded, "I would expect to see them all working on different things." Another principal stated, "I think that in a strict sense, where kids really have a lot of latitude in terms of what they can be doing and how they can be learning." All of

these statements indicate students would have more freedom in a personalized learning environment. They would also have more responsibility. In a personalized learning environment, “The students are creating an action plan.” The principals said that this student role is very different than the ones that students have now, with one indicating, “I think that may be difficult for a lot of teachers, because it’s certainly not a traditional concept.”

Assertion 3. *Principals viewed the role of teaching in a personalized learning environment to be supportive in nature such as a guide, coach, support, helper, or facilitator, and not the center of the learning experience as it is in a traditional learning environment.* The principals were very clear that the role of the teacher would need to change in a personalized learning environment, with one indicating that “the teacher would be moving around from group to group, supporting, furthering, and prompting the students to further their research.” The teacher becomes “a facilitator,” and “the teacher is much more of kind of like a coach or not really a teacher. They're kind of going around to the kids and making sure that they're following through and doing what they said they were going to do.” The principals did not conceptualize the new role of the teacher as one of one of “teaching” at all. Another principal stated that teachers needed “to be able to let go of control and to be able to understand not being a teacher.” In addition to the role of guiding, coaching or facilitating, one of the principals indicated the importance of the teacher as a learner in this statement

> The teacher becomes a guide, and that teacher also becomes a learner, because that teacher may not be an expert in the finite area that the child even wants to learn about. As educators, we need to kind of take a step back and understand that

> we need to be engaging in learning with our kids. As adults, we know how to learn, and we can help kids to better teach themselves and follow the path that they think is good for them.

The principals definitely conceived of the role as different from the current one since they listed what the teachers would not be doing (much of which is what they are doing currently.) Examples include statements such as “not the role to be the disseminator of information, or to be the one who totally constructs the learning experiences for the kids” and that teachers “are not like at the front.”

Assertion 4. *Some principals admitted that personalized learning is not happening in their schools.* This differed from reports that were sent in when the principals were asked to report on progress toward the Board of Education goals. Since I told them that this information would be kept confidential and not in any way held against them in terms of their evaluations, they seemed comfortable being more honest, and two of them admitted that there were not examples of “true” personalized learning happening in their schools yet. The middle school principal stated, “I'm going to be real honest. In going with the definition of what we're learning personalized learning is, through our book study which I have somewhere, I'm going to say probably not. Not to that level. There are elements of it...” He went on to state that he observes elements of student choice but that the choice is offered in the context of teacher-driven instruction and happens only occasionally. The high school principal admitted, “Currently at my school, for that kind of personalized learning, I do not see that happening. No. I haven't seen any students partake in any sort of project where they're like choosing what they want to do, just anything out there.” This informal evaluation may also be evidence that

as the principals develop a better understanding of the concept of personalization, they realize that some of the things they originally provided as examples of personalized learning do not align with this more comprehensive understanding of the concept.

Assertion 5. *Students exploring their own interests with teacher assistance was viewed as an example of personalized learning.* The elementary principal provided several examples of personalized learning, all of which involved the students expressing an interest in a topic and the teachers supporting them through a process of learning about it. For example, the children in one of the special education classes had asked who the other adults were in the building and what they did, so the teacher arranged for the students to interview the principal, secretaries, custodians, aides, and other staff, and students generated a big book explaining all of the adult roles in the school building. She provided another example in which the students expressed an interest in learning about pilgrims, Native Americans, and the traditions of Thanksgiving around the holiday. The teacher provided varied resources and let the children explore them on their own. The principal was unclear as to how the students expressed their interests or whether student interest played a role in all of the other classes that studied the same topic.

Assertion 6. *Time is a barrier in the implementation of personalized learning both in terms of teachers not having enough preparation and thinking time in their days and also in the length of perceived time required to effectively implement a personalized approach.* The principals thought it was important to take time in introducing and expecting personalized environments. The elementary principal mentioned the need to take "baby steps" several times. The middle school principal indicated "I think that all changes teachers may initially be not real comfortable with it and need a lot of very

specific direction and guidance in terms of how to do that, and a lot of time." The high school principal referred to personalized learning this way. "I think it's a daunting task." All of the principals mentioned time as a barrier in focusing on personalized teaching. One of the principals mentioned "limited prep time." A different principal mentioned a "multitude of different initiatives." It may be difficult for teachers to prioritize these initiatives, particularly when personalized instruction is not a part of their evaluation as are some of the other initiatives mentioned.

Assertion 7. *Other mandates and standards and assessment requirements make it difficult to implement personalized learning because people are unclear how to achieve both.* The principals agreed that it is difficult to conceptualize an environment in which students drive their own learning while we still meet state requirements for covering specific standards and taking specific assessments. Other mandates included PARCC assessments, Student Growth Objectives, curriculum development, lesson plan development, grading, and other requirements that interfere with teachers 'having the time to study and implement personalized learning. These concepts seem somewhat at odds with each other. This conflict did not dissuade the principals from trying to pursue personalized learning, but they recognized that this is no easy task. The high school principal referred to it as a "very noble task but I think it's hard to figure out how to implement it into the schools with all the other requirements that we have to do." When asked about how to do both, the middle school principal replied,

> That is the million-dollar question. I mean, I'm just speaking freely. There's got to be a workable intersection between the two, but in some ways, philosophically, they're like two ships passing in the night. You'd like to think that in designing

> these really high-quality, personalized learning experiences for kids that an effect of that is going to be that the kids are going to do better when they're measured on these assessments.

He said that he sees it as a "two-pronged approach" but when pressed for more information, he responded, "Where that intersection comes and exactly what that looks like, I think is something good for us to be discussing administratively, but don't think that anyone right now knows exactly what that should look like ideally." It is clear that the principals need more guidance in how to marry personalized learning environments with other state mandates.

Assertion 8. *Teachers need professional development that is chunked into manageable pieces including opportunities for research, book studies, speakers, studying examples particular to their grade levels, and ongoing support to be able to implement personalized learning.* The principals were asked what types of support their teachers would need to implement personalized learning. One of the principals mentioned that his teachers had had only one presentation on the topic of personalized learning. Another principal indicated that book studies, speakers, and time to conduct research would be helpful. All of the principals thought that the professional support needed to be targeted to the age group of the students the teachers teach as there are developmental differences between the students that would affect implementation. One of the principals indicated that administrators should model a more personalized approach when working with teachers. Speaking specifically about the teacher evaluation process, the principal said,

> I don't see it embedded in the teacher evaluation process at all really. I think that even the teacher evaluation process isn't totally personalized either. It's a very

> structured way of looking at teaching as what it's supposed to be. We don't look at their strengths and weaknesses and say here's the things you can work on. It's very formulaic. It's the same rubric for every single teacher. The way we evaluate them is standard-based and it's what they have to do. Within their classrooms we look at specific things that we want to see and we don't really personalize it for them specifically.

He went on to state, "I think it's kind of top down. We are ... The principal is the principal teacher of the school. We are not modeling personalized learning with our staff. We offer the same PD for them. We offer the same grading criteria for them. We expect the same uniformity within the classrooms for the most part." This statement may suggest that in addition to formalized professional development on personalized learning that the model of working with teachers in schools must also change. Teachers may require a more personalized approach to

professional development, coaching, and evaluation to really be able to master skills essential to personalized instruction.

Cycle 2. Following the interviews with principals, I developed a pilot study in which a community of practice model was used to implement a Personal Professional Learning Community (PPLC). As a part of this professional development activity, teachers participated in online discussions. I reviewed the online chat postings of teachers involved this pilot during the first month of their participation. The facilitator asked the teachers the following questions:

1. What comes to mind when you hear the word personalization?

2. Why do you believe that the learner is the missing piece in the conversations about education? What are some of the barriers to the implementation of personal learning?
3. What tools and strategies are in your personal learning backpack?

I analyzed the chat log responses that were recorded online using Strauss and Corbin's (1990) constant comparative method from grounded theory. From these data, I developed three assertions that are presented in Table 2.

Table 2

Theme-related Components, Themes, and Assertions

Themes	Theme-related Components	Assertions
Characteristics of Personal Learning	Conceptualization --student-directed --Specific and meaningful learning --voice and choice --authentic learning --student perspective --students take charge --needs and style --work at their own pace --their goals --learner led --student interests and preferences --motivated --students setting their own goals --self-directed --student driven --personal interests --students deciding and directing	Teachers had similar perceptions of personal learning which involved student voice and choice, addressing diverse student needs, and students leading their learning.
Barriers/Challenges	-students generate topics they are interested in and what a class would look like -latitude -active participants -design their own learning experiences -all over the classroom -not necessarily sitting in their seats or desks -working on different things -investigation -researchers -create an action plan	Principals view student roles in a personalized learning environment as active in which they are designing and creating based on their own talents and interests, resulting in students working on different projects at the same time
Personal Learning Tools/Strategies	Tools/Strategies --Google apps for education --Google Drive --Google apps	When asked about tools and strategies for personal learning, the

	--Google drive --Google classroom --Smartboard --feedback from colleagues --student interest surveys --student feedback --YouTube --Khan Academy --Animoto --Google --Google drive --Dropbox --Google classroom --Google hangouts --Social media --Remind 101 --CrashCourse --Pocket --student interest surveys --student collaboration	teachers' responses focused more on tools than strategies, among which Google applications were the most popular tool used for personal learning.

Assertion 1. *Teachers had similar perceptions of personal learning which involved student voice and choice, addressing diverse student needs, and students' leading their learning.* While the teachers expressed different thoughts and ideas in response to the question asking them what comes to mind when they hear personal learning, several common themes emerged. The idea of giving students more voice and choice in their learning was a common theme. For example, one teacher stated, "Personalization is giving your students a voice and choice in their learning." Another responded, "Students' personal interests are highly regarded and incorporated into classroom activities." Other teacher responses included "tailored to the student's interests and preferences" and "giving students voice and choice in the classroom." Another common theme was addressing diverse learner needs. For example, teachers made comments such as, "Learning specific to each individual's learning needs and style," "Everyone can learn in their own way," "Specific and directed towards the specific

learner" and "Specific and meaningful to ME (the learner)." Finally, many of the teachers referenced the importance of students' setting their own goals and leading their own learning. For example, "Students take charge of their learning," "students setting their own goals," "self-directed" and "personalization is students deciding and directing their learning."

Assertion 2. *Teachers identified many barriers or challenges to implementing personal learning, the most common of which were time, curricular and standards requirements, a fear of letting go of control, and a lack of professional development.* Several of the teachers mentioned the challenges of balancing a desire to let student interests drive learning and still meeting curriculum and standard requirements, a challenge which one teacher described as "the struggle between what *should be* done and what *must be* done." Others blamed a lack of focus on the learner on "standards driven education" and a "test-driven society." Time was also mentioned frequently as a barrier to the implementation of personal learning. For example, one teacher wrote, "There are many time constraints with curriculum and within the school day." In response to why the learner is often a missing piece in conversations about learning and what holds teachers back in implementing personal learning, teachers responded, "It's because of convenience and time" and "time is an issue." Teachers also reported concerns about letting go of control in the classroom. One teacher stated, "We tend to feel like we as teachers need to be in the driver's seat." Another teacher stated, "Teachers are often afraid to give up the control." Finally, several teachers mentioned a lack of quality professional development. For example, "…most PD focuses on what the teacher should do (as opposed to students)," "pre-service teaching programs and PD do not focus on

personal learning," "directives are often top-down" and "PD is usually the same for everyone even though not all learners are created equal."

Assertion 3. *When asked about tools and strategies for personal learning, the teachers' responses focused more on tools than strategies, among which Google applications were the most popular tool used for personal learning.* Teachers listed many different tools including Google docs, Google classroom, Google Hangouts, Remind 101, student interest surveys, and Smartboards. The only responses that might be seen as strategies included "student collaboration," "student feedback," and feedback from colleagues." None of these were explained in any depth. This may be indicative of a lack of understanding regarding strategies to personalize learning.

In addition to the information obtained in these two previous cycles of research, I used data drawn from a professional development survey which the district conducts annually. In the annual district professional development survey for 2015-2016, of which 226 of the 330 teachers responded (a 75% response rate), 86% of respondents reported not having sufficient professional development on personalized learning, and 94% reported having insufficient professional time to explore the topic. It is difficult to promote student's personalized learning if there is no professional development support for teachers' personalized instruction (Lin & Kim, 2013). To address this issue, I developed an innovation that focused on providing time for professional development on personal learning.

The Innovation

The Personal Professional Learning Cohort (PPLC) was designed to address many of the perceived barriers to the implementation of personal learning, using the

Communities of Practice (CoP) framework. Key goals of the program included developing and implementing a district-wide framework for personalization as well as enhancing teacher self-efficacy with regard to the use of personalization strategies in the classroom. To assist me with the implementation of the PPLC, I hired Innovative Designs in Education (IDE) as a consultant firm to support the work of the PPLC. There were several reasons for this decision. One was time. My role as assistant superintendent did not include the PPLC so this work was all above and beyond my typical workload. It was very helpful for me to have this support. IDE provided one consultant, Patricia, who worked with us throughout the period of the cohort. The IDE consultant helped to facilitate cohort sessions and served as the PL coach who visited teachers in their classrooms. While IDE was not doing work on personal learning, they were doing work in the area of student-centered classrooms, and they provided several concrete strategies to assist teachers in moving toward a more personalized classroom. Patricia then supported the teachers in the implementation of these strategies in the classroom-based coaching sessions. The final reason I wanted the consultant to work as the PL coach was so that the teachers would have a partner and coach who did not work for the district or have any evaluative authority so participants could feel comfortable discussing challenges that they were having without fear of them being reflected in their evaluations.

The cohort participated in a blended approach to professional learning, participating in face-to-face learning and sharing sessions as well as online components. In between face-to-face sessions, teachers participated in online discussions, completed online activities, and shared documents and information through a learning management system. Each face-to-face session focused on specific topics but also allowed for

flexibility based on the needs of the participants. Each session also included design time in which teachers could apply their new learnings. In order to build and maintain a sense of community, each face-to-face session also included at least one community activity such as an ice-breaker, team building activity, or sharing session. As noted in Figure 1, there were a total of ten different sessions. Online activities served as extension of the face to face sessions. Topics are explained in more detail in chapter three.

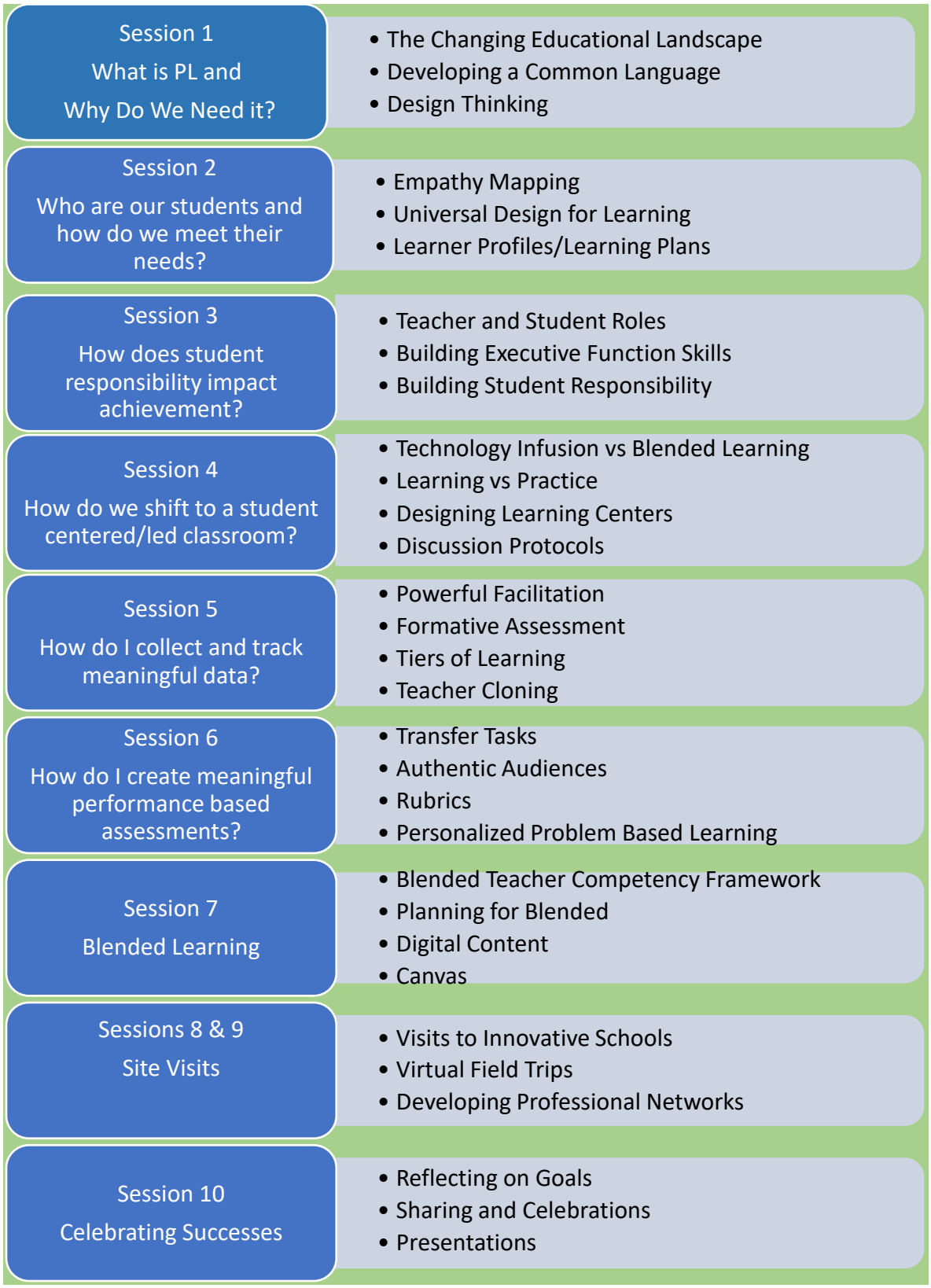

Figure 1. Personal professional learning cohort topics, 2017-2018.

Purpose of the Study

The purpose of this study was to examine the effectiveness of the community of practice model in providing professional development to improve K-12 teacher self-efficacy with regard to the implementation of personal learning. The research questions are as follows:

RQ1: To what extent does participation in a community of practice affect K-12 teachers' knowledge, skills, and self-efficacy for implementing personal learning?

RQ2: To what extent does the PPLC create value for individuals and the organization?

Summary

Concern over U.S. student performance on international tests and a lack of preparedness on the part of high school graduates for college and career prompted the federal government to prioritize funding for the establishment of personal learning environments. Private organizations have also provided funding to support personal learning. These funding streams, as well as an increased interest in personal learning as a way to increase student achievement, prompted many local districts to include personal learning as a district goal; however, there is no universal, consistent definition of personal learning, nor has there been much support for districts, schools, and teachers to help them with the implementation of personal learning. Teachers perceive many barriers to the implementation of personal learning including time, required mandates, a fear of letting go of control, and a lack of professional development. This study examines the use of a Personal Professional Learning Cohort (PPLC) designed using a community of practice

model to enhance teacher self-efficacy, reduce perceived barriers in the implementation of personal learning, and generate value for the individuals and the organization.

CHAPTER 2

THEORETICAL PERSPECTIVES AND EXISTING SCHOLARSHIP

I.

It was six men of Indostan,

To learning much inclined,

Who went to see the Elephant

(Though all of them were blind),

That each by observation

Might satisfy his mind.

II.

The *First* approach'd the Elephant,

And happening to fall

Against his broad and sturdy side,

At once began to bawl:

"God bless me! but the Elephant

Is very like a wall!"

III.

The *Second*, feeling of the tusk,

Cried, -"Ho! what have we here

So very round and smooth and sharp?

To me 'tis mighty clear,

This wonder of an Elephant

Is very like a spear!"

IV

The *Third* approach'd the animal,

And happening to take

The squirming trunk within his hands,

Thus boldly up and spake:

"I see," -quoth he- "the Elephant

Is very like a snake!"

V

The *Fourth* reached out an eager hand,

And felt about the knee:

"What most this wondrous beast is like

Is mighty plain," -quoth he,-

'"Tis clear enough the Elephant

Is very like a tree!"

VI

The *Fifth*, who chanced to touch the ear,

Said- "E'en the blindest man

Can tell what this resembles most;

Deny the fact who can,

This marvel of an Elephant

Is very like a fan!"

VII

The *Sixth* no sooner had begun
About the beast to grope,
Then, seizing on the swinging tail
That fell within his scope,
"I see," -quoth he,- "the Elephant
Is very like a rope!"

VIII

And so these men of Indostan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong! (Saxe, 1868, p. 259-260)

Saxe's (1868) poem illustrates how perception is often based on what a person is able to see or touch. In the story, each of six blind men touch parts of an elephant, but the individual characterizations of the same animal are based only on what each blind man is able to perceive. This parable emphasizes the importance of communication and respect for different perspectives. In this instance, the blind men can only conceive of the elephant in its entirety and complexity by sharing their own individual experiences. Saxe's poem can assist us in understanding some of the confusion surrounding personal learning (PL). Without a clear and universally accepted definition, each person or

organization defines PL by what it is they see. To some, personal learning is a synonym for blended learning; to others, it implies voice and choice for students; whereas some might define it as project-based learning. This elucidates the necessity of having a common language within an organization attempting to implement personal learning but it also indicates the importance of continued and open conversations and communication among educational institutions and experts to move toward a common and complex understanding of personal learning.

Chapter 1 provided an overview of the context and purpose of this project. I described the national and local context, provided preliminary data collected on the problem of practice, and introduced the PPLC as an innovation to address the problem. In Chapter 2, I will introduce existing scholarship on personal learning, present data from a previous cycle of action research that led to the development of a conceptual model for personal learning and explain the theoretical perspectives and studies relative to the problem of practice that guide the study.

Review of Existing Scholarship

Personal learning (PL) has been a controversial concept that means different things to different people depending on the experience and perspective of the observer as well as the context in which it was referenced. Differences in definitions and approaches to personalization have caused confusion over the past several decades (Keefe, 2007). Personal learning is not a new concept. Elements of personalization can be traced to a variety of different educational approaches or philosophies including classical education, child-study, humanist education, progressive education, and individualized instruction.

The earliest formal use of the word "personalized" can be found in the Personalized System of Instruction (PSI) introduced by Keller and his colleagues at the University of Brasilia in 1962 (Keefe, 2007). Keller's (1968) PSI included the following components:

- The ability for students to move at their own pace.
- Mastery-based learning.
- Lectures and demonstrations as vehicles of motivation, rather than sources of critical information.
- Emphasis on the written word in teacher-student communication.
- The use of proctors which permitted repeated testing, immediate scoring, and tutoring.

The National Association of Secondary School Principals (NASSP) sponsored the Model Schools Project (MSP) from 1969 through 1974 in which they cultivated Keller's model of personalization. Keefe (2007) defined personalized education as "a systematic effort on the part of a school to take into account individual student characteristics and effective instructional practices in organizing the learning environment" (p. 219). This model was later adopted and improved upon by Keefe for LEC International and has continued to be used in self-directed schools in Canada.

Various reform movements have also advocated for personal learning. In *Breaking Ranks: Changing an American Institution* (1996), the NASSP proposed that high schools in the United States commit to substantive reform, guided by six main themes and 13 interrelated recommendations. First among the themes was personalization in which the NASSP recommended that high schools divide themselves into units of no

more than 600 students, teachers use a variety of instructional strategies that accommodate individual learning needs, and every student have a Personal Adult Advocate and a Personal Plan for Progress (NAASP, 1996). In collaboration with the Education Alliance at Brown University and its Center for Secondary School Design, the NASSP followed this report with *Breaking Ranks II: Strategies for Leading High School Reform*. In this second report, the NASSP used John Clarke's definition of personalized learning as "a learning process in which schools help students to assess their own talents and aspirations, plan a pathway toward their own purposes, work cooperatively with others on challenging tasks, maintain a record of their explorations, and demonstrate their learning against clear standards in a wide variety of media, all with close support and guides" (NAASP, 2004, p. 67 cited in Clarke, 2003).

Although personal learning is not a new concept, it has been revitalized as a part of recent educational reform movements in light of the 2005 Achieve Report's findings regarding the lack of preparedness of high school graduates for college and career as well as U.S. PISA scores in reading and mathematics as compared to global averages. In addition, the increased availability and affordability of technology has resulted in calls to leverage technology to personalize learning for students. For example, the U.S. Department of Education included personalization as part of their 2010 Technology Plan, and it was one of the main goals of the Federal Race to the Top Grants (U.S. Department of Education, 2014). In 2014, Next Generation Learning Challenges (NGLC) offered 7.2 million dollars in grants to schools who developed plans to launch personalized, competency-based programs (Next Generation Learning Challenge, 2014). Numerous curriculum and educational technology companies cited personal learning as one of their

main selling features, as parents demanded more personalized approaches for their children (Bray & McClaskey, 2015; Keefe, 2007). Even with so many groups focused on personalization, there was still an absence of consensus on what was meant by the term, a situation which has made planning and implementation for schools difficult and concerns and critiques of the reform plentiful. This condition of uncertainty has been perhaps most evident when terms like differentiation and individualization were used interchangeably with personalization.

The U.S. Department of Education (2010) stated that personalization, differentiation, and individualization were all education "buzzwords" and that "little agreement exists on what they mean beyond the broad concept that each is an alternative to the one-size-fits-all model of teaching and learning" (p. 12). The department defined all three terms in the 2010 Educational Technology Plan:

> **Differentiation:** refers to instruction that is tailored to the learning preferences of different learners. Learning goals are the same for all students, but the method or approach of instruction varies, according to the preferences of each student or what research has found works best for students like them.
>
> **Individualization:** refers to instruction that is paced to the needs of different learners. Learning goals are the same for all students, but students can progress through the material at different speeds according to their learning needs.
>
> **Personalization:** Instruction is paced to *learning needs*, tailored to *learning preferences*, and tailored to the *specific interests of different learners*. In an environment that is fully personalized, the learning objectives and content as well

as the method and pace may all vary (so personalization encompasses differentiation and individualization). (p. 12)

The plan then uses all three terms interchangeably, contributing to the confused nature of the discourse. Bray and McClaskey (2015) took issue with the government's definition of personalization due to its lack of specificity and also because the Defocused primarily on instructional practice rather than the learner. In response, Bray and McClaskey developed a chart, comparing the terms as they related to both the teacher and learner roles which is excerpted in Figure 2.

Personalization The Learner…	**Differentiation** The Teacher…	**Individualization** The Teacher…
drives their own learning.	provides instruction to groups of learners.	provides instruction to an individual learner.
actively participates in the design of their learning.	designs instruction based on the learning needs of different groups of learners.	customizes instruction based on the learning needs of the individual learner.
owns and is responsible for their learning that includes their voice and choice on how and what they learn.	is responsible for a variety of instruction for different groups of learners.	is responsible for modifying instruction based on the needs of the individual learner.
identifies goals for their learning plan and benchmarks as they progress along their learning path with guidance from teacher.	identifies the same objectives for different groups of learners as they do for the whole class.	identifies the same objectives for all learners with specific objectives for individuals who receive one-on-one support

demonstrates mastery of content in a competency-based system.	monitors learning based on Carnegie unit (seat time) and grade level.	monitors learning based on Carnegie unit (seat time) and grade level.
becomes a self-directed, expert learner who monitors progress and reflects on learning based on mastery of content and skills	uses data and assessments to modify instruction for groups of learners and provides feedback to individual learners to advance learning.	uses data and assessments to measure progress of what the individual learner learned and did not learn to decide next steps in their learning.
assessment **AS** and **FOR** learning with minimal **OF** learning	assessment **OF** and **FOR** learning.	assessment **OF** learning.

Figure 2. Personalization, Differentiation, and Individualization Chart from Bray and McClaskey (2015, p. 9)

Bray and McCluskey's (2015) chart clearly outlined the role of the learner and the role of the teacher. Note that in individualization and differentiation, the teacher is the one taking a leading role, whereas in the personalization column, it is the learner who takes the leading role. Bray and McClaskey (2015) also defined a personalized environment as one in which the learner builds a network of peers and experts. By comparison, Yonezawa, McClure, Larry, and Jones (2012) defined personalization solely as a "web of positive relationships among adults and youth in classrooms, schools, and communities to promote learning" (p. 41). On the other hand, Askar and Altun (2009) did not address the role of relationships at all in their definition of personalization. Instead, they focused on the role of technology and the need to capture learners' interaction patterns using online learning. They have developed a cognitive skill and concept ontology for K-12 education to be used for personalization. In 2013, the International

Association for K-12 Online Learning (iNACOL) published a definition of personal learning based on responses collected in a practitioner survey, “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. 4). KnowledgeWorks (2018) defined PL as meeting each student at their own level, challenging them with high expectations for academic achievement and growing student agency through:

- **Instruction aligned to rigorous academic standards and social-emotional skills** students need to be ready for college, career and life.
- **Customized instruction** that allows each student to design learning experiences aligned to his or her interests.
- **Varied pacing of instruction** based on individual student needs, allowing students to accelerate or take additional time based on their level of mastery.
- **Real-time differentiation of instruction, supports and interventions** based on data from formative assessments and student feedback to ensure every student remains on track to graduation.
- **Access to clear, transferable learning objectives and assessment results** so students and families understand what is expected for mastery and advancement. (KnowledgeWorks, 2018)

Convinced that there would never be consensus on the definition of personalization, Keefe (2007) developed a *descriptive profile of personalization* by bringing together the concepts of innovators, scholars, and practitioners. The profile included the following components: (a) the philosophy of personalization is learner-centered–the learner must be involved; (b) personalization required interactive learning environments designed to foster collaboration and reflective conversation; (c) no single pattern of horizontal or vertical school organization was normative in a personalized school; (d) advisement was integral to personalization; (e) the curriculum of a personalized school connected to real life whenever possible, helping students to connect their education to the future; (f) no attempt was made to impose one model of instruction or learning on all students; (g) teachers were to assume a dual role—subject-matter coach and advisor; (h) the school schedule must have provided flexibility and adequate structure for learning; (i) assessment began with the diagnosis of individual student's knowledge and skills; and (j) academic progress of students was assessed in a variety of ways so that a clear and valid picture emerged of what students knew and were able to do. This framework was significant because it captured many of the components of other definitions, but it was not overly prescriptive in nature. It may also have served as a model for the development of subsequent frameworks developed recently. iNACOL's 2016 framework included 10 Essential Elements of Personal Learning:

1. Student agency.

2. Differentiated instruction.

3. Immediate instructional interventions and supports for each student on-demand, when needed.
4. Flexible pacing.
5. Individual student profiles (personalized learning plans).
6. Deeper learning and problem solving to develop meaning.
7. Frequent feedback from instructors and peers.
8. Standards-based, world-class knowledge and skills.
9. Anywhere, anytime learning.
10. Performance-based assessments (project-based learning, portfolios, etc.). (Abel, 2016)

Jenkins, Williams, Moyer, George, and Foster (2016) also developed a framework with essential elements for personal learning. It included five elements:

> (1) instruction being aligned to rigorous college and career ready standards and the social; and emotional skills students need to be successful in college and career; (2) instruction is customized allowing each student to design learning experiences to his or her interests; (3) the pace of instruction is varied based on individual student needs, allowing students to accelerate or take additional time based on their level of mastery; and (4) educators use data from formative assessments and students receive feedback in real-time to differentiate instruction and provide supports and interventions so that every student remains on track to

> graduation; (5) Students and parents have access to clear, transferable learning objectives and assessment results so they understand what is expected for mastery and advancement. (p. 3)

The idea of a framework seems to be more readily accepted because it allows for flexibility in both interpretation and implementation. In fact, when NGLC offered grants for schools to implement personalization, they did not define or specify a model of personal learning; they allowed the schools to design and develop their own models (Next Generation Learning Challenge, 2014). After studying the NGLC supported models, the RAND researchers who have written about the effectiveness of personalized learning utilized a framework, rather than a definition, for discussing personal learning (Pane, Steiner, Baird, & Hamilton, 2016).

Although there has been much dialogue about the meaning of personalization, there has been little research on the effectiveness of personalization on student learning. Pane, Steiner, Baird, and Hamilton (2015) at the RAND Corporation completed a study of 62 public and charter school districts that received NGLC grants to implement personal learning to support the implementation of college-ready standards. The report acknowledged that personal learning has been around for some time, but the adoption of such approaches has increased significantly, in part due to rapid advances of technology platforms and digital content, which have been used to personalize learning. Pane et al. acknowledged there was not yet one shared definition of personal learning, but claimed practitioners in the field generally looked for three characteristics:

> (1) systems and approaches that accelerate and deepen student learning by tailoring instruction to each student's individual needs, skills, and interests; (2) a variety of rich learning experiences that collectively prepare students for success in the college and career of their choice; and (3) teachers' integral role in student learning: designing and managing the learning environment, leading instruction, and providing students with expert guidance and support to help them take increasing ownership of their own learning. (pp. 2-3)

Pane et al. admitted that there was considerable variety in the instructional models of the schools studied, but they cited a framework developed by the Gates Foundation. The framework identified five strategies that typified personal learning environments. Each strategy encompassed a set of tools or features of the personalized learning environment, some of which were central to the approach whereas others might be viewed as enablers of the approach. The personalization framework included the following:

1. Learner profiles: Learner profiles are records of student's individual strengths, needs, motivations, progress, and goals used to inform learning. Goals are generated cooperatively by teachers and students. Student data is generated from multiple sources including projects, tests, presentations, quizzes, and software. Student data are provided to students, and teachers and students discuss these data.
2. Personal learning paths: Students are held to performance standards but the school model allows for multiple pathways to achieve and demonstrate mastery of these standards. Students make choices about the content and structure of learning and the school uses varied instructional strategies and

curriculum materials to meet the needs of all learners. Time for one-on-one academic supports is built into the school day and there are opportunities for students to engage in meaningful learning experiences outside of school.

3. Competency-based progression: Student progress toward clearly defined goals is consistently assessed. Assessment occurs "on demand" when a student is prepared to demonstrate competency. Assessments are varied and students advance or earned course credit as they demonstrated competency, moving at their own pace.
4. Flexible learning environments: The school uses elements of the learning space, such as size, classroom organization, and furniture to support the implementation of PL. Schools also leverage staff and time in flexible ways to support personalization. Student learning time and student grouping strategies are flexible, data-based, and responsive to student needs. Technology is often a key aspect of the model and available to all students.
5. Emphasis on college and career readiness: Curriculum, activities, and programs are designed to promote college and career readiness in terms of academic and non-academic skills. Examples included college visits, college level courses, internships, or career surveys. Student advisory strategies and other aspects of the curriculum develop skills and competencies beyond academic content to include "habits of mind," "learner identity" or "student agency."

In this study of 62 public and charter schools that received the NGLC grants for personal learning, Pane et al. found positive effects on student performance in reading and

mathematics and the lowest performing students made substantial gains relative to their peers (Pane et al., 2015). Scores grew substantially relative to national averages and results were widespread with the majority of schools having statistically significant positive results. No single personalized learning element distinguished the successful schools from other schools in the sample; however, Pane et al. identified groups of elements that distinguished the successful cases from others when present together. The three elements included student grouping in which grouping strategies were flexible, dynamic, and responsive to student needs; data discussion where students were provided with their own student data and included in discussions about how the data related to student's learning goals; and learning space, particularly as the learning space supported grouping strategies.

In a more recent study, Pane, Steiner, Baird, Hamilton, and Pane (2017) identified several benefits identified with personal learning. The PL structures allowed for more one-on-one time instruction between teachers and individual students. Additionally, teachers were able to maximize flexible grouping strategies based on student data. There were also modest gains in test scores. Students attending a PL school scored 3 percentile points better than a student with average test scores in a traditional school. The gains occurred in both reading and math but only the math scores were statistically significant. Students in PL schools who started the year academically behind also made up slightly more ground than comparable students in traditional schools. Pane et al. (2017) also found a cumulative improvement in student test scores after schools completed their second year of implementing PL. These researchers also identified some challenges associated with the implementation of PL and cautioned that more research is needed.

Challenges included teachers not having sufficient time to develop customized lessons for each student, balancing the competing priorities of PL, collaborative learning, and meeting common standards, as well as a lack of high quality digital instructional materials to support implementation. Additionally, some of the teachers reported that when students were able to move at their own pace, many of the students moved too slowly based on current requirements.

This research is important because it will hasten a call for more personal learning, particularly in districts that struggle with an achievement gap in their student populations. It is also important because the study identifies the elements of the framework that were found to be most effective when used in combination and which elements of the framework were challenging for schools to implement given current supports and structures. This may guide future personal learning implementations and provide guidance on needed bureaucratic and policy changes as well as the design and development of professional development for teachers.

Based on the examination of the literature, there was no consensus on the definition of personal learning; however, there were some commonalities across recent definitions. There was also no single implementation strategy for personalization in schools, although there were some common elements across programs. Williams, Moyer, and Jenkins (2014) identified the conditions necessary for a district to scale personal learning. These included curriculum and instructional practices and comprehensive assessment systems that are aligned to the district vision for teaching and learning, the cultivation of learning environments both inside and outside of school walls and supports and interventions for students who need them. They also advocated for professional job-

embedded professional development aligned to the district vision for teaching and learning that fosters a culture of collaboration and continuous improvement, leveraging technology to create more customized experiences that are available at any place at any time. Williams et al. emphasized the importance of leadership development programs that identify and train leaders at the classroom, building, and district levels; a technology policy that allows for ubiquitous, safe, access to the Internet throughout the day; a comprehensive data management system consisting of learning management, assessment, and student information systems; and the development of partnerships with business, community, and higher education constituents.

While preliminary research indicated implementation of some of these common elements improved student achievement, it is difficult to promote student's personalized learning if there is no support for teachers' personalized instruction (Lin & Kim, 2013; Pane et al., 2015). Little research has been done on the preparation of teachers to implement personal learning, although professional development has been identified as a critical component in the implementation of personalization (Bingham, 2016; Williams, Moyer, & Jenkins, 2014). My dissertation study will examine the effectiveness of a Personal Professional Learning Cohort (PPLC) designed and implemented using a community of practice model (CoP) to develop and implement a district-wide framework for personalization as well as to enhance teacher self-efficacy with regard to the use of personal learning strategies in the classroom. This study will contribute to the literature by seeking to understand how teachers in one school district understand and implement personal learning, giving shape to the concept that has invited dissensus as well as to

assess the effectiveness of the CoP model for providing personalized, job-embedded, professional development.

Previous Cycle of Action Research

As stated in Chapter 1, one of the challenges facing my school district was a lack of clarity as to the meaning of personal learning. In the 2016-2017 school year, I conducted a pilot of the PPLC. Chapter 1 examined some of the initial conceptualizations of personal learning using the teachers' online discussions.

In addition to piloting the PPLC, the goal of this research was to explore in depth how a community of practice negotiates the meaning of personal learning. This study was significant locally because it will help the district implement a community-based conceptual model for personal learning. It contributes to the body of literature as a whole because currently there are no studies in which the conceptualization of personal learning was explored from the perspective of teachers. By the end of this pilot, participants focused on collaborative meaning-making: how did the cohort of teachers negotiate the meaning of personal learning?

Participants consisted of a sub-set of teachers from the Clayfield Township school district who volunteered to be a part of the PPLC. Information about the PPLC was publicized and interested teachers were asked to complete an application. Nineteen teachers applied and were accepted to the cohort. It was necessary to use volunteers for this study because of the extra time required for participation and collective bargaining agreements. Of these 19 teachers, 12 of them participated in the focus group. The

participants range in age and experience levels and teach a variety of different grade levels and subject areas. There were ten female teachers and two male teachers.

A focus group generated information on collective views of personal learning. Focus groups are useful for developing a rich understanding of participants' experiences and beliefs (Morgan, 1998). The focus group was semi-structured allowing information to emerge in the discussion. The discussion began with the researcher asking, "What do you think of when you hear the word personalization?" Follow up questions were asked throughout the session to ask for clarification or to draw out additional information. The researcher served as the moderator and took notes. The focus groups audio recorded. The recording and notes were transcribed and analyzed. Member checking was used to confirm the accuracy of participants' understandings and experiences.

I employed grounded theory to analyze the data from the focus groups. Grounded theory is a systematic methodology involving the construction of theory through the inductive analysis of data (Charmaz, 2000; Glaser & Strauss, 1967). I implemented Strauss & Corbin's (1997) three steps of coding (Cresswell, 2003). First, I open-coded the data by reading through it several times and then created tentative labels for chunks of data that summarized what I saw happening, based on the meanings that emerged from the data. Next, I engaged in the process of axial coding by identifying relationships among the open codes. Finally, I implemented selective coding in which I integrated and refined the categories and identified the core concepts for the conceptual model from the axial codes.

Figure 3 displays the conceptual model for personal learning that emerged from the grounded-theory coding. The first concept indicates that personal learning requires some shifts in power. This concept is not overtly referenced in the previously discussed literature, and this represents new knowledge that emerged from the pilot. Teachers reported that students need to be "empowered" and that students must "take charge" of their learning. Teachers must be willing to "give up" some control of the classroom and be willing to "give" students some voice and choice in their learning. One of the participants stated that teachers must be willing to "let students sit in the driver's seat." A few of the teachers envisioned more of a balance of power in that there are "learner-teacher partnerships." The participants also discussed the need for teachers to be empowered by administrators. The teachers explained that their administrators must have a "tolerance for teachers taking risks." The teachers stated a need to feel comfortable and supported by their administration "in case things don't go well." They also described a need for more flexible policies. For example, one teacher asked, "How can you write a lesson plan with a single objective when you are doing personal learning and the students are working at different paces?" Other teachers concurred with this thinking stating how important it is that administrators really understand personal learning. One teacher recounted a story in which the students were working on their own projects and an administrator came in to observe but told the teacher, "I'll come back when you're teaching." Some of the other models do mention student agency but they do not discuss the power shifts required to achieve this. None of the other models or frameworks address the shifts in power that must occur at an administrative or even a state level to allow teachers the flexibility to implement personal learning.

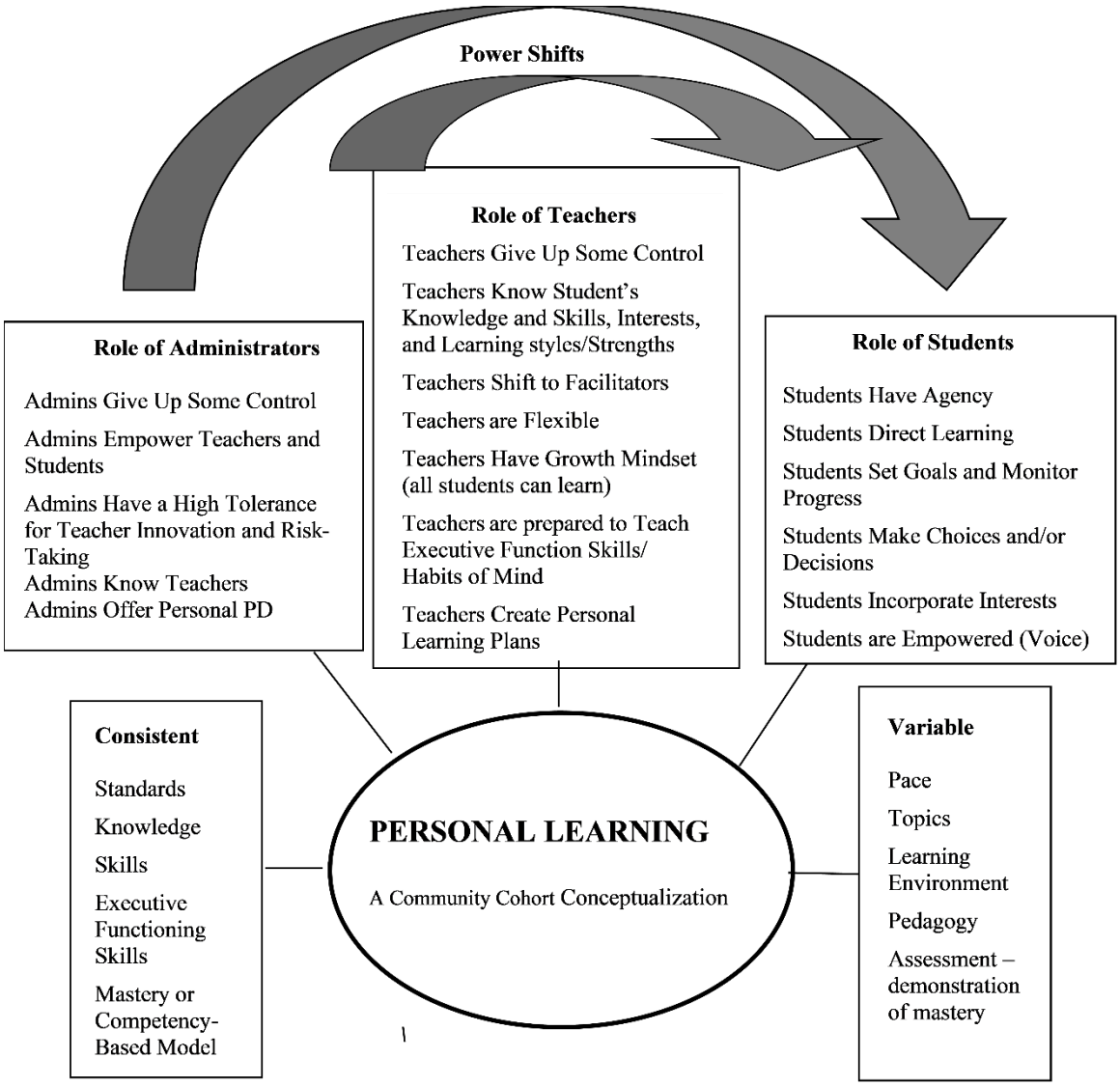

Figure 3. Conceptual model of personal learning.

Changing roles was another concept that emerged from the data. I created selective codes for administrator roles, teacher roles, and student roles, since all were discussed by participants in their explanations of personal learning. The teachers wanted their administrators to know them as individuals and to be aware of their strengths and interests. One stated, “We read a lot about teachers knowing their students, but what about principals knowing their teachers? If students get to learn about what they are interested in, why can’t we have more personalized PD?” Several teachers echoed the importance of administrators trying to get to know their teachers and to adjust their leadership strategies accordingly. Changing roles are reflected in some of the current literature on personal learning; however, they do not go into this level of depth, or make the connection to the need for personalized professional development as overtly.

Many of the role changes applied to teachers. Among focus-group participants there was widespread agreement in the importance of teachers knowing their students because personal learning is in part about “engaging student interests.” Participants also thought it important to understand students’ academic strengths and weaknesses so that instruction can be “targeted to their needs.” Many of the teachers mentioned the need to create formal or informal personal learning plans for students but they felt that this was an “advanced stage” of personal learning. One of the teachers stated, “I’m not there yet, but that is my ultimate goal.” All of the teachers agreed that their role needs to shift to more of a facilitative one because “we are no longer the sole source of content for these kids.” One of the teachers emphasized the importance of believing that “all students can learn.” Several other teachers characterized this thinking as having a growth mindset. The teachers also discussed the importance of students having a growth mindset as well and

that the teachers must play a role in helping them to develop this outlook. This led to a larger discussion of what the teachers referred to as "executive function skills" and "habits of mind." One participant said, "Students won't magically know how to take more responsibility for their own learning – especially if they have not been asked to do this all along. We have to teach them."

There was quite a bit of discussion about the changing role of students. Much of the discussion centered on students 'setting their own goals and monitoring their own progress. Teachers asserted that students should exercise decision-making and problem-solving skills in the classroom. *Voice* and *choice* were mentioned by several teachers as being essential to a personalized classroom but as one acknowledged, "Many students struggle with this because they have never been asked what they think or what they are interested in." The teachers saw an essential component of personal learning being that students are taking more responsibility for their own learning. One teacher said, "When the teacher is directing the learning, they tend to be the hardest working person in the classroom." There was widespread agreement among the participants that the students should be the hardest-working people in the classroom.

Two additional theoretical codes emerged from the data: variability and consistency in the implementation of PL. There was much discussion, and some debate, about whether personal learning can be defined since it is so dependent on the individual students and context. The conversations shifted to focus on what can be variable in a personalized learning environment and what must remain consistent. In other words, what the teachers felt they could confidently state *must* be present in every personal learning environment and what could vary from one learning environment to the next,

and still be considered a personal learning environment. Most of the teachers agreed that the standards must remain consistent and that there were essential skills that students must have, but participants could not always agree on what these skills must be. One of the teachers pointed out that "perhaps students should decide what is essential for them to learn." There was some agreement that the standards could be used to derive the essential knowledge and skills. There was also fairly widespread agreement that teacher must take some responsibility for teaching executive function or habits of mind to prepare students for taking on their new roles. The teachers also advocated for what they called mastery models or competency-based learning models. One of the teachers asked, "What is the point of just covering stuff to cover it? If the students didn't get it, it doesn't matter that you covered it."

The teachers also acknowledged that there were many things that could or should be variable in a personal learning environment. They argued strongly for a flexible learning environment which for many meant no desks in rows but comfortable, flexible seating and stations in the classroom where students could easily collaborate, present, or work independently. The teachers were insistent that topics, pace, and pedagogical strategies *should* vary in personal learning. One of the teachers characterized this by stating "Not everyone has to learn the same thing at the same time in the same way…"

Finally, I included barriers as a thematic code even though this may not seem to be descriptive of personal learning. For the teachers, the barriers were intertwined with their conceptualizations of personal learning. They would frequently make a statement about the meaning but then add "but…" and explain why something was difficult to do or could not yet be done, therefore, I included these identified barriers as a part of the model

so that they could be explored further in subsequent research cycles and ultimately addressed. Barriers included not having sufficient time to plan for personal learning and not having sufficient professional development on personal learning, district, state, and federal mandates, as well as fears about letting go of control and receiving poor standardized test scores that are tied to their evaluations.

Theoretical Perspectives

Self-Efficacy. The construct of self-efficacy refers to an individual's belief in his or her capability to "organize and execute the course of action required to manage prospective situations" (Bandura, 1997, p. 2). It is a task-specific belief that regulates choice, effort, and persistence in the face of obstacles and in concert with the emotional state of the individual (Bray-Clark & Bates, 2003). Expectations of personal efficacy determine how much task-related effort will be expended, how long that effort will be maintained, and whether an individual's coping behavior will be initiated (Bandura, 1982). It is important to note that self-efficacy has to do with self-perception of confidence rather than actual levels of competence (Tshannan-Moran, Hoy, & Hoy, 1998).

Research has indicated a positive relationship between self-efficacy and different motivational and behavioral outcomes in clinical, educational, and organizational settings (Stajkovic & Luthans, 1998). Self-efficacy has been consistently recognized as an important attribute of effective teaching and has been positively correlated to teacher and student outcomes (Tshannan-Moran, Hoy, & Hoy, 1998). Empirical research has demonstrated that self-efficacy is related to several work-performance measures such as adaptability to advanced technology, coping with career-related events, managerial idea

generating, managerial performance, skill acquisition, and newcomer adjustment to organizational settings (Stajkovic & Luthans, 1998).

Because educational reform initiatives such as personalization continue to be at the political forefront and there is an increased focus on the link between teacher effectiveness and student achievement, there has been a renewed interest in the on-going professional development of teachers. Creating high quality professional development experiences has become a major area of focus as communities, states, and the nation grapple with ways to improve the quality of education. Self efficacy should be explicitly included as a central focus in the professional development of teachers since it is a key driver of teacher effectiveness (Bray-Clark & Bates, 2003). Designing professional learning opportunities that explicitly seek to develop teacher self-efficacy can affect the extent to which a teacher's professional learning opportunity promotes the acquisition of knowledge and skills. Increases in self-efficacy have also been linked to post professional learning performance for both cognitive tasks and interpersonal skills (Gist, Bavetta, & Stevens, 1990). Evidence suggests that positive self-efficacy beliefs can increase the extent to which teachers are willing to transfer skills learned through professional learning to the classroom (Bray-Clark & Bates, 2003). In addition, research has also shown that teachers with high levels of self-efficacy tend to explore more alternative methods of instruction, seek improved teaching methods, and experiment more extensively with instructional materials (Allinder, 1994). Further, directing resources at enhancing self-efficacy can initiate and sustain an on-going process of individual improvement because of the nature of the reinforcing feedback cycle, a cycle in which

initial increases in self-efficacy beliefs lead to increased teacher effectiveness that in turn enhances subsequent self-efficacy beliefs (Bandura, 1991).

Social cognitive theory (Bandura 1977) outlined four sources of self-efficacy: (1) enactive mastery; (2) vicarious experience; (3) social/verbal persuasion; and (4) physiological arousal.

Each of these must be considered and applied to the development of professional learning opportunities for teachers if one of the goals of the program is to enhance teacher self efficacy.

Enactive mastery refers to accomplishments from previous experience or professional development. The goal of enactive mastery should be to provide teachers adequate opportunities to master new techniques/content before they implement them in the classroom. The PPLC provided teachers with opportunities to explore definitions, frameworks, and research associated with personal learning. Participants also had the opportunity to practice skills and simulate classroom experiences. Several of the teachers taught mini-lessons to other participants to practice and test out ideas. Although mastery experiences are the most powerful efficacy changing forces, they may be the most difficult to deliver, but thoughtfully designed professional learning opportunities can provide efficacy-building mastery experiences (Goddard, Hoy, & Hoy, 2000).

Vicarious experience occurs when teachers observe a significant model engaged in an activity that they perceive as being aligned with their needs and capabilities. To achieve vicarious experience, the PPLC examined several other school and district models of personal learning. Participants read about PL examples, watched videos of PL classrooms, connected virtually with other PL schools and participated in face to face site

visits at PL schools. In addition, cohort teachers had opportunities to visit the classrooms of previous cohort members to see how they were implementing PL. The nature of the cohort model also provided opportunities for social comparisons made with other individuals which can produce vicarious experiences (Bray-Clark & Bates, 2003).

Verbal persuasion refers to the communication of verbal judgments from respected or influential others that can affect self-efficacy beliefs. Bandura (1997) cautioned against artificial praise; the behavior-related information must be compelling and delivered in a manner that disrupts the pre-existing disbelief in one's capabilities. The PPLC provided collaborative planning sessions, opportunities for peer observations, sharing sessions, and mentoring and coaching relationships, all of which offered opportunities for learning and receiving verbal support that contributed to efficacy beliefs.

Self-efficacy is a good predictor of people's physiological arousal under stressful situations (Bandura, 1978). Low self-efficacy is generally accompanied by high performance arousal, whereas a strong sense of efficacy is associated with low performance arousal. Therefore, teachers judge their levels self-efficacy by their perceptions of their anxiety levels in different situations. The PPLC was designed to provide a safe, supportive, and non-threatening environment. Effective coping strategies, problem-solving, and stress-reduction techniques were embedded in the cohort content to help teachers develop a repertoire of coping strategies.

Stajkovic and Luthans (1998) found that self-efficacy was positively and strongly related to work-related performance, but that this relationship is moderated by task complexity. To address this, Stajkovic and Luthans provided several specific suggestions

for organizational practitioners to improve worker's self-efficacy. First, they asserted that leaders should provide accurate descriptions of the tasks employees are to perform as well as to provide instruction as to what means are necessary for successful performance and how to use those means; complex tasks usually involve several possible paths for their execution. Since complex tasks require greater cognitive and behavioral demands, Stajkovic and Luthans found that workers may not perceive enough personal capability to successfully complete the tasks; therefore, managers may need to design programs to enhance employee's self-efficacy. In addition to providing programs designed to enhance self-efficacy, leaders should provide additional training in developing effective behavioral and cognitive strategies for coping with complex tasks. Further, efficacy enhancement programs should be timed to coincide with the tasks employees are asked to perform. Finally, leaders should provide clear and objective standards against which employees can assess their level of performance accomplishment.

These recommendations were also considered in the design of the PPLC. The PPLC provided information, resources, and examples to help participants understand the complexity of personalization strategies. The PPLC also employed the use of strategies to promote teacher-efficacy including cognitive and behavioral strategies for coping with complex tasks. The PPLC took place during the school year so that teachers were learning and had support as they were implementing personal learning in their classrooms. Finally, the PPLC used Innovation Concept (IC) maps to help teachers understand possible paths for the execution of personalization as well as to assess their levels of performance (Hall & Hord, 2006).

Communities of Practice. The term community of practice is usually attributed to Lave and Wenger's (1991) book on situated learning, in which they proposed the theory of Legitimate Peripheral Participation (LLP) whereby a learner does not merely gain information but gains membership into a community of practice. Lave and Wenger provided an ethnographic account of traditional apprenticeships, and Brown and Duguid (1991) first applied the theory to an organizational context (cited in Hoadley, 2012). Wenger (1998) then published a more detailed description of a community of practice in the context of claims processors at an insurance company. Since then, the concept and of communities of practice has been applied to different types of organizations and has been shown to have a positive impact on learning and improving the efficacy of work (Brown & Duguid, P., 1991; Goddard, Hoy, & Hoy, 2000; Hoadley, 2012; Lin & Kim, 2013; Wenger, 1998; Wenger, Trayner, & de Laat, 2011; Wenger-Trayner & Wenger-Trayner, 2015). Wenger, McDermott, & Snyder (2002) identified several benefits of implementing communities of practice (CoPs), both to the individual and to the organization. They describe both short-term and long-term value. In the short-term, an employee can get help with an immediate problem, receive multiple perspectives on an issue, and practice risk-taking and problem-solving in a supportive, collaborative environment. In the long-term, this structure helps the employee to develop professionally and engage in productive ongoing practices. CoPs have both tangible and intangible benefits. Employees may develop a new manual or improved skills, and they may also develop intangible benefits such as a sense of trust and an ability to innovate. CoPs are both strategy-implementing and strategy-making. They help employees implement existing strategies and develop

new ones. Ultimately, they connect professional development and the strategy of the organization (Wenger, McDermott, & Snyder, 2002).

Communities of practice are defined as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger-Trayner & Wenger-Trayner, 2015). Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human enterprise. Communities of practice are an integral part of our daily lives (Wenger, 1998), but not everything called a community is a community of practice. Wenger (1998) identified three dimensions of communities of practice: mutual engagement, joint enterprise, and shared repertoire. These dimensions were later updated to identify three critical elements that constitute a community of practice:

1. The Domain: A community of practice has an identity defined by a shared domain of interest. Membership implies a commitment to the domain and therefore a shared competence that distinguishes members from other people. The competence is not necessarily recognized as expertise outside of the community.
2. The Community: In the process of pursuing their domain, members engage in joint activities and discussions, help each other, and share information. The relationships they develop help them to learn from one another. Members must interact and learn from one another for a community to be a community of practice.
3. The Practice: Members of a community of practice are practitioners. They developed a shared repertoire of resources such as experiences, stories, tools,

> techniques, and approaches to problem solving. They develop a shared practice. (Wenger, McDermott, & Snyder, 2002; Wenger-Trayner & Wenger-Trayner, 2015).

A community of practice may have all three elements but not necessarily be called a "community of practice." Instead, they may be referred to as learning networks, professional learning communities, thematic groups, technology clubs or some other term that fits the context of the organization. Some are small, while others are large; often there is a core group and many peripheral members (Wenger-Trayner & Wenger-Trayner, 2015). Communities of practice may be local or global. Some meet face to face, while others meet online, and now some communities meet in blended learning environments. Communities of practice can exist with an organization or across organizations. Some communities are formally recognized and have a budget, while others are informal or even invisible (Wenger-Trayner & Wenger-Trayner, 2015). According to Wenger, McDermott, and Snyder (2002), communities of practice have existed for as long as human beings have learned together; they are so familiar an experience that they may escape our attention, but when given a name and brought into focus, their existence can help us to see and understand our world better by perceiving the structures defined by engagement in practice and the informal learning that comes with it.

Over time, the concept of community of practice has evolved from a descriptive one (Lave, 1987; Lave & Wenger, 1991) to a more prescriptive one (Cox, 2007; Wenger, McDermott, & Snyder, 2002). Communities of practice occur naturally, but can they be cultivated? Wenger, McDermott, & Snyder (2002) have developed seven design

principles for cultivating a community of practice. These principles were considered in the development of the PPLC.

1. Design for evolution. Design elements should be catalysts for a community's natural evolution: "Because communities are built on existing networks and evolve beyond any particular design, the purpose of a design is not to impose a structure but to help the community develop" (Wenger, McDermott, & Snyder, 2002, p. 53.) Community design often involves fewer prescriptive design elements at the beginning than traditional organizational design, a feature that allows for flexibility and change within the community. The way in which the building of roads can precipitate the development of a town, having a community coordinator or holding weekly problem-solving meetings can precipitate the evolution of a community. In the development of the PPLC, the specific goals of the group were not initially established, other than that the group would focus on personal learning. The group itself participated in developing the goals and parameters of the group. The structures that were put in place were designed to facilitate natural communication and collaboration among the group. The group met face to face once or twice per month from September through March. Initially, these meetings were coordinated by a central facilitator; however, the group subsequently took over the facilitation of their own meetings. Activities were planned in advance for only a portion of these days so that the group could participate in the design of the cohort and to allow for flexibility as the community developed. The PPLC was provided with an online learning management system that will

allow them to communicate in a number of different ways online, including asynchronous video and text discussions.

2. Open dialogue between inside and outside perspectives. An insider perspective is necessary to appreciate the issues at the heart of the domain, the knowledge that is important to share, the challenges that the group and the field face, the players and the relationships, the strategy of the organization, and the latent potential in emerging ideas and techniques. This type of deep understanding of community issues can only be achieved by an insider; however, good community design also requires an understanding of the community's potential to develop and manage knowledge, which often requires an outside perspective to fully see the possibilities: "Because intentional communities are new to most organizations, members often have a hard time imagining how a more developed community could improve upon their personal networks or help them leverage dormant capabilities" (Wenger, McDermott, & Snyder, 2002, p. 54). Therefore, good community design leverages information from outside the community into the dialogue about what the community can achieve. The PPLC encouraged online and face to face dialogue among inside perspectives, and it also leveraged outside perspectives. Innovative Designs for Education Corporation (IDE Corp.) provided portions of the professional development as well as external coaches, providing job-embedded support and bringing with them their experience of supporting other schools and organizations with personal learning and promoting student agency. IDE Corp. was founded by Nancy Sulla in 1997

and provides schools support in implementing learner-active, technology-infused classrooms by engaging educators in continual reflective practice to shift paradigms and to transform the teaching/learning process.

3. Invite different levels of participation. People participate in communities for different reasons. Some participate because the community provides some type of value, some for the personal connections, and some for the opportunity to improve their skills (Wenger, McDermott, & Snyder, 2002). Since people join for different reasons and have different levels of interest in the community, it is unrealistic to think that all community members will participate equally. Wenger, McDermott, and Snyder (2002) have identified three levels of community participation. Those who actively participate, take on leadership roles, and become auxiliaries to the community coordinator are the *core* group. This group makes up 10% to 15% of the community. Outside the core, the next level is the *active* group. This group attends meetings regularly and participates occasionally, but with less regularity and consistency than the core group. This group is also small, comprising another 15% to 20% of the group. The largest numbers of group members are *peripheral* and rarely participate. They stay on the sidelines, watching the interactions of the core and active members. Community members will move through these levels at different times. “The key to good community participation and a healthy degree of movement between levels is to design community activities that allow participants at all levels to feel like full members” and rather than force participation, successful communities “build

bridges" for those on the sidelines (Wenger, McDermott, & Snyder, 2002, p. 56). The PPLC provided opportunities for members to take leadership roles and opportunities for private and semi-private interaction. Members were able to participate in a variety of ways both online and face to face.

4. Develop both public and private community spaces. Wenger, McDermott, and Snyder (2002) argue that a common mistake in community design is to focus on public events, thereby missing opportunities to work the private space between meetings by discussing current problems with members, providing and linking them to resources, and promoting other back-channel discussions that help to contribute to the public meetings (p. 58). The public and private dimensions are interrelated, and a stronger set of relationships among the community will foster richer interactions. Good community events allow time for informal networking, and lively public events allow for one-to-one interactions. "The key to designing community spaces is to orchestrate activities in both public and private spaces that use the individual relationships to enrich events and use events to strengthen individual relationships" (Wenger, McDermott, & Snyder, 2002, p. 59). The PPLC had private, semi-private, and public interactions. Teachers had opportunities to work in partner teams and in small groups as well as to participate in whole group activities. The face to face sessions had unscheduled time that was often used for networking or one-to-one interactions.
5. Focus on value. "Value is the key to community life" but often may not be apparent when a community is first formed (Wenger, McDermott, & Snyder,

2002, p.59). Rather than attempting to determine the expected value of a community in advance, communities need to "create events, activities, and relationships that help their potential value emerge and enable them to discover new ways to harvest it" (Wenger, McDermott, & Snyder, 2002, p.59). The PPLC encouraged celebrations of successes and small wins. Community members were encouraged to be explicit about the value of the community. The value of the PPLC was be shared with the larger district community as well through a series of Board of Education presentations and during faculty meetings and professional development time.

6. Combine familiarity with excitement. Communities need to provide patterns of familiarity such as monthly meetings, weekly discussions, and regular website activity so that members can feel comfortable participating in candid discussions, asking for advice, and sharing their ideas. Communities also need to provide some exciting opportunities to keep people interested and challenged as well as to promote divergent thinking and activity: "Routine activities provide the stability for relationship-building connections; exciting events provide a sense of common adventure" (Wenger, McDermott, & Snyder, 2002, p. 61). The PPLC was designed to provide both familiarity and excitement. The group held regular meetings and participated using the online platform on a regular basis. They also had the opportunity to engage with the external consultant, visit other schools, and participate in conferences and problem-solving activities.

7. Create rhythm for the community. Vibrant communities of practice have a rhythm which Wenger, McDermott, and Snyder (2002) cited as the strongest indicator of the "aliveness" of the community (p. 62). There are many different types of rhythms in a community including "the syncopation of familiar and exciting events, the frequency of private interactions, the ebb and flow of people from the sidelines into active participation, and the pace of a community's overall evolution" (p. 62). It is difficult to plan the rhythm of a community; however, there are factors that can help the community to achieve its own rhythm, factors such as the combination of whole group and small group activities and gatherings, a mix of idea-sharing and tool-building projects, and casual connections and directed community action. The PPLC design included many of the recommendations of Wenger, McDermott, and Snyder, including opportunities for small- and whole-group interaction, regular meetings, consistent online participation opportunities, and a mix of idea-sharing and skill-building work. The groundwork was laid, but the community had to develop its own rhythm.

Cultivating a community of practice is not an easy endeavor. Wenger (1998) referred to it as the paradox of design. No community can fully design the learning of another, yet, no community can fully design its own learning. The application of the seven principles for cultivating communities of practice provided a foundational structure for the PPLC as a starting point for the group, from which a lively community developed. An appropriate amount of design can be a powerful catalyst for the evolution of a community of practice, helping members to identify the knowledge, events, roles, and

activities that will bring about the community's growth, with the idea to "create liveliness, not manufacture a predetermined outcome" (p. 63)

Summary

In this section, I examined the theoretical perspectives and research guiding the study. I discussed the lack of a clear definition or consensus on the term personal learning and examined several frameworks that have been developed for personal learning. I also introduced a conceptual framework that I developed during a previous cycle of research in my district that will serve to guide my study. In addition, I identified a lack of research into the effectiveness of personal learning as a pedagogical strategy but highlighted the recent RAND study that offered some promising results. Finally, I introduced two theoretical frameworks that guide the study: Bandura's theory of self-efficacy and Wenger's Communities of Practice. In the next section, I will focus on the method for the study.

CHAPTER 3

METHOD

In Chapter 3, I describe the method of this action research project in detail. First, I describe the setting, participants, and role of the researcher. Next, I explain the innovation. Finally, I discuss the instruments, data collection procedures, data analysis, and preliminary data analysis from a pilot of the intervention.

Setting

This study took take place during the 2017-2018 school year in the Clayfield Township Schools (CTS). CTS is a comprehensive public-school system serving students in pre-kindergarten through twelfth grade in New Jersey. The district serves approximately 4,000 students and was categorized by the New Jersey Department of Education as being in the second highest socioeconomic category for local school districts in the state. The district consists of eight schools including a K-12 alternative school serving students from surrounding counties in addition to local residents. The district has approximately 350 classroom teachers.

As explained in Chapter 1, the CTS Board of Education adopted a mission statement and subsequent district goal for the implementation of personal learning; however, an attempt to report out on progress made toward the goal made apparent that there was no clear consensus on the meaning of personal learning. In addition, teachers in the district reported a lack of understanding about what it means to personalize learning as well as confusion about how to meet this district goal and simultaneously follow district curriculum requirements and state standards mandates. In a district-wide professional development survey, 86% of responding teachers reported not having

sufficient professional development on personal learning, and 94% reported having insufficient professional time to explore the topic. It is difficult to promote students' personalized learning if there is no professional development support for teachers' personalized instruction (Lin & Kim, 2013).

The purpose of this study was to examine the effectiveness of the community of practice model in providing professional development to improve teacher self-efficacy with regard to the implementation of personal learning. The research questions were as follows:

RQ1: To what extent does participation in a community of practice affect teachers' knowledge, skills, and self-efficacy for implementing personal learning?

RQ2: To what extent does the PPLC create value for individuals and the organization?

Participants

The participants consisted of 18 K-12 teachers from across the district, drawn from volunteers for the PPLC. The teachers volunteered for the program by completing an application to be a part of the PPLC. For this particular study, it is necessary for teachers to self-select into the program because of the amount of extra work that will be required for the project and collective bargaining agreements. That being said, the goal was to try to create a representative sample by selecting teachers of varied genders, education levels, years of experience, teaching assignments, and schools. All 18 of the participants contributed to the qualitative data; however, only 15 of the participants completed the self-efficacy post-test. A list of participant pseudonyms, years of

experience, grade level(s)/subjects taught, and initial goals for signing up for the cohort are presented in Table 3.

Table 3

Participants

Name	Years of Experience	Grade/Subject Taught	Initial Goals for PPLC
Aggie	11-15	Grade 6-8 ELA	To provide more students with options for learning ELA content and skills.
Amy	21-25	K-2 Special Education and ELA	To learn to create activities to foster student independence, choice, and interest.
Annette	5-10	Grade K	To infuse technology more meaningfully and embed more student choice in lessons.
Audrey	5-10	Grades 6-8 ELA and Social Studies	Incorporate more technology and give students more choices.
Beatrice	1-4	Grade 3	To infuse technology more meaningfully to engage students.
Caleb	1-4	Grades 6-8 Math and Personal Finance	Create more performance-based activities and include more choice in instruction.
Deirdre	21-25	Grades 9-12 World Language	To implement a blended learning classroom to be able to serve students at different competency levels of language.
Katie	5-10	K-5 Music	To relinquish more control to students, to learn to set up meaningful learning stations, and to spend less time talking and more time advising.

Kelly	1-4	Grade 1	To implement one problem-based learning activity for each math unit, to offer students more choice in how they learn, and to have students take more responsibility for their learning.
Leighanne	16-20	Grades 6-8 ELA	Provide students with more choice in the classroom.
Lori	16-20	Grades 6-8 ELA	To provide students with more choices and to set up a resource center for students.
Marie	5-10	Grade 4	To create authentic learning assessments for math units.
Mary	11-15	9th and 10th Grade Biology	To set up a blended learning classroom.
Melony	11-15	Grades 9-12 Business	I'd like to run a flipped classroom so as to have more engagement in school and less lecture.
Nadine	11-15	Grade 5	To run a flipped classroom and embed more choice.
Noel	5-10	Grades 6-8 World Language	Provide students with more choice.
Steve	11-15	Grades 9-12 Health and PE	To infuse more technology into the classroom and to get students more engaged in learning.

Valerie	1-4	Grade 1 Special Education	Provide students with more autonomy and choice.

As shown in Table 3, there were 18 participants. Sixteen of the participants were female. Eight of the participants were general education elementary teachers and 2 of the participants were elementary special education teachers. Ten of the teachers taught secondary education with 5 teaching middle school students and 4 teaching high school students. Secondary subjects included English language arts (ELA), science, social studies, math, business, world languages, and health and physical education. The participants varied in their years of teaching experience. Four of the teachers had between 1 and 4 years of teaching experience and were therefore non-tenured teachers. Five of the teachers had been teaching between 5 and 10 years. Five of the teachers had been teaching between 11 and 15 years. Two of the participants had been teaching between 16 and 20 years and two of the participants had more than 20 years of teaching experience. The specific schools where the teachers taught have not been listed to protect their identities, but all 7 district schools were represented by this participant group.

Role of the Researcher

In this action research study, my role was that of a participant observer. I was the Assistant Superintendent for Curriculum and Instruction, and I was responsible for district professional development as well as the overall effectiveness of curriculum and instruction. It was also my responsibility to help the district fulfill the Board goal of personalized learning. I designed the PPLC structure and facilitated the professional learning sessions in collaboration with the consultants and participants. I also developed an online component which I facilitated with support from teachers who participated in the PPLC the previous year. I administered a pre-intervention self-efficacy survey, conducted observations of participation in the sessions and in the online community, and

conducted interviews with participants during and after the intervention. At the conclusion of the intervention, I administered a post self-efficacy survey of the participants. On the continuum of positionality of action research, I was an insider collaborating with other insiders (Herr & Anderson, 2015). Although there were external consultants involved, they did not play a role in the research. The district was assigned one consultant who helped to facilitate components of the face to face sessions, teaching the participants strategies to move toward more personalized classrooms. The consultant also provided in-class coaching support to teachers to help them improve their practice. The consultant was not involved in any of the data collection processes. I designed and administered the pre and post self-efficacy assessment as well as all of the cohort feedback forms. I also collected artifacts from the cohort sessions and maintained a research journal. The consultant did not maintain any data on the participants nor did she have access to our online environment.

The Innovation

My innovation was the development and implementation of a Personalized Professional Learning Cohort (PPLC) designed to develop and implement a district-wide framework for personalization and to enhance teacher self-efficacy with regard to the implementation of personalization strategies in the classroom. The PPLC was designed using the Communities of Practice (CoP) framework, and the research on self-efficacy. This study examined the extent to which the cohort increased teacher self-efficacy for implementing PL and the extent to which the community developed value for the individuals and the organization.

The cohort was designed using a blended approach to learning. Teachers participated in in face-to-face learning and sharing sessions. In between face-to-face sessions, teachers applied their learning to their classrooms and communicated in an online environment using the Canvas learning management system where they wrote about their experiences, participated in online discussions, and shared resources. I hired a consultant from Innovative Designs for Education (IDE), Patricia, who helped to facilitate some of the cohort sessions and served as the PL coach for the teachers. The consultant was hired to provide the teachers with specific concrete starter strategies to help teachers begin to move toward a more personalized classroom as well as to provide a support and coach with no evaluative authority.

Each of the PPLC face-to-face sessions had a specific theme or focus for the learning and these activities were flexible based on the needs of the learners. Participants played a role in shaping the themes and activities for each session. Each session also included design time in which participants had time to apply their learning by creating lessons or units for implementation in the classroom. There were a total of ten different sessions. Figure 4 lists the topics for each session. To jump-start the program, the PPLC met face-to-face twice per month for the first three months and then once per month thereafter. Participants received coaching support in their classrooms two times during the first half of the year in December and again in February.

Figure 4. Personal professional learning cohort 2017-2018

Cohort Session 1. In the first session of the cohort, teachers participated in an ice-breaker called Connectiles which requires working as a team and thinking creatively to solve a puzzle. Participants also completed the self-efficacy pre-test and were provided an overview of the cohort and the research used to develop it. Teachers shared their motivations and initial goals for participating in the cohort and were exposed to literature, videos, and statistics to make the case for the need to implement personal learning. Participants were also asked to do some brainstorming about the types of knowledge and skills they would like for their graduating students to possess upon leaving the district. This first session also focused on developing a common language for the group. The group was introduced to different definitions and frameworks, including the conceptual model created from the focus group of the previous year's cohort and developed a working model for their group. Bray and McClaskey's (2015) Stages of Personalized Learning Framework was introduced as a simplistic model of an innovation concept map to provide teachers with an understanding of what personal learning might look like in their classrooms as well as to develop an understanding that there may be a continuum of implementation. Finally, the teachers participated in Stanford's d. school virtual Crash Course in Design Thinking and discussed their roles as designers of learning environments as well as the ways in which students might use design thinking in a personalized classroom.

Cohort Session 2. The second session focused on different ways participants could get to know their learners. The session began with another ice-breaker to continue to develop a sense of community among the group. Next, since empathy is the first step in Stanford's design thinking framework, the teachers learned how to develop empathy

maps and applied these to various situations involving students, other teachers, parents, and administrators with regard to personal learning. The teachers were introduced to Universal Design for Learning (UDL) and how it might serve as a framework for implementing personal learning. The teachers applied the principles of UDL to their own learning and then explored how they might use these principals in the development of learning environments. The participants learned how to develop personal learning profiles as well as classroom learning "backpacks" and how they might use these to guide their instruction.

Cohort Session 3. The third session of the cohort focused on developing student responsibility and the relationship between student responsibility and achievement. Teachers completed a self-assessment evaluating how much responsibility they offer students. Participants were offered a variety of resources for exploring the following questions: *Do we need to change the way that schools function?* and *Is it important to build in choice for students?* Teachers completed a compliance vs. engagement activity in which they examined more deeply what it means to be engaged. Teachers then had an opportunity to read written descriptions of student-centered and/or student-led classrooms at the primary, elementary, middle or high school levels. Teachers were offered additional choice for exploring specific strategies for building student responsibility which included things such as the development of a resource area, a scaffold for learning, interactive boards, and technology infusion strategies. Teachers were then provided with design time, time to work on the development of their own lessons and classrooms strategies, to work on how they might implement one or more of these strategies into their classrooms.

Cohort Session 4. The fourth session of the cohort focused on how to design a more student-centered classroom. The session began with teacher goal-setting and reflecting on initial successes and challenges. Teacher were also provided an opportunity to adjust their framework for personal learning based on their experiences. Teachers were exposed to the difference between learning and practice and when it might be appropriate to embed learning and practice activities in their learning plans. Participants also had the opportunity to analyze different learning activities developed by other teachers and organizations. Teachers were then exposed to resources for technology infusion, which included tools such as Nearpod, Pear Deck, Quizlet, and Answer Garden. Please see Appendix E for more detailed explanation of each of these tools. Participants were provided choice in their exploration. Teachers were also offered choices for exploring more student-centered activities such as a purposeful activity list, Totally 10, tic tac toe boards, and choice boards as well as discussion protocols that could be embedded throughout learning plans such as Padlet, Todays Meet, Speed Networking, and Placemat activities. Once again, teachers were provided with design time to develop lessons or activities for their classrooms and to brainstorm with their colleagues and give and receive feedback on learning plans.

Cohort Session 5. The fifth cohort session focused on collecting, tracking, and leveraging data for learning. The meeting began with another sharing session in which teachers had the opportunity to discuss successes and challenges in their implementations of personal learning. The teachers then learned about a variety of different types of formative assessments and ways to chart and manage the data they collect on their students, including having students manage their own data. Next, teachers explored their

roles as facilitators and learned some specific strategies for powerful facilitation such as facilitation questions, a facilitation grid, and a facilitation roadmap. The teachers then had time and choice to explore a variety of different topics including tiers of learning, teacher cloning, designing learning centers, and building students' executive function skills. Teachers were also provided design time.

Cohort Session 6. Session six focused on the creation of meaningful performance-based assessments. The session began again with a sharing of successes and challenges. Next, a formative assessment was implemented to help determine the schedule for the rest of the day based on the needs of the teachers. Teachers were introduced to the concept of transfer tasks. A transfer task requires students to apply knowledge that has been acquired through an authentic learning unit, which acts as a high-level summative assessment of students' mastery of the content. They then had the opportunity to analyze transfer tasks using a rubric and to create their own transfer tasks. For example, one of the transfer tasks they reviewed was a K-1 task entitled *Using Numbers to Feed Others*. In this task, students worked with a local food bank to identify food needs and create a donation list. They then wrote letters soliciting donations. Finally, they counted and sorted these donations in preparation for delivery to the food bank. This unit was tied to standards on counting strategies, cardinality, and letter writing. Participants then received an introduction to rubrics and were given choices for further exploration including the additional exploration of rubrics, teacher cloning, layered discussion and executive function skills. Teachers were also provided design time.

Cohort Session 7. The seventh cohort session focused on blended learning. A representative from Instructure came to teach the participants how to use its learning management system, Canvas. In addition, the teachers had a variety of learning modules that they could explore on blended learning based on their interests and expertise. These included an introduction to the Blended Teaching Competency Framework developed by the Learning Accelerator, planning and preparing for leading a blended classroom, online facilitation and feedback, and developing and curating digital content. Teachers were also provided with design time to develop learning modules in Canvas.

Cohorts Sessions 8 and 9. Cohort meetings 8 and 9 were focused on exposing the teachers to different models of personal learning. This consisted of visiting the classrooms of previous cohort participants in our own district, virtually connecting with other schools implementing personal learning, and going on site visits to other schools implementing aspects of personal learning. The site visits included a visit to a K-6 school district and a 6-8 school in a K-12 district. Another high school opportunity had been planned but was canceled because the school was selected for state-wide monitoring which prohibited their ability to host us. Teachers had choices as to which visits they would select. Each session included debriefing opportunities in which teachers got to speak to the teachers they had observed as well as to debrief among our own group.

Cohort Session 10. Cohort 10 was our last face to face meeting of the group. Each participant prepared a presentation highlighting what they had learned in the cohort and some of the many changes they had made with students. We celebrated the successes of the participants and discussed their goals for next year. Participants also provided feedback on the cohort and worked on the presentations they would give outside of the

cohort to benefit the district. These included ideas for department meetings, faculty meetings, and professional development day workshops.

Instruments and Data Sources

This study employed a mixed methods approach for data collection which is a class of research in which the researcher combines quantitative and qualitative research techniques, methods, approaches, concepts, or language into a single study (Johnson & Onwuegbuzie, 2004; Mertler, 2014). To effectively mix methods, it is important to understand the relative characteristics of both quantitative and qualitative approaches. The major characteristics of quantitative studies are a focus on deduction, confirmation, theory or hypothesis testing, explanation, prediction, standardized data collection, and statistical analysis, whereas the major characteristics of traditional qualitative research are induction, discovery, exploration, theory or hypothesis generation, the researcher as the primary instrument of data collection, and qualitative analysis. Understanding the strengths and weaknesses of quantitative and qualitative research allows the researcher to combine strategies to implement the fundamental principle of mixed methods research, which is to collect data using different strategies, approaches and methods in such a way that the resulting mixture or combination is likely to result in complementary strengths and non-overlapping weaknesses (Brewer & Hunter, 1989; Johnson & Turner, 2003). Effective use of this principle is a major justification for the use of mixed methods research because the product can be superior to monomethod studies. (Johnson & Onwuegbuzie, 2004). This study employed a mixed-model design in which the quantitative and qualitative methods were implemented concurrently for the purposes of triangulation (seeking convergence and corroboration of results from different methods

and designs studying the same phenomenon) and expansion (seeking to expand the breadth and range of research by using different methods for different inquiry components) (Johnson & Onwuegbuzie, 2004; Mertler, 2014)

Quantitative Measures

Quantitative data will be obtained by administering self-efficacy surveys to teachers before and after the intervention.

The self-efficacy scale is based on Bandura's (2006) one hundred-point scales of perceived competence in which individuals are asked to rate themselves on their perceived competence, or what they "can" do. Participants were presented with items portraying different levels of task demands and asked to rate the strength of their belief in their ability to execute the requisite activities. They recorded the strength of their efficacy beliefs on a 100-point scale, ranging in 10-unit intervals from 0 ("Cannot do"); through intermediate degrees of assurance, 50 ("Moderately certain can do"); to complete assurance, 100 ("Highly certain can do"). Bandura (2006) suggested scales that use only a few steps should be avoided because they are less sensitive and less reliable since people usually avoid the extreme positions so a scale with only a few steps may, in actual use, shrink to one or two points. Specifically, Bandura claimed,

> Including too few steps loses differentiating information because people who use the same response category may differ if intermediate steps were included. Thus, an efficacy scale with the 0-100 response format is a stronger predictor of performance than one with a 5-interval scale. (Bandura, 2006, p. 312)

The instructions and standard response format are provided below. The form lists different activities. In the column Confidence, rate how confident you are that you can do them as of now. Rate your degree of confidence by recording a number from 0 to 100 using the scale given below:

0	10	20	30	40	50	60	70	80	90	100
Cannot do at all				Moderately certain can do				Highly certain can do		

The self-efficacy assessment was tailored to domains of functioning and task demands with respect to PL. Nine constructs were assessed. the construct of Instructional Self-Efficacy focused on teachers' perceptions of their pedagogical skills. Efficacy to Develop Learner Profiles assessed teachers' efficacy in understanding student needs and developing appropriate student learning profiles. The next construct, Efficacy to Create Personal Learning Paths, included items to assess teachers' perceived competence in offering flexibility in the path that students take through the content. Competency-Based Learning Efficacy assessed teacher confidence levels in the implementation of practices to support competency-based learning. Data Use Efficacy items were designed to gauge participant perceived competence at using data to understand student needs and drive instruction. The construct Student Choice and Engagement evaluated teachers' perceptions of their ability to provide students choices and engage them in their learning. Technology for Personalization Efficacy items were designed to appraise teachers' perceptions of their ability to integrate technology for personalization. The construct Efficacy to Develop College and Career Readiness assessed teachers' confidence levels

with regard to their ability to implement standards, curriculum, activities, and programs intended to develop college and career readiness. Finally, the construct of Project-Based Learning assessed participants' confidence levels in implementing project-based learning. Refer to Appendix A for the complete set of items on the self-efficacy instrument.

I conducted a pilot survey of the personal learning (PL) pre-and post-self-efficacy scale. The instrument was administered to pilot participants (N-18) prior to beginning participation in a professional development cohort focused on PL. The survey was administered on paper at a meeting prior to the start of the cohort. All of the participants completed the survey and responded to all of the questions. To minimize response bias, self-efficacy judgments were recorded privately, a nondescript title was used on the appraisal inventory, and the importance of frankness on the survey was explained to participants in the context of the importance of the research.

Plano Clark and Creswell (2010) asserted that scores from a data collection instrument must be reliable, meaning the extent to which all of the items in the scale measure the same concept or construct. To assess the reliability of my PL self-efficacy scale, I conducted a reliability analysis of the survey instrument and its nine constructs. To measure the internal consistency of the instrument and its constructs, I calculated Cronbach's alpha. Fraenkel and Wallen (2005) indicated that the Alpha Coefficient, or Cronbach's alpha, is used to provide a measure of internal consistency of a test or scale. This reliability estimate helps to determine the level of measurement error in the instrument. Plano, Clark and Creswell (2010) indicated that the scores for all questions should relate to each other at a positive level where Cronbach's alpha (α) is equal to 0.7-1.0. The results of the reliability assessment are presented in Table 4.

Table 4

Personal Learning Self-Efficacy Survey Coefficient Alpha Estimates of Internal Consistency Reliability (n=18)

Factor	Within Factor Items	Coefficient Alpha Estimate of Reliability
Instruction	Items 1a, 1b, 1c, 1d, 1e, 1f, 1g, 1h,	.94
Learning Profiles	Items 2a, 2b, 2c, 2d, 2e	.78
Personal Learning Paths	Items 3a, 3b, 3c, 3d	.72
Competency-Based Learning	Items 4a, 4b, 4c, 4d	.87
Data Use	Items 5a, 5b, 5c, 5d	.85
Choice	Items 6a, 6b, 6c, 6d, 6e	.93
Technology for Personal Learning	Items 7a, 7b, 7c,7d	.89
College and Career Readiness	Items 8a, 8b, 8c	.94
Project-based Learning	Items 9a, 9b, 9c	.96
Overall Alpha	Items 1a-h, 2a-3, 3a-d, 4a-d, 5a-d, 6a-3, 7a-d, 8a-c, 9a-c	.97

The coefficient alpha should range in value between 0 and 1; the greater the consistency in responses among items, the higher coefficient alpha will be (Green & Salkind, 2014). My analysis of internal consistency indicated that all of my constructs are above the.70 threshold for acceptability (What is Cronbach's Alpha? n.d.). Three of the constructs, competency-based learning, data use, and technology for personal learning demonstrated at least good reliability with values above .80. Four of the constructs, instruction, choice, college and career readiness, and project-based learning demonstrated high reliability scores above .90. The project-based learning construct scored the highest

at.96. The PL self-efficacy survey overall demonstrated high reliability with a value of .97.

I also calculated Cronbach's alpha in the dissertation phase of the cohort in year two to measure the internal consistency of the instrument and its constructs. Table 5 depicts the results of this reliability assessment.

Table 5

Personal Learning Self-Efficacy Survey Coefficient Alpha Estimates of Internal Consistency Reliability (n=15)

Factor	Within Factor Items	Coefficient Alpha Estimate of Reliability
Instruction	Items 1a, 1b, 1c, 1d, 1e, 1f, 1g, 1h,	.78
Learning Profiles	Items 2a, 2b, 2c, 2d, 2e	.70
Personal Learning Paths	Items 3a, 3b, 3c, 3d	.68
Competency-Based Learning	Items 4a, 4b, 4c, 4d	.73
Data Use	Items 5a, 5b, 5c, 5d	.91
Choice	Items 6a, 6b, 6c, 6d, 6e	.80
Technology for Personal Learning	Items 7a, 7b, 7c,7d	.86
College and Career Readiness	Items 8a, 8b, 8c	.90
Project-based Learning	Items 9a, 9b, 9c	.90
Overall Alpha	Items 1a-h, 2a-3, 3a-d, 4a-d, 5a-d, 6a-3, 7a-d, 8a-c, 9a-c	.94

All but one of the constructs demonstrated the .70 threshold for acceptability (What is Cronbach's Alpha? n.d.). The personal learning path construct measured a .68. Two of the constructs, instruction and learning profiles, met the .70 threshold or above for

acceptability and two of the constructs, choice and technology use for personalization, demonstrated at least good reliability with values above .80. Three of the constructs, data use, college and career readiness, and project-based learning demonstrated high reliability scores above .90. The PL self-efficacy survey overall demonstrated high reliability with a value of .94.

Qualitative Data

A variety of qualitative data was collected during the course of the study including a researcher's journal, individual participant interviews, emails, online discussion board postings, online assignment submissions, and feedback surveys completed after each face-to-face session. I maintained a journal throughout the period of research in which I recorded observations during the face-to-face sessions and immediately afterward. I also used the journal to record conversations that occurred outside of the face-to-face sessions but were not recorded online, such as a phone call or in-person conversation or presentations that were made to the Board of Education. Finally, I logged observations made during site visits to other schools.

Nine of the 18 participants were selected randomly, via lottery, to participate in semi-structured individual interviews. These interviews were conducted privately in our professional development room where our face-to-face sessions were held or in the teacher's classrooms. The interviews were recorded and transcribed. The interview questions were piloted with two members of the previous year's cohort and then revised for clarity. Please see Appendix B for the interview protocol.

Data collection also used the fact that the PPLC consisted of face-to-face sessions complemented by an online component in which participants were asked to read articles, watch videos, examine artifacts, and then contribute to online discussions. They were also asked to submit assignments such as creating a digital backpack for their current class(es). A digital backpack is a tool developed by Bray & McClaskey (2016) in conjunction with the Center for Applied Special Technology (CAST) using the lens of Universal Design for Learning (UDL). To create a digital backpack, a learner completes a self-assessment in which they identify how they access information, engage with content, and express what they know and understand. This assessment is then used as a tool for discussion between the teacher and the learner in which learners can identify learning strengths, challenges, and interests. The teacher and the learner then work together to identify tools, resources, strategies, and skills that can support learning. The teacher then helps the learner identify online resources and technology that can support their learning. For example, a learner might indicate that they need step by step instructions for better understanding. The teacher might suggest that the learner use a graphic organizer to understand instructions and recommend online graphic organizer tools such as Popplet or Lucid Chart. The completed document is known as a digital backpack. At the conclusion of each face-to-face session, participants were asked to complete a feedback survey. All of these activities generated qualitative data that was analyzed.

I analyzed the qualitative data using a hybrid approach of inductive and deductive coding and theme development (Fereday & Muir-Cochrane, 2006). This method employed the deductive a priori template of codes approach outlined by Crabtree and Miller (1999) and the data-driven inductive approach developed by Boyatzis (1998).

Using this hybrid methodology allowed me to apply Wenger, Traynor, and de Laat's (2001) conceptual framework for assessing the value of a community of practice, as well as the use of data generated in previous research cycles using the deductive codebook approach, while still permitting themes to emerge from the data using inductive coding.

The Fereday and Muir-Cochrane hybrid approach included six stages of coding that I implemented in this study.

Stage 1. Stage 1 included the development of the coding manual, or codebook. I developed codes for this study using an adaptation of Wenger, Trayner, and de Laat's (2001) conceptual framework for assessing the value of a community, along with data generated in previous cycles of research, which can be found in Appendix C. I chose the following three categories from Wenger, Trayner, and de Laat's (2001) conceptual framework for assessing the value of a community:

Category 1: Immediate Value/Activity & Interactions. Indicators for this category refer to community and networking activities in and of themselves. Many activities and interactions were observed in the face-to-face meetings. Some data was readily available on the technology used by participants. One indicator is *Level of Participation,* and sources of data included meeting attendance, website logs and statistics, and the number and characteristics of active participants. Participants were also asked about their levels of participation and interaction following and in-between each session.

Category 2: Potential Value/Knowledge Capital. Indicators for this category reflect the various types of knowledge capital that can be produced by the community

including human, social, structural, reputational, and learning. *Skills Acquired* is an indicator and data sources included self reports and interviews, surveys, and community reflections.

***Category 3: Applied Value/Indicators of Changes in Practice*.** Indicators for this category include the use of knowledge, tools, and social relationships. Because much of this information was not readily available, this level required the most probing to help participants reflect on how they put their social learning to use. A sample indicator is *Innovation in Practice* and data sources included recording new perspectives and ways of doing things as well as the use of new concepts and language. This study also focused on whether, and if so, how participants overcame identified barriers to implement personal learning.

Stage 2. Stage 2 of the Fereday and Muir-Cochrane (2006) hybrid coding process involved testing the robustness of the codes. For this study, I selected data from previous cycles of research to test the codes derived from the Wenger et al. (2001) framework. In addition, I employed member checking, a technique in which qualitative researchers seek validation from participants to help improve accuracy, credibility, validity, and transferability, was employed (Creswell, 2003; Creswell & Plano Clark, 2007; Mertler, 2014). I discussed the preliminary codes with members of the previous cohort from the pilot study and no modifications to the predetermined code template were required.

Stage 3. Stage 3 involved summarizing the data and identifying initial themes. As a part of this process, I read, listened to, and summarized raw data in analyzing each of the categories of data, i.e. interview transcripts, online discussion, feedback forms, and

other sources. The summaries that I generated from each data source reflected my initial processing of information and provided the opportunity to sense and take note of potential themes in the raw data.

Stage 4. In stage 4, I applied the template of codes and conducted additional coding. I applied text from the various data sources to the codebook. My analysis of the text at this stage was guided, but not confined by the preliminary codes. As coding was conducted, inductive codes were applied to segments of data that describe new or expanded themes observed in the text (Boyatzis, 1998).

Stage 5. Stage 5 consisted of connecting the codes and identifying themes and patterns in the data. In this stage, I reviewed and connected the codes and identified themes in the different sets of data. I clustered these into headings that related to the research question. Similarities and differences between separate groups of data began to emerge in this stage, indicating areas of consensus and areas of potential conflict with regard to the research question (Fereday & Muir-Cochrane, 2006).

Stage 6. The sixth and final stage consisted of legitimating and corroborating coded themes. In this stage, I closely scrutinized my work in the previous stages to be sure that clustered themes were representative of the initial data analysis and assigned codes. The interaction of text, codes, and themes in the study underwent several iterations before I proceeded to the analysis and interpretive phases. To further corroborate the coding and thematic development process, as well as to promote accuracy, credibility, validity, and transferability, I engaged in member checking with members of the current cohort (Creswell, 2003; Creswell & Plano Clark, 2007; Mertler, 2014).

A summary of the research questions, data sources, and data analysis procedures can be found in Table 6.

Table 6

Research Questions, Data Collection, and Analysis

Research Question	Data Source	Data Analysis
To what extent does participation in a community of practice affect teachers' knowledge, skills, and self-efficacy for implementing personal learning?	Self-Efficacy Pre-and Post-Tests Semi-Structured Interviews Participant Feedback Forms	t-test comparison of means Hybrid Coding approach – Fereday & Muir-Cochrane (2006)
To what extent does the PPLC create value for individuals and the organization?	Semi-Structured Interviews Observations Online Class-work Online Discussions Cohort Feedback Forms Researcher's Journal	Hybrid approach to coding and theme development using Fereday & Muir-Cochrane (2006). A priori codes were developed in a code book based on an adaptation of Wenger et al.'s Framework for Analyzing the Value of a CoP

Procedure

The applications for participation in the PPLC were distributed in May 2017. Twenty teachers applied and were accepted into the cohort. Applicants were notified of their acceptance in June of 2016. The PPLC began in October of 2017. The self-efficacy survey was distributed at the first meeting of the group. The face-to-face and the online components began together and continue April. The group met face-to-face once per month, with two monthly meetings taking place in October, November, and December.

Participants interacted online between these sessions. Observations of the face-to-face sessions as well as observations of activity in the online community were recorded on an ongoing basis. Participants completed feedback forms at the end of each face-to-face session. Semi-structured teacher interviews were conducted after the conclusion of the PPLC. The self-efficacy survey was administered at the conclusion of the PPLC in April to determine whether there were changes in self-efficacy. Table 7 outlines the procedure and schedule.

Table 7

Timelines and Procedures of the Study

Timeframe	Actions	Procedures
January. -July 2017	Revised PPLC Design	Used guidelines for cultivating a CoP and feedback from pilot participants
April 1-25 2017	Developed PPLC Program and Budget	Used quotes and estimated labor to develop costs
April 25, 2017	BOE voted on budget	Prepared budget presentation
May 2017	Teacher PPLC Applications Distributed	Teacher PPLC applications created. PPLC advertised to teachers
June 2017	Teacher Selection Process Occurred	Rubric developed and implemented to ensure representative participation
October-November 2017	Self-Efficacy Inventory Completed	Administered pre-intervention self-efficacy assessment
October – April	Teachers Participated in PPLC	Facilitation of Sessions; Data collection occurred

April 2018	Teachers took post Self-Efficacy Survey	Administered post Self-Efficacy Instrument
June 2018	Analyzed data	Transcribed Interviews; Analyzed quantitative and qualitative data

Pilot Study

A pilot of the PPLC was conducted during the 2016-2017 school year and I implemented the pre-and post-self-efficacy assessments. Using SPSS, I created means for each construct. I then conducted a paired t-test to compare the means of each construct for the pre- and post-tests. The null hypothesis was that there was no change in the means from the pre-test to the post-test. Table 8 displays the results of the paired t-test and includes the pre-and post-test means for each construct and the standard deviation, the difference, standard error and the *t* and *p* values.

Table 8
Personal Learning Self-Efficacy Survey Comparison of Means (n=18)

	Pre-Test		**Post-Test**		**Change**			
	Mean	SD	*Mean*	SD	Difference	Standard Error	*t*	*p*
Instruction	68	12.3	79.9	7	11.9	2.2	5.3	<.001
Learning Profiles	64.8	10.6	83.5	7.5	18.7	2.5	7.5	<.001
Personal Learning Paths	71.3	11.6	86	7	14.7	2.7	5.5	<.001
Competency-Based Learning	70.6	12.5	84.8	8.4	14.2	3.3	4.3	.001
Data Use	66.9	13.3	82.8	11.3	15.9	3.6	4.5	<.001
Choice	70.8	15	87.6	6.9	16.7	3.6	4.6	<.001
Technology for Personalization	68.3	21.1	83.3	13.3	15	4.8	3.1	.006
College and Career Readiness	77.2	19.9	89.1	6.9	11.9	5	2.4	.009
Project-Based Learning	71.7	17.8	91.1	8.5	19.4	4.1	4.7	<.001

The first two columns in the table depict the pre-test means and the standard deviation for the pre-test. The second two columns display the mean and the Standard Deviation for the post-test. The third column displays the differences from the pre-test to the post-test. The differences range from 11.9 to 19.4. The next column displays the standard error which is a measure of sampling distribution of the difference and is the theoretical standard deviation if the sample were to be randomly drawn from a larger population. The last two columns display the *t* and *p* values, which address how likely it is that the mean difference seen in this sample could have occurred by chance given the random draw and a sample size of 18. Since the p value for all constructs is $p < .05$, we can infer some robustness in the following: there was a change in the pre-and post-test values and it was substantial in terms of the pre-test variation. Since the post-test values were higher, it can be said that there was real and meaningful change in the personal learning self-efficacy constructs measured after the implementation of the PPLC.

CHAPTER 4

RESULTS

The purpose of this study was to examine the effectiveness of the community of practice model in providing professional development to improve K-12 teacher self-efficacy with regard to the implementation of personal learning (PL). There were two research questions that guided this study.

RQ1: To what extent does participation in a community of practice affect K-12 teachers' knowledge, skills, and self-efficacy for implementing personal learning?

RQ2: To what extent does the PPLC create value for individuals and the organization?

In this chapter, I will organize and present the quantitative and qualitative results by research question. I will also present additional analysis of themes that emerged during data analysis not already addressed by one of the research questions as these analytic points provide important information and context relevant to the study.

Research Question 1

Both quantitative and qualitative data were collected to examine the first research question: To what extent does participation in a community of practice affect K-12 teachers' knowledge, skills, and self-efficacy for implementing personal learning? I will first present the quantitative data.

Quantitative Data. I designed a self-efficacy assessment with nine PL constructs. The self-efficacy scale was based on Bandura's (2006) one hundred-point scales of perceived competence in which individuals are asked to rate themselves on their perceived competence, or what they can do. Participants were presented with items

portraying different levels of task demands and asked to rate the strength of their belief in their ability to execute the requisite activities. They recorded the strength of their efficacy beliefs on a 100-point scale, ranging in 10-unit intervals from 0 (“Cannot do”); through intermediate degrees of assurance, 50 (“Moderately certain can do”); to complete assurance, 100 (“Highly certain can do”).

As discussed in chapter 3, the self-efficacy assessment was tailored to domains of functioning and task demands with respect to the implementation of PL. Nine constructs were assessed. The construct of Instructional Self-Efficacy focused on teachers’ perceptions of their pedagogical skills. Efficacy to Develop Learner Profiles assessed teachers’ efficacy in understanding student needs and developing appropriate student learning profiles. The next construct, Efficacy to Create Personal Learning Paths, included items to assess teachers’ perceived competence in offering flexibility in the path that students take through the content. Competency-Based Learning Efficacy assessed teacher confidence levels in the implementation of practices to support competency-based learning. Data Use Efficacy items were designed to gauge participant perceived competence at using data to understand student needs and drive instruction. The construct Student Choice and Engagement evaluated teachers’ perceptions of their ability to provide students choices and engage them in their learning. Technology for Personalization Efficacy items were designed to appraise teachers’ perceptions of their ability to integrate technology for personalization. The construct Efficacy to Develop College and Career Readiness assessed teachers’ confidence levels with regard to their ability to implement standards, curriculum, activities, and programs intended to develop college and career readiness. Finally, the construct of Project-Based Learning assessed

participants' confidence levels in implementing project-based learning. Appendix A contains the complete set of items on the self-efficacy instrument.

The instrument was administered to pilot participants (n=18) prior to beginning participation in a professional development cohort focused on PL. The pre-test survey was administered on paper at a meeting prior to the start of the cohort. All of the participants completed the survey and responded to all of the questions. The post-test survey (N=15) was administered on the last day of the cohort. Only 15 of the teachers were present to complete the post-survey. One teacher was no longer with the district. Another left early on maternity leave. One teacher was out on workman's compensation. One teacher was not permitted by the superintendent to attend the last session because of a parent complaint regarding her number of absences and one teacher was ill the day of the final cohort meeting. Attempts were made to administer the post-assessment to these teachers since they had participated in all of the other sessions, but these attempts were not successful within a reasonable amount of time. To minimize response bias, self-efficacy judgments were recorded privately, a nondescript title was used on the appraisal inventory, and the importance of frankness on the survey was explained to participants in the context of the importance of the research. As discussed in chapter three, I calculated Cronbach's alpha for the PL self-efficacy instrument to measure the internal consistency of the instrument and its constructs. The PL self-efficacy survey overall demonstrated high reliability with a value of .97.

I calculated means for each construct. I then conducted a paired t-test to compare the means of each construct for the pre- and post-tests. Table 9 displays the results of the

paired t-test and includes the pre-and post-test means for each construct and the standard deviation, the difference, standard error and the *t* and *p* values.

Table 9
Personal Learning Self-Efficacy Survey Comparison of Means (n=15)

	Pre-Test		**Post-Test**		**Change**			
	Mean	SD	*Mean*	SD	Difference	Standard Error	*t*	*p*
Instruction	74	9	83.4	6.5	9.4	2.5	3.8	.002
Learning Profiles	65	10.6	84.3	6.9	19.3	2.7	7.1	<.001
Personal Learning Paths	70.8	13.1	87.1	7.6	16.3	3.4	4.8	<.001
Competency-Based Learning	74.3	12.3	87.7	7.6	16.3	3.4	4.8	<.001
Data Use	69.7	16.2	85.7	7.7	16	3.9	4.1	.001
Choice	66.4	14.1	88.5	6.5	22.1	3.2	7.0	<.001
Technology for Personalization	59.8	19.4	80.8	17.8	21.1	4.8	4.4	.001
College and Career Readiness	80.9	13.9	94.3	4.3	13.4	2.9	4.5	<.001
Project-Based Learning	67.9	20.8	90.4	8.4	22.6	4.4	5.1	<.001

The first two columns in the table depict the pre-test means and the standard deviation for the pre-test. The second two columns display the mean and the Standard Deviation for the post-test. The third column displays the differences from the pre-test to the post-test. The differences range from 9.4 to 22.6. The next column displays the standard error which is a measure of sampling distribution of the difference and is the theoretical standard deviation if the sample were to be randomly drawn from a larger population. The last two columns display the *t* and *p* values, which address how likely it is that the mean difference seen in this sample could have occurred by chance given the random draw and a sample size of 15. Since the p value for all constructs is $p < .05$, it can be said that there was a change in the pre-and post-test values and it was substantial in terms of the pre-test variation. Since the post-test values were higher, it can be said that the teachers demonstrated greater levels of self-efficacy with regard to the implementation of personal learning in all 9 constructs after the implementation of the PPLC: instruction, learning profiles, personal learning paths, competency-based learning, data use, choice, technology for personalization, college and career readiness, and project-based learning. This is important because one of the main district barriers was a lack of professional development in the area of PL. After participating in the PPLC, the teachers are now more confident in implementing PL, thus moving the district closer to its goal. This finding is also important because there has not been any other research done related to teacher's self-efficacy with regard to the implementation of PL and this evidence indicates it is possible to increase confidence levels related to the implementation of PL with an intervention specifically designed to do so.

Qualitative Data. Qualitative data sources used to answer this research question consisted of PPLC feedback forms, semi-structured individual interviews, and a researcher's journal. As described in chapter 3, I analyzed the qualitative data by employing a hybrid approach of inductive and deductive coding and theme development (Fereday & Muir-Cochrane, 2006). This approach employed the deductive a priori template of codes approach outlined by Crabtree and Miller (1999) and the data-driven inductive approach developed by Boyatzis (1998). Using this hybrid methodology allowed me to apply Wenger, Traynor, and de Laat's (2001) conceptual framework for assessing the value of a community of practice, as well as the use of data generated in previous research cycles using the deductive codebook approach, while still permitting themes to emerge from the data using inductive coding.

The Fereday and Muir-Cochrane hybrid approach included six stages of coding that I implemented in this study. First, I developed the coding manual, or codebook which was done using an adaptation of Wenger, Trayner, and de Laat's (2001) conceptual framework for assessing the value of a community and data generated in previous cycles of research, which can be found in Appendix C. Next, I tested the robustness of the codes by employing member checking, a technique in which qualitative researchers seek validation from participants to help improve accuracy, credibility, validity, and transferability (Creswell, 2003; Creswell & Plano Clark, 2007; Mertler, 2014). I discussed the preliminary codes with members from both cohorts and no modifications to the predetermined code template were required. Next, I read, listened to, and summarized raw data in analyzing each of the categories of data, i.e. interview transcripts, online discussion, feedback forms, and other sources. The summaries that I

generated from each data source reflected my initial processing of information and provided the opportunity to sense and take note of potential themes in the raw data. Once this was complete, I applied the template of codes and conducted additional coding. I applied text from the various data sources to the codebook. My analysis of the text at this stage was guided but not confined by the preliminary codes. I then completed another round of open coding in which inductive codes were applied to segments of data that describe new or expanded themes observed in the text (Boyatzis, 1998). I then reviewed and connected the codes and identified themes in the different sets of data. I clustered these into headings that related to the research question. Finally, I closely scrutinized my work in the previous stages to be sure that clustered themes were representative of the initial data analysis and assigned codes. The interaction of text, codes, and themes in the study underwent several iterations before I proceeded to the analysis and interpretive phases. To further corroborate the coding and thematic development process, as well as to promote accuracy, credibility, validity, and transferability, I engaged in member checking with members of the current cohort (Creswell, 2003; Creswell & Plano Clark, 2007; Mertler, 2014). Participants generally agreed with the findings but would sometimes make clarifications or suggestions to make the assertions more specific. For example, for assertion 1, I originally had planning, implementation, and sharing and presenting this knowledge. Through our discussion, the participants recommended that I break implementation down into two additional categories: risk-taking and modifying for continuous improvement. I had these as codes but had not broken them out specifically in terms of the assertion about confidence. Member-checking helped me to refine the assertions. The qualitative data used to answer this research question was derived from

the codebook. Table 10 depicts the themes or patterns that emerged from the data sets, as well as some of the components related to these themes, including sample codes, and finally, the three assertions, that I am making based on the data analysis. Unless otherwise noted, quotations are from participant interviews.

Table 10

Theme-related Components, Themes, and Assertions

Themes	Theme-related Components	Assertions
Confidence	--planning --implementation --risk-taking --modifying for continuous improvement --sharing/presenting	Teachers reported increased confidence with regard to personal learning in the areas of planning, risk-taking, implementation, making modifications for continuous improvement, and sharing their knowledge with others
Knowledge Gained	--PL --UDL --executive function skills --engagement vs. compliance --learning vs. practice --PL instructional strategies	Teachers reported learning about themselves, their students and colleagues, as well as gaining knowledge of content related to teaching, and personal learning.
Skills Gained	--problem-solving --design process --learning about students --open-mindedness/flexibility --technology --facilitation	Teachers reported the development of a variety of skills including design and problem-solving skills,

	--PL strategies	technology skills, and facilitation and PL strategies. They also reported changes in certain dispositions such as flexibility and open-mindedness.

Assertion 1. *Teachers reported increased confidence with regard to personal learning in the areas of planning, risk-taking, implementation, making modifications for continuous improvement, and sharing their knowledge with others.* Teachers reported increased confidence with regard to planning for personal learning. Since the cohort format allowed for design time in which teachers planned and developed products, tools, and strategies for their personalized classrooms, teachers gained confidence in planning for personal learning. In her interview, Audrey said,

> I came to each cohort meeting very eager to see what I could do, and then I'm the type of person who immediately puts it into action the next day. So that night, I'll be changing my lesson plan, trying to experiment with something I learned in the cohort. That's what I did throughout the year. It really affected my planning.

Leighanne stated, “I really appreciated having this time to learn and work so I made the most of it. I got a lot done in every session and then I was able to roll this over into my regular planning.” Noel commented on how overwhelming learning about PL was in the beginning. She said she did not think she would have been able to plan anything to get started if not for the cohort design time. In reflecting on the cohort at the end, she had learned that she could in fact implement PL and do it on her own during her regular

planning time. She stated, “It also showed me that I could do it, if I planned appropriately during my planning time of the week.” Since the cohort included design time for planning and because the teachers had each other and a coach available to support them, rather than just receiving information without the time to apply it, teachers were able to make a permanent shift in the way that they planned so that they could embed PL in their planning. Audrey reinforced this in her interview:

> Sometimes if you're sitting through a workshop and now it's like, okay, great, hope you enjoyed that. Then you go home and now it's everything else that comes up, you sometimes forget what you learned and how you wanted to implement it.”

Lori summed it up by stating, “It was the right blend of being shown and told new things, and also being able to practice what we've learned. Application is key. Again, much like you're teaching us to do in the classroom, if we can't apply what we're hearing, you don't learn from it.”

Teachers also reported increased confidence with regard to taking risks in their classrooms. This is extremely important in the change process. Mary reported that she had learned that, “It's ok to not have all the answers now and we are permitted to fail.” I was very excited to hear this because I had attempted to cultivate an environment in which participants would feel comfortable taking risks. Melony expressed an understanding that, “it is okay to take baby steps, as we keep trying more and more, little by little our instruction will improve and be more personalized and engaging for the students.” When asked about her level of confidence in implementing personal learning, Lori stated the following, illustrating growth in the area of risk taking, “I do now (feel

confident). I was tentative in the beginning, and I think that's just normal. Any time you try something new, there's risk involved. But I just felt like, what's the worst that can happen?" Teachers openly discussed their fears in the cohort sessions and became more open to taking risks as they connected with and shared experiences with their colleagues. Some teachers even became excited to come in and discuss their "failures" because they knew they would get more ideas and assistance from the group. Amy seemed to relish these discussions stating, "We are all in this together. Sharing the different strategies that we have tried and worked have been extremely beneficial." Nadine concurred: "Hearing other people's thoughts and opinions sparked some of my own and made me feel like I'm not the only one thinking in certain ways." Since taking risks is an essential part of changing teaching and learning to move toward a more personalized environment, risk-taking was encouraged from the first day of the cohort. The teaching of the design process was meant to instill an understanding that failure is a part of the learning process. The ice-breakers and community activities were designed to build trust among members. Based on my observations and the teacher's feedback and interview statements, they increased their confidence when it came to taking risks in the classroom.

Teachers reported increased confidence in the implementation of personal learning. For example, Chris reflected on his accomplishments over the course of the year and stated, "I was able to discuss ideas and find a way to begin to implement a flipped classroom and more choices into my math instruction." Annette said, "I will never go back to the other way. It has just been amazing watching them grow and take charge of their own learning and just everything that they've accomplished has been amazing." Referring to the student reaction, Audrey stated, "So they really do like the personalized

learning aspect to teaching. I mean, I like it, they like it. I try to do it a lot more now. Reflecting on her growth over the course of the year, another teacher remarked,

> I have always put 100% of myself into my classroom and my students, but I was the one "in charge". It has been unbelievably eye opening to take a step back and just guide them to become problem solvers, collaborate with their peers, and navigate their own learning process. I am a much better teacher (and learner) after participating in this cohort!

There were numerous discussions of various types of PL implementations in the cohort. The teachers began implementing PL strategies in their classrooms after the second cohort session. As the year continued, they reported more and more implementation goals and accomplishments. These were also observed by their PL coach and their principals. All of the teachers invited me into their classrooms to observe their personalized classrooms. Some sent me pictures, videos, and data related to their implementations. All of the teachers agreed to open their classrooms to other teachers who were interested in learning more about PL because of their improved confidence with PL implementation.

Teachers reported increased confidence in reflecting and making modifications for continuous improvement. Leighanne discussed how she did this in consultation with her students:

> Something doesn't go well, so I change it for the next class. I do have the luxury of teaching the same class three times a day, so you almost feel badly for that first period. You're like, "Sorry, guys. You're the guinea pigs," and they laugh. But I'm very open with my students, and I'll say to them, "Hey, this is the first time I'm doing

this." And then I always do a self-reflection. It's something that I've always done. I always have a sheet at the end. It's a survey and it asks them, "What did you like? What didn't you like? How could we do it differently?" Then we talk about it.

Leighanne was also modeling reflection and continuous improvement for her students, processes embedded in PL generally. She was open to feedback and comfortable with failure, some of the dispositions and skills the teachers identified as being important for students. When asked his thoughts about his progress on the personal learning journey, Steve said,

> I feel really good about it. I'm actually really excited for this next student group, because I have most of the work done. So, now I feel like I can tweak it. I wanted to put it into stages.

When asked whether her personal learning implementation would continue, Audrey said:

> Oh, my goodness. Every time I teach a new unit, I already am like, "Okay, how can I personalize this?" Like I'm already thinking about next year, like how I want to rearrange my classroom, how I want my tables differently. I'd like to have white board surfaces on my table. Different nooks that I want to design in my room.

In the cohort sessions, teachers sought feedback from their colleagues, the coach, and from me. They were eager to receive feedback that would improve PL implementations. During their interviews, teachers frequently discussed the changes they implemented based on the feedback they received from the PL coach. In the last cohort session, the teachers discussed their plans for next year, and they were generally focused on improving and expanding their PL work.

Finally, teachers demonstrated increased confidence in sharing their knowledge of personal learning with their colleagues, most of whom had not participated in a cohort. In some cases, the teachers felt so strongly about the work that they were doing, they expressed feeling compelled to share it with other teachers. Annette stated, “I think this has been just such a learning experience for me. I know I'm sharing out with others who have participated in it. I've been pushing it on them.” In other cases, the non-cohort teachers sought assistance from the cohort teachers based on student requests. One of the health teachers was being requested by the students because the word had spread among the students that his class was more engaging. Steve said:

> Now, I got other people from other classes and grade levels who are coming to me and asking, "Listen, I gotta teach health this marking period. What's this thing you're doing in health right now?” That's been going on. I have at least two other people who are now gonna be on Classroom delivering Project Based learning also.

Deirdre, who was implementing a blended learning approach in which she created online world language modules offering students many different options and choices in a competency-based model, mentioned being questioned by other teachers at the faculty meeting. She said the other teachers asked:

> “What are you doing differently?" And I show them what I'm doing and they're like "Oh this is- I can do that for the English class," and I'm teaching math and they're like "Oh, I can do the same thing." They do the same thing but with their own subjects.

Deirdre was able to show the other teachers examples of pre-assessments and corresponding activities. She explained that when a student had mastered a concept, which she determined to be getting at least a 90%, they could move on to the next skill. They continued their choice activities on a particular topic until they were able to achieve 90%. All of the teachers presented to their colleagues in a faculty or department meeting about the work that they were doing. Several of the teachers also presented on professional learning days, sharing PL strategies that they had implemented. One teacher brought some of her students to a Board of Education meeting and had them share what they were doing in their PL classroom.

Assertion 1 Summary. In review, the pre and post self-efficacy assessments indicated an increase in teacher self-efficacy with regard to the implementation of personal learning. In addition, the qualitative also data revealed an increase in teachers' confidence levels related to personal learning but provided more information as to the specific ways that the teachers felt more confident. Teachers reported higher levels of confidence with regard to planning for personal learning. They also described higher levels of confidence in implementing, reflecting, and refining personal learning. Finally, the teachers articulated increased confidence in teaching other teachers how to implement personal learning. These findings are important because prior to their participation in the PPLC, these teachers had varied understandings of PL and there was very little implementation of PL in the district. Eighty-six percent of the teachers reported not having sufficient professional development on PL. After participating in the PPPLC, these teachers now feel more confident in planning and implementing PL. More importantly, they reported increased confidence in reflecting upon their PL

implementation and making refinements which promotes a cycle of continuous improvement and increased the likelihood that their implementation of PL will continue to improve. A key finding here is that these teachers now feel comfortable teaching other teachers about PL, which will help to spread PL knowledge across the district, outside of the cohort.

Assertion 2. *Teachers reported learning about themselves, their students and colleagues, as well as gaining knowledge of content related to teaching, and personal learning*. Teachers reported learning more about themselves and their teaching as a result of participating in the cohort. At the conclusion of the cohort, Lori stated, "I am more aware of how my learning style affects my teaching style." In this quotation Lori is referring to the UDL self-assessment used created by Bray and McClaskey in conjunction with the Center for Applied Special Technology (CAST). Lori realized that she was teaching from her own learning preferences, which meant that she was not typically providing multiple means of representation, action and expression, and engagement. Leighanne reflected on how she came to realize that she was not as open-minded as she thought she was. She said:

> I think that was probably the hardest part for me. I tend to be pretty open-minded, or, I thought I was, at least, and then I was reflecting on the different workshops, I'm like, "Well, I really don't do that and I should." I've always tried to be student-centered and sometimes I'm not as much as I could be, which I'll admit. But I think it's expanded my knowledge and my perspective.

One of the more veteran teachers, Amy, admitted to being resistant to many new initiatives in the past.

> Like I said, I didn't think you could teach an old dog new tricks but… yeah, I really tried a lot of stuff this year. Some of it worked, some of it was disastrous, but I just kept trying. I can really see that the kids, even the special ed and the little ones can do more than we think. They love having choice. I am freed up to really observe them as they work and learn. I have never been able to do that before because I've always been right in the thick of it. I'll keep doing it for sure.

She went on to speak about how her daughter, who is also a teacher, could not believe the types of things she was doing and saying. Amy said her daughter described her as "a whole new person." One of the newer teachers, Caleb, spoke about how had been "getting into his groove" as a teacher but then realized he was capable of so much more.

> This has only been my third-year teaching, not that I'm set in my ways, but I was kind of getting in a rhythm, and I was like "okay I can keep doing this each year" and then I did the cohort, and I can totally like maximize what I'm doing and go above and beyond I thought I was doing pretty well. It just opens you up like that, there's always more, always more that you can do, always a little bit better, more efficient, to help more students. That's what the cohort helped me do.

Caleb realized that he had been selling himself short. Interestingly, he referenced the evaluation process. He said, "No one wants to get a bad evaluation but, at the same time, you want feedback to help you get better…you don't want to be told you're great when you're not really great." The self-learning may have been encouraged by several factors

including the amount of reflection and self-assessments that were completed throughout the cohort, the personal attention they received from the PL coach, and the interactions with their peers, which will be discussed next.

The teachers reported getting to know their colleagues in the PPLC. It is not all that surprising that teachers from different buildings did not know one another as there are only a few occasions when the entire district gets together, but it was a bit shocking that some of the teachers in the same buildings did not know one another. Teachers reported learning from one another but they also talked about expanding their relationships and their networks. They enjoyed this camaraderie and the idea that they were "all in this together." This theme came up frequently in the data. Leighanne reported, "I met a few people that I thought were ... that I didn't know before…So I felt that the interactions were great and the fact that you're (with others) always helps because ... we were working together, so it was good."

The intent of the cohort was to develop a community and to have teachers collaborate with one another. I was surprised by how much the teachers were affected by this opportunity to create a community. I underestimated how isolated they were in their own classrooms. As the cohort continued, their relationships became more meaningful over time and they established plans for them to continue beyond the cohort meetings. Lori said:

> At first, I was sitting with a couple of people from my school, which was nice because I normally don't get to speak with those people. Then as the cohort went along, I started branching out and then I even started working and talking with the

> language arts teachers from other schools. On the last day, we even said, "Wow, we never really got to talk to one another," because they were seventh grade, I was sixth grade, they were at different schools, so that was really good. We even set up a document together to keep in touch with what we were doing.

Audrey concurred:

> A lot of times I sit there and I'm coming up with ideas while we're talking about stuff so I really enjoyed doing that. I liked being in the room and bouncing ideas off of people and I liked that we always had our little time to talk and stuff like that, and then hear things and then bounce ideas off of people and then hear what they did and then talk about things that I did, and it was just really nice being able to talk to everybody while we were there."

Audrey later told me that she and some of the other teachers had been getting together for social events outside of the cohort. Noel concluded, "I just would like to share that I am very thankful for being a part of the cohort. I felt like it's given me so much in terms of just strategies and a network of colleagues that can support my ideas and at the same time I can bounce my ideas off of, which is really neat…now I feel like my network is much larger, and we are all in it together." Teaching can be an isolating profession because you are in your own classroom all day, often with little interaction with colleagues (Schlichte, Yssel, & Merbler, 2005; Flinders, 1988; House & Lapan, 1979; Sarason, 1966;). Flinders (1988) argued for the importance of addressing teacher isolation in reform movements. The fact that the PPLC teachers were trying something new together and experiencing and sharing both their successes and failures seems to have bonded them. The PPLC also

helped to eliminate teacher isolation by providing the teachers with time to connect with one another and to share ideas and strategies. In the cohort, some of this time consisted of structured ice-breakers and team building activities, but it also existed in the unstructured time at breakfast, lunch, and during design time.

The teachers reported learning more about their students, including their interests and abilities. What teachers reported learning varied based on the grade level of the students. Prior to the completion of the PPLC, elementary teachers seemed to know more about the interests and families of their students but less about their academic abilities. The secondary teachers seemed to know more about students' academic abilities but less about their students as persons, such as their interests and goals. This is consistent with the findings of Hargreaves (2000) in which he argued that elementary teaching is generally characterized by physical and professional closeness, resulting in greater emotional intensity, while secondary teaching is characterized by professional and physical distance, which threatens the emotional understanding on which high quality teaching and learning depends. To implement personal learning, the teacher has to know their students and have some type of emotional connection. The cohort participants began to learn about their students in ways they had not before, deepening their emotional connections. A focus on personal learning may help to develop the emotional connections that are typically lacking at the secondary level.

The PPLC participants also helped the students to learn more about themselves. It is important for the teacher to know the strengths and challenges of their students, but it is also important for students to know this about themselves if we want them to take more responsibility for their learning. Lori reported that she had learned "how to work with

students in building a learning backpack. Specifically, what students feel are their strengths and challenges and what can be done to help their learning process in and out of the classroom." Noel learned more about what her students were interested in and allowed for class activities to revolve around those interests: "I used to try to really stick to the plan, but there are times now that their engagement or their conversations led to other things, such as basketball and who was in the top league, and their brackets, and stuff like that." She continued saying that it is important to "engage in that what their interests are."

Some of the teachers reported being able to observe students and to connect with them in different ways. Leighanne said, "I've always given kids choice but I think it expanded my horizons a little bit more about how to personalize more and how to make more connections with the students, so that's been valuable to me." Amy mentioned that observing her students has been important in planning for their needs. She said that her shift to more of a facilitator allowed for this to happen. Recall that she indicated the PL strategies freed her up to observe her students. Many of the teachers also employed student conferences. Lori mentioned the student conferencing in reflecting on the students' reaction to an open-ended assignment she created:

> "You mean we could do anything?" I said, "As long as it meets my requirements, yes. And then we'll have a little conference and you propose your idea, and then together we'll make it work." We'll make it fit the requirements and hit the standards and whatever it is that I'm trying to get them to do. So that was an exciting new thing that I did this year as a result of the cohort.

The teachers also reported realizing that the students were capable of more than they had originally expected. Amy said, “I learned that students, especially the younger ones, can do a lot more than we think. They can really rise to the challenge.” Annette said, “I will never go back to the other way. It has just been amazing watching them grow and take charge of their own learning and just everything that they've accomplished has been amazing.” This is an important finding because the relationship between teacher expectations and student achievement has been well documented in the research literature (Brattesani, Weinstein, & Marshall, 1984; Cotton, 1989; Crohn, 1983; Edmonds, 1979; Findley & Good, (1982); Good, 1987; Good & Brophy, 1980; Rosenthal & Jacobsen, 2003; Rosenthal, 2002). If the PPLC or the approach to personal learning increased teacher expectations regarding student performance, this is likely to have a positive impact on student achievement.

Finally, the teachers reported learning about a variety of content, including a better understanding of personal learning, Universal Design for Learning, executive function skills, the difference between engagement and compliance, design, and strategies for PL. On one of the (anonymous) feedback forms from the first cohort session a teacher wrote, “I gained a better understanding of what personalized learning is and why there is a need for it.” Another participant stated, “I learned that personalized learning can look many different ways.” The first cohort session focused on the design process. On the feedback survey a teacher reported, “In doing the design process, a reminder of what it's like for students and that learning and designing can sometimes be messy and that's okay.” I intentionally tried to model PL in the cohort with the teachers. They often noticed this modeling and commented on the empathy it helped them to have

for their students as well as some shared experiences. This is important as research indicates that empathy and affective student- teacher relations play a positive role on students' engagement and academic achievement (Roorda, Koomen, Spiit, & Oort, 2011). One teacher reported learning "the difference between learner centered and learner driven." This alludes to the definition of PL as well as the preliminary innovation concept maps depicting various stages of PL (Bray & McClaskey, 2015). Many of the teachers needed to start by attempting to develop more student-centered classrooms, which in some instances, evolved into student-led classrooms.

At the end of the cohort, teachers reflected on some of their most impactful learnings. Teachers identified one of their most critical learnings as executive function skills. Kelly stated, "I had no idea what executive functioning even was. I never realized how what I was doing in the classroom was enabling them for their future." Marie concurred: "The three-part videos from Nancy Sulla were extremely helpful in breaking down ways in which executive function are taught in the classroom." In addition to understanding personal learning, teachers identified their new knowledge of executive function skills as being critical to being able to successfully implement PL. Amy, a first-grade special education teacher, shared how far her students had come in terms of their executive function skills. Many of the students had individualized education plan (IEP) goals that addressed making eye contact, being able to speak to a peer, and understanding the feelings of others. By the end of the year, these first-grade special education students were independently leading the class. They were presenting to the whole class and the teacher. They made eye contact, and they helped each other out when they got stuck. The teachers also reported value in learning about Universal Design for Learning (UDL) and

how this approach can be used as a means for creating personal learning plans by having students identify their strengths and challenges in how they access information, engage in learning, and express their understanding. Other learnings included "the difference between personalized and blended learning," "engagement vs compliance," "different types of assessment (formative, summative)," "learning vs. practice," and "simple, practical ideas that I can easily implement: Expert Board, Help Board, Sign-up sheets for choice activities, etc."

Assertion 2 Summary. In review, the teachers reported increased knowledge as a result of their participation in the cohort. This knowledge included learning more about themselves as learners and how they think about teaching and learning. The teachers also indicated that they learned more about their students in terms of their interests and abilities. Finally, the teachers reported learning a variety of content including a better understand of PL and executive function skills as well other content helpful in moving toward a more personalized classroom such as UDL, formative assessment, transfer tasks, and the use of rubrics. The teachers demonstrated their knowledge in their presentations, discussions, and classroom practice. One of the most surprising findings was how impactful the cohort was in helping teachers to get to know their colleagues and to develop lasting relationships with them. This is consistent with the research of de Jong, Moolenaar, Osagie, and Phielix (2016) in which they found that there was a positive relationship between teacher social networks and teacher self-efficacy and commitment. In the de Jong, et al. 2016 study, however, the researchers studied existing social networks so those teachers that were better at social networking had higher levels of self-efficacy and commitment, while those that were not as proficient in networking, did not.

The concept of the PPLC, a cultivated community of practice, may offer a way to provide all participating teachers with these critical social networks to support the development of self-efficacy and commitment.

Assertion 3. *Teachers reported the development of a variety of skills including design and problem-solving skills, technology skills, and facilitation and PL strategies. They also reported changes in certain dispositions such as flexibility and open-mindedness.* Design thinking was taught in the first cohort session, and the philosophy was carried throughout the year. Several of the teachers responded positively to the idea of teachers as designers. After participating in the d. school crash course in design, one of the teachers indicated on the feedback form, "The last partner activity was valuable, as it taught me how to analyze and identify a problem that I didn't actually even know existed prior to looking, while engineering a possible solution to not only solve the problem but to also improve a situation." When reflecting on the cohort in the final feedback form, another of the teachers said that they had "gained the skills and ability to think critically, analyze, evaluate, deconstruct problems and brainstorm/engineer solutions." The teachers also used design thinking with students. One of the cohort teachers brought five of her students with her to present to the Board of Education. The students explained how they participated in design challenges on a weekly basis and brought some of their current prototypes to share. Design and problem-solving skills were used throughout the cohort as teachers designed personalized learning environments and problem-solved various challenges associated with making instructional changes.

Although it was not the main focus of the cohort since the group did not define personal learning as needing any type of technology, there was widespread agreement

that technology could be used to support and help facilitate personal learning. For this reason, the cohort was introduced to blended learning and a learning management system to facilitate the delivery of online content. The participants also learned about different types of technology tools that they might want to embed in their PL classrooms. Some of the teachers were already very skilled in the use of technology and they helped to teach their colleagues. Melony, for example, is a business teacher and very skilled in the use of Excel. She taught many of the teachers how they could use Excel for personal learning such as using it as a facilitation guide for students and as a mastery tracker. Aggie said of Melony's teaching, "I learned how to use Excel and how to send class lists from Power School to Excel. This is very helpful because it helped me make checklists for standards." Steve, an admitted "techno-phobe," embraced the use of technology. At the end of the cohort he told me, "My class is completely computer based at this point. I have not printed a single thing since the second marking period." He also discussed innovative ways that he used technology with students. For example, he was home sick one day and he managed to still teach class from home. "I had 102 fever, bronchitis and a sinus infection. And it was funny, because I taught one of my classes, an entire unit on tobacco and nicotine, all through Google Classroom when I was at home."

Deirdre also embraced the use of technology with a focus on developing a flipped classroom. She said, "I definitely became more tech savvy. I learned an awful lot on the learning platform that we have, Canvas." Deirdre had set up multiple units of study in Canvas. The assistant principal at the high school contacted me after conducting a classroom observation of Deirdre. She said that she had called me because she had never seen students so actively engaged in a world language classroom, and she credited the

cohort. She was very excited about the way that Deirdre was using the technology. Deirdre's colleague, Mary, also learned "how to facilitate a flipped classroom." Mary bought a special tablet that allowed her to write on it and transfer it to the computer screen. She created her own youtube channel with close to 100 videos to help students learn biology. Leighanne summarized what she learned about technology this way:

> Well, it definitely added a lot to my tool belt. I've been a teacher a long time, and you're always looking for new things because things are always changing in education, as we know. Especially with technology and how to use it better. I'm always trying to find the balance with technology, how to use it so it's most effective, and I think doing the cohort added a lot of value in that area.

Leighanne captured here one of the main concerns of the cohort participants. They wanted to use technology in transformative ways and not just for the sake of using technology. They were also concerned about making sure that technology did not usurp student to student and student to teacher interactions. They wanted technology to augment these interactions but not to replace them. This topic will be addressed further in the context of the partnership.

The teachers reported learning specific strategies to help them move toward more personalized classrooms such as facilitation strategies, assessment strategies to assist in the development of digital backpacks and personal learning plans, and instructional strategies that allowed for more student choice and responsibility. The development of facilitation strategies was critical as this helped the teachers move into a more facilitative role in the classroom. In one of the anonymous feedback forms, a teacher reported that they had learned "the ability of stepping back and giving the students the independence

and opportunity they need to grow as learners. To be a facilitator." Another teacher reported, "to act as a facilitator instead of always as the instructor." Similarly, a teacher reported "learning specific strategies for scaffolding student learning and taking the steps towards giving students greater responsibility." It was not easy for all of the teachers to step back and relinquish this control.

In the beginning, Melony kept reporting that inevitably the class would return to whole group instruction because the students were not able to work independently. Eventually, she came to the realization that it was not the students that could not handle working independently or in small groups, but it was she, herself, who was uncomfortable not "commanding the room." "At first, I felt like I wasn't really teaching if I wasn't talking to everyone all at once." There is a common sense of discomfort when teachers shift to a learner-centered classroom. Evertson and Neal (2006) found that many teachers grappled with finding a balance in how active they should be in guiding students in a learner-centered classroom. Teachers often struggled with the degree to which they should relinquish their authority in the classroom (Evertson & Neal, 2006). The PPLC cohort provided opportunities for the teachers to discuss and work through some of these challenging questions.

Melony ultimately decided to use her strong technology skills as a business teacher to help her to make the transition. She created a facilitation grid for her students using Excel. She also created a list of standards so that she could track student mastery. She used videos and pre-developed Canvas modules so that students could have choice and work in small groups. Toward the end of the cohort, she encouraged the students to develop centers or project ideas for how they would like to learn the standards. Melony

became so comfortable with these skills that she led mini-lessons during the cohort to teach other teachers how to use Excel and other technology to support their personal learning work. Leighanne summed up the progress many of the teachers made in shifting their roles to facilitators when she said,

> The most valuable part of the cohort was shifting the focus to a truly student-centered focus and giving students more ownership in their learning. Prior to this cohort I felt that I was already doing these things and did not think that students could handle more responsibilities. This cohort has allowed me to try new ways of teaching and running a classroom, and it has been extremely beneficial to my students and classroom environment.

The teachers also reported gaining skills in formative assessment which were used in the development of digital backpacks and the creation of personal learning plans for students. (Expanded definitions of these terms can be found in Appendix E.) Lori reported learning "how to work with students in building a digital learning backpack. Specifically, what students feel are their strengths and challenges and what can be done to help their learning process in and out of the classroom." On the cohort feedback surveys one teacher reported, "I have made a few quick pre-assessments on Socrative. I have also set up a Quizlet." This facility with formative assessment allowed the teachers to assess student knowledge to design more customized pathways for their learning based on what students had already mastered and what they still needed to learn. Another teacher wrote, "I learned the how's and why's of rubrics and I worked on making one for reading and one for math." Annette worked with her kindergarten students to create PL plans for every student. She reported learning how to "Create meaningful assessments and rubrics

for student use and to guide instruction." The students used this data from formative and summative assessments to set goals for learning their site words and for their math facts. Almost every student exceeded their goals. This will be addressed further in the open coding section.

One of the most common points of feedback from the pilot study was that the teachers felt that they needed specific strategies to get started, even if these strategies did not achieve the ultimate goal or stage of PL, these first steps helped them to move more in the direction of a student-centered classroom and helped them to offer students more choices in their learning. This was a change from the pilot cohort. Initially, I avoided introducing some of these strategies because I thought that they were more focused on differentiation or that the teacher was still directing the learning, which did not meet our ultimate goal of students driving their own learning. The pilot participants reported, however, that it was hard to get started without more concrete strategy examples and that if a teacher was running a fairly traditional classroom, it was an unreasonable expectation to go from lecturing everyday to putting students in charge of their own classrooms. One of the main goals of this cohort, therefore, was to help teachers to learn some of these starter strategies. Each cohort session focused on at least one strategy. Some sessions included as many as three or four different strategies. The content was also available to the teachers outside of the cohort, so if they chose to go back and look at all of the content choices offered, they would have access to many more strategies. Teachers reported gaining skills in the implementation of a variety of these strategies. The most common were the implementation of a resource area, expert boards, activity lists, tic-tac-toe boards, a Totally 10 list, learning scaffolds, learning centers, and the creation and

implementation of transfer tasks. (Appendix E contains more detailed explanation of each of these strategies.) Typically, these activities allowed the teachers to begin making the shifts in teacher and student roles. It helped the students to gain some of the skills needed to take more responsibility for their own learning. It also helped the teacher to begin to gain confidence in their new role and with relinquishing control in the classroom. As one strategy was successfully implemented, the teachers typically added on until several strategies might be implemented simultaneously, moving them toward a more personalized classroom.

The teachers also reported the development of dispositions they thought were critical for the implementation of personalized classrooms such as being more open-minded and/or more flexible. While not skills, these dispositions made it easier for the teachers to implement the other skills they had learned. Some of this work was evident in observing them and their discussions throughout the cohort but they also articulated this in their interviews. Noel said, “The biggest skill that I’d say I'd gained would probably be ... keeping an open mind. Being flexible. I felt like I was flexible, but I'm a lot more now, even with assignments.” When asked about skills gained as a result of the cohort, Aggie said, “The ability to be open and receptive to a flexible classroom.” Leighanne said, “I now offer a variety of seating/learning/reading options, as well as a more individually paced, personalized learning environment.” After one of the cohort sessions, Amy pulled me aside and said that she was going to now be more open to other district initiatives because she was getting so much out of the cohort and it made her wonder what else she might be missing. This kind of flexibility and open-mindedness helped to make the teachers more receptive to learning about different ways of teaching. It also helped them

to be supportive of students as they began to express and assert themselves in terms of learning pathways, demonstration of mastery, and seating preferences. Finally, this type of flexibility is critical to managing the uncertainty associated with this type of educational change and is essential to creative thinking and problem-solving (Adcock & Martin, 1971; Faust, & Havlin, 2018; Kenett, Kennett, Levy, Stanley, 2018).

Assertion 3 Summary. The teachers reported the development of a variety of skills including design thinking and problem-solving skills. This is an important finding because employees with these skills are beneficial to organizations, particularly those with complex knowledge bases (van Laar, van Deursen, vam Dijk, & de Haan, 2018). In addition, having good design thinking skills assists individuals in solving complex problems and to be able to adjust to unexpected changes (Razzouk & Shute, 2012). Moreover, teaching these skills to our students will help them to develop their critical thinking skills and promotes dispositional traits such as persistence and creativity which have been defined as essential 21st century skills. (Bellanca & Brandt, 2010;Razzouk & Shute, 2012). The teachers also reported enhanced technology skills as well as the ability to implement personal learning strategies which have also been identified as important 21st century learning skills for both teachers and students (Bellanca & Brandt, 2010). Finally, the teachers reported dispositional changes such as increased flexibility and open-mindedness which have been identified as important skills for managing the uncertainty around educational change and in developing creative thinking and problem-solving skills (Adcock & Martin, 1971; Kenett, Levy, Kennett, Stanley, Faust, & Havlin, 2018).

Research Question 1 Summary

In summary, this section examined the data in light of RQ1: To what extent does participation in a community of practice affect K-12 teachers' knowledge, skills, and self-efficacy for implementing personal learning? The pre and post self-efficacy assessment analysis indicated there was a change in the pre-and post-test values, it was substantiated in terms of the pre-test variation, and it is statistically significant taken one-by-one if the sample were a random draw. Since the post-test values were higher, it can be said that there was real and meaningful change in the PL self-efficacy constructs measured after the implementation of the PPLC. In addition, the qualitative data analysis supported the quantitative analysis and led to three assertions: (1) Teachers reported increased confidence with regard to personal learning in the areas of planning, risk-taking, implementation, making modifications for continuous improvement, and sharing their knowledge with others; (2) Teachers reported learning about themselves, their students and colleagues, as well as gaining knowledge of content related to teaching, and personal learning; and (3) Teachers reported the development of a variety of skills including design and problem-solving skills, technology skills, facilitation skills, and the ability to successfully implement a variety of PL strategies. Additionally, the teachers reported the development of certain dispositions they viewed as critical to developing a PL classroom such as flexibility and open-mindedness.

Research Question 2

Research question 2 focused on value: To what extent does the PPLC create value for individuals and the organization? To assess the value of the PPLC, I adapted Wenger,

Trayner, and de Laat's (2001) conceptual framework for assessing the value of a community of practice, applying the following three categories:

1. Immediate Value/Activity & Interactions. Indicators for this category refer to community and networking activities in and of themselves. I observed many activities and interactions in the face-to-face meetings and recorded them in my research journal. I also collected some of this data via online postings, including anonymous online feedback forms that I administered after every face-to-face cohort session. Finally, I asked selected participants about their levels of participation and interaction in individual interviews.
2. Potential Value/Knowledge Capital. Indicators for this category reflect the various types of knowledge capital that can be produced by the community including human, social, structural, reputational, and learning. Data sources included self reports and interviews, surveys, and my own observations which were recorded in my research journal.
3. Applied Value/Indicators of Changes in Practice. Indicators for this category include the use of knowledge, tools, and social relationships to affect practice as well as the ability to overcome barriers to implement PL. Data sources included observations during the cohort sessions as well as classroom observations which were recorded in my research journal, products generated during the PPLC sessions, PPLC session feedback, and individual interviews.

As described in chapter 3, I analyzed the qualitative data by employing a hybrid approach of inductive and deductive coding and theme development (Fereday & Muir-Cochrane, 2006). This method employed the deductive a priori template of codes

approach outlined by Crabtree and Miller (1999). Using Wenger, Trayner, and de Laat's (2001) conceptual framework for assessing the value of a community of practice, as well as data from my previous cycles of action research, I generated a code book. (Appendix C has the preliminary codebook.) I used the codebook to code my research journal, online participant postings, participant feedback forms, artifacts generated during the PPLC sessions, and participant interviews. I will present the findings by value category.

Category 1: Immediate Value. This first category focused on participant activity and interactions including the level of participation and engagement of the participants, the collaboration and networking of the participants, and the quality and value of the interactions and connections among the participants. Table 11 depicts the frequencies of these codes.

Table 11

Immediate Value Code Frequencies

Code	Frequency
1a Level of Participation	83
1b Level of Engagement	83
1c Quality of Interactions	31
1d Collaboration	139
1e Networking	43
1f Value of Connections	77

The code collaboration had the highest frequency and was viewed as an essential component of the Personal Professional Learning Cohort (PPLC). Participation and engagement displayed the next highest frequencies, with teachers describing both their participation and engagement as high throughout the cohort. Next, was the value of connections, which will be discussed in more detail as it helps to determine the value of the community. Networking was coded 43 times. In some cases, teachers referred to in-district networks, but in most cases, they used network to refer to communities that extended beyond the school district. The quality of the interactions was coded 31 times, and this data is helpful in understanding why the teachers valued the connections and collaboration in the PPLC. Although data was collected and analyzed for each of these categories as separate codes in the codebook, the conclusions will be discussed holistically. A detailed sample of the codebook in practice can be viewed in Appendix D. Table 12 depicts the category of immediate value including the value recipients, the assertions, and sample evidence statements.

Table 12

Immediate Value – Value Recipients, Assertions, and Evidence

Category 1 Immediate Value, Activity/Interactions		
Value Recipient	**Assertion/Conclusion**	**Evidence**
Individual	Relationships were key to developing ideas and confidence for implementing PL	"I think that's what made it the most important, was that community basically." "I would say that the interactions were probably one of the most beneficial things that we all took in. I found that just sharing with my colleagues from the high school level or the elementary level, and just sharing ideas or thoughts was really helpful, in just shifting our way of thinking…"
Organization	New relationships and networks were developed which has inspired or re-inspired teachers and begun to change the culture of the district	"I just would like to share that I am very thankful for being a part of the cohort. I felt like it's given me so much in terms of just strategies and a network of colleagues that can support my ideas and at the same time I can bounce my ideas off of, which is really neat, I feel like, because I do have a smaller network, but now I feel like my network is much larger, and we are all in it together. In doing it together, I find that other colleagues are starting to ask more about it. I do feel like it's a shift that's happening slowly, but it's definitely happening."

Assertion 1. *Relationships were key to developing ideas and confidence for implementing PL.* The teachers reported that the interactions in the cohort provided immediate value in terms of developing and refining ideas as well as in developing

confidence for implementing PL. When asked about the value of the interactions, Annette said,

> That was one of the best parts. Sharing ideas with everyone else. Getting ideas from everyone else. Everyone was really engaged. I even learned things from working with high school teachers which I never thought would happen. I learned so much from Melony about technology.

Many of the teachers described value in interacting with teachers from different content areas and grade levels in terms of getting or validating ideas. In referring the value of the interactions, Noel stated,

> I would say that the interactions were probably one of the most beneficial things that we all took in. I found that just sharing with my colleagues from the high school level or the elementary level, and just sharing ideas or thoughts was really helpful, in just shifting our way of thinking, or even, sometimes we think, "Oh, well they're only elementary, how could they do so much?" Or, "They're in high school, they're attitudes change by then," but just having those conversations on how to constantly engage them and what to put into play to make it work was always beneficial at all grade levels.

She then went on to say, "…in bouncing ideas with another colleague, they sometimes suggested something that I didn't think of or that I could maybe go more into depth with. I thought that was really neat. The collaboration was extremely helpful." Audrey concurred stating,

> I feel like that's what helped me the most was being able to sit there, see what's going on, now let me try, and put this in and having other people just say, this is

> what I'm thinking, what do you think? Having everyone act as springboards for each other, whether they are in 7th Grade or Kindergarten.

Teachers had the opportunity to try out ideas for lessons with their colleagues, to receive encouragement and support, as well as ideas for improvement, which helped the teachers to gain the confidence to implement PL in their classrooms. They also supported one another when a teacher was confronted with a challenge in the classroom in terms of offering ideas and strategies for addressing the challenges. These interactions provided immediate value to the cohort teachers.

Assertion 2. *New relationships and networks were developed which has inspired or re-inspired teachers and begun to change the culture of the district.* Many of the teachers were inspired or re-inspired by the cohort. Annette was inspired and stated, "It has changed my classroom, it has changed my students. It has changed me as an educator." Lori was re-inspired. This is how she described her journey:

> I don't think I realized that until I became part of the cohort that what I thought was student-centered really wasn't student-centered. That was my first epiphany, I think, in being part of that cohort. Then it became an exciting exploration as to how I can truly make my classroom student-centered.

This inspiration and enthusiasm on the part of the teachers has helped the work of the PPLC to begin to spread throughout the district. In some cases, the teachers are so excited about the work they are doing that they could not help but share. Audrey stated, "I know I'm sharing out with others who have not…participated in it. I've been pushing it on them." She added,

> When you're explaining it to people in your building, then you're building that community within your own little community, so it's cool. Then having to explain it, it's like a different way of learning because you're explaining what you just learned to somebody else and that they can learn, and it's like a cycle- a circle.

Interestingly, Audrey discussed creating new communities of learning beyond the PPLC. The communities and networks of the teachers continued to expand, resulting in changes across the district and even outside of the district. Noel stated,

> I just would like to share that I am very thankful for being a part of the cohort. I felt like it's given me so much in terms of just strategies and a network of colleagues that can support my ideas and at the same time I can bounce my ideas off of, which is really neat, I feel like, because I do have a smaller network, but now I feel like my network is much larger, and we are all in it together. In doing it together, I find that other colleagues are starting to ask more about it. I do feel like it's a shift that's happening slowly, but it's definitely happening.

Noel describes a shift in the culture of the district and, while it may be happening slowly, it is happening. Principals have recorded seeing PL strategies in their teacher observations and highlighted successes in their superintendent reports. I have seen PL being implemented in other contexts as well. The Clayfield Township Schools has an extensive 4-year mentoring program. In their third year of the program, the teachers are required to conduct and submit a classroom-based action research project to the mentoring coordinator and the assistant superintendent. In reviewing the year 3 action research projects of our mentor teachers, I discovered that 6 of the 8 teachers focused their projects on PL. Two of these teachers were in the PPLC, but 4 teachers were

implementing PL in their classrooms, not having been in the cohort. This likely happened because they had exposure to teachers in their departments and schools that participated in the PPLC, for example, the mentoring coordinator participated in the pilot PPLC program the previous year. Steve further illustrated this phenomenon when he discussed other health teachers coming to ask him about what he was doing in his class since students were requesting him as a teacher. Lori also discussed having connections with teachers from other schools and how this has helped to expand PL across the district. She then went on to share that she had been invited to an innovation conference and that the work of the PPLC was now being shared and implemented beyond the borders of the district.

> I mean having those connections in the other schools, is valuable, I think, and, as I shared with you from going to this convening, it's expanded it even outside of the school because I'm able to talk about what we were doing with teachers from other school districts in New Jersey when I went to this convening, so it expanded even outside of the district.

The PPLC created value for the district by inspiring teachers to share their learnings of PL with others across the district which has begun to change the culture of the district, inspiring more teachers to implement PL in their classrooms.

Category 2: Potential Value. This category included the knowledge and skills gained by the participants of the PPLC, changes in the perspectives of the participants, inspiration and confidence experienced by the participants as well as tools and documents generated by the participants. Table 12 displays the frequencies for each of these codes.

Table 12

Potential Value Code Frequencies

Code	Frequencies
2a Knowledge Acquired	211
2b Skills Acquired	121
2c Change in Perspective	74
2d Inspiration	36
2e Confidence	72
2f Production of Tools and Documents	35

The most frequently assigned codes were knowledge and skills acquired. As explained earlier, these codes were discussed in response to the first research question in the previous section and two assertions were made: (1) Teachers reported learning about themselves, their students and colleagues, as well as gaining knowledge of content related to teaching, and personal learning; and (2) Teachers reported the development of a variety of skills including design and problem-solving skills, open-mindedness and flexibility, technology skills, and facilitation and PL strategies. Code 2e, confidence, was also addressed in the previous section and the following assertion was made: Teachers reported increased confidence with regard to personal learning in the areas of planning, risk-taking, implementation, making modifications for continuous improvement, and sharing their knowledge with others. I included these codes in Table 13 which depicts the value recipients, assertions, and evidence for the category of potential value. They will be discussed briefly in terms of value since they were explored in depth in the previous section.

Table 13

Potential Value – Value Recipients, Assertions, and Evidence

Category 2 **Potential Value, Knowledge Capital**		
Value Recipient	**Assertion/Conclusion**	**Evidence**
Individual Organization	Teachers reported learning about themselves, their students and colleagues, as well as gaining knowledge of content related to teaching, and personal learning	"I am more aware of how my learning style affects my teaching style." "I learned that students, especially the younger ones, can do a lot more than we think. They can really rise to the challenge." "I gained a better understanding of what personalized learning is and why there is a need for it."
Individual Organization	Teachers reported the development of a variety of skills including design and problem-solving skills, open-mindedness and flexibility, technology skills, and facilitation and PL strategies	"I gained the skills and ability to think critically, analyze, evaluate, deconstruct problems and brainstorm/engineer solutions." (I learned) "To act as facilitator instead of always as the instructor." "My class is completely computer based at this point. I have not printed a single thing since the second marking period."
Individual Organization	Teachers reported increased confidence with regard to personal learning in the areas of planning, risk-taking, implementation, making modifications for continuous improvement, and sharing their knowledge with others	"I do now (feel confident). I was tentative in the beginning, and I think that's just normal. Any time you try something new, there's risk involved. But I just felt like, what's the worst that can happen?" "Every time I teach a new unit, I already am like, Okay, how can I personalize this? Like I'm already thinking about next year, like how I want to rearrange my classroom, how I want my tables differently."

		"I think this has been just such a learning experience for me. I know I'm sharing out with others who have participated in it. I've been pushing it on them."
Organization	Participants' perspectives about teaching and learning changed regarding teacher role and the agency and capacity of students.	"I also enjoyed the Design Thinking challenge because it forced me to step outside of my comfort zone and think in a different way." "I found that a lot of the time, I was holding back my very ... Not my smarter students, but those that understood it really were just waiting for me to review the things that my other students, that didn't understand, needed to catch up" "I will never go back to the other way. It has just been amazing watching them grow and take charge of their own learning and just everything that they've accomplished has been amazing." "I want to make sure my students are more independent, engaged and more in control of their learning." "I realized that I haven't given the students the opportunity to truly be responsible for their learning. While they are compliant children, they rely heavily on me for guidance. I realize the importance of changing their mindset to be more engaged." "It has changed quite a bit. I always knew that we were not there to be a teacher that lectures with all the information but I really see the importance of having students collaborate and be responsible for their learning."

Assertion 1. *Teachers reported learning about themselves, their students and colleagues, as well as gaining knowledge of content related to teaching, and personal learning.* The teachers benefited as individuals from this personal growth, but their growth also benefited the organization as well. Amy remarked on her learning and participation in the cohort. "I really participated. I never participate in this kind of stuff. I have been avoiding it for years. I thought I knew all I needed to know and that I was really too old to be learning new things but I dived right in and started trying it and it really paid off." She later told me that she was going to be more open-minded and take more advantage of different learning opportunities to continue to grow as a teacher. She said she had become "engaged." Once the formal cohort sequence had completed, Amy signed up for an additional district professional development offering, a 40-hour literacy training. The other teachers also expressed a renewed commitment to continuing to grow and learn as teachers, which will be of great benefit to the organization. A more engaged, self-efficacious, and knowledgeable staff helps to create a more effective learning organization (Bandura, 2009; Bakker & Schaufeli, 2008).

Learning more about their students, helped the teachers to incorporate student interests as well as to address their academic strengths and weaknesses. Lori shared that she had allowed students to design units of study around their own interests as long as they could align these interests to the required standards. Noel also shared that she had incorporated student interests into her language instruction as she felt it helped the students to be more engaged in class. Several of the teachers had students complete interest inventories to get to know their students better and incorporate student interests into instruction. When teachers form positive relationships with their students,

classrooms become supportive, caring environments that promote students' cognitive and social development (Hamre & Pianta, 2001; Hughes, Carell, & Wilson, 2001). The teachers also used formative assessment to identify student strengths and weaknesses and to design instruction accordingly. Several of the elementary teachers implemented a competency-math program in which students could move at their own pace based on mastery. In addition, the teachers provided individual and small group instruction based on students' skills. Meeting the needs of all students is a goal of the organization and having more teachers learn how to do this is definitely beneficial to the organization.

Personal Learning is one of the organization's main goals, and 86% of the teacher reported not having sufficient professional development in the area of personal learning when surveyed prior to the implementation of the PPLC. A greater number of teachers understanding PL and the need for it helps the organization make progress toward achieving this goal. One teacher reported, "I gained a better understanding of what personalized learning is and why there is a need for it." Another stated, "I learned that personalized learning can look many different ways." Still another teacher reported learning, "The difference between learner centered and learner driven!" This knowledge is critical to achieving the goal of being a PL district. Not only do the PPLC teachers now better understand PL themselves, but they are developing networks with their colleagues and sharing this information, helping the knowledge spread across the district. This is exemplified in Audrey's statement, "I think this has been just such a learning experience for me. I know I'm sharing out with others who have participated in it. I've been pushing it on them."

Assertion 2. *Teachers reported the development of a variety of skills including design and problem-solving skills, technology skills, and facilitation and PL strategies. They also reported changes in certain dispositions such as flexibility and open-mindedness.* Learning new skills certainly benefited individual teachers in terms of their own professional growth, but the implementation and sharing of these skills benefited the organization as a whole. Many of the teachers were implementing skills and strategies as soon as they learned them. Leighanne shared, "I came to each cohort meeting very eager to see what I could do, and then I'm the type of person who immediately puts it into action the next day." The teachers also reported that the implementation of these strategies affected students positively. For example, Lori recalled, "My students have learned a lot about themselves as learners and have been able to make strong choices to help plan their learning. Students are held more accountable and they are more aware of their own progress and performance." The implementation of skills and strategies that benefit students, also benefits the organization as a whole since our mission is to support students in their academic and social-emotional development. Also, as many of the teachers stated, they shared this knowledge with other teachers in their departments, teams, and buildings. This concerted and collegial activity helped to spread PL skills across the district, resulting in a greater number of teachers implementing PL strategies in their classrooms.

Assertion 3. *Teachers reported increased confidence with regard to personal learning in the areas of planning, risk-taking, implementation, making modifications for continuous improvement, and sharing their knowledge with others.* Once again, this increased level of confidence benefited individual teachers, but their desire for

continuous improvement and their confidence in sharing their knowledge and skills with others, benefited the organization as a whole. Throughout the cohort, teachers were implementing strategies, confronting challenges, and working to improve their implementations. Recall how Leighanne, Frank, and Audrey all discussed their plans for improving their PL implementation for next year. This commitment to reflection and continuous improvement as well as the sharing of effective PL skills sand strategies across the district will continue to benefit the district as it works toward achieving the goals of becoming a PL district.

Assertion 4. *Participants' perspectives about teaching and learning changed regarding teacher role and the agency and capacity of students.* This is a critical finding because according to Fishbein and Azjen's (1975) Theory of Reasoned Action, an individual's beliefs must change before their behavior will (Azjen, 2002). The Theory of Reasoned Action was then expanded to the Theory of Planned Behavior (TPB) wherein perceived behavioral control (beliefs about one's ability to perform a behavior) and behavioral intentions predict behavior (Azjen, 2002). An individual must believe in the necessity for change, desire that change, and believe they have it within their control to make that change (Azjen, 2002). Since teachers run their own classrooms and do their own planning, it is logical that they would possess this locus of control or the belief that they can make changes in their classrooms regarding instruction. TPB was again expanded to include self-efficacy. If an individual possessed self-efficacy with regard to the behaviors they desire to implement, the likelihood that they would be able to make these changes increases. (Azjen, 2002). It would benefit the organization if the changes in

teacher perception resulted in a commitment to PL and subsequent desire to implement PL in their classrooms, given that PL is a district goal.

In this section, I will examine the participant's changes in perspective regarding their role in the classroom as well as the agency and capacity of their students. Amy experienced a change in belief with regard to student capacity and agency. As an elementary special education teacher, it seemed hard to imagine how these young children could take charge of their own learning. After her participation in the PPLC she reflected, "I can really see that the kids, even the special ed and the little ones can do more than we think." Annette, a kindergarten teacher, also had difficulty in the beginning believing that her students were capable of exercising agency in their classroom. She recalled,

> I have to admit I was a little skeptical in the beginning, because I teach full-day kindergarten and I thought, how are they going to take charge of their own learning at such a young age? What does this look like? And I had so many questions, but once I got into it. I mean, it has been unbelievable experience for me. It has changed my classroom, it has changed my students. It has changed me as an educator. I will never go back to the other way. It has just been amazing watching them grow and take charge of their own learning and just everything that they've accomplished has been amazing.

Annette indicated her long-term commitment to these changes when she said she would never go back to the "other way" by which she meant a more traditional classroom in which she was the one in control. Teacher control was something that was very important to the participants prior to their participation in the cohort. Many of them realized they

had been exercising all of the control in the classroom which facilitated some changes in their beliefs about the appropriate role of the teacher in the classroom. This is an important point given the importance of student agency for developing learners as well as an important component of student engagement (Reeve & Tseng, 2011).

Many of the teachers' perspectives about the role of the teacher changed significantly. Instead of seeing themselves as the person in charge, they began to believe in the importance of the students having more agency in the classroom and the teacher role shifting to that of a facilitator. Leighanne, for example, reflected on her tendency to do too much for her students early on in the PPLC. She said, "I realized that I haven't given the students the opportunity to truly be responsible for their learning. While they are compliant children, they rely heavily on me for guidance. I now realize the importance of changing their mindset to be more engaged." Melony said this about her perspective on teaching and learning: "It has changed quite a bit. I always knew that we were not there to be a teacher that lectures with all the information but I really see the importance now of having students collaborate and be responsible for their learning." Leighanne actually thought she was doing PL in the classroom. It was only after participating in the cohort that she realized that her students were not driving the learning. She said,

> Prior to this I felt like I was doing personalized learning: I leveled, differentiated, selected activities based upon student interests, and provided choice in many areas. I realized thought that although I was doing those things, a majority of it was chosen by me for the students, which defeats the idea of personal learning. Now that I have been a part of the cohort I have realized and tested the

> importance of students truly choosing how they learn and how they practice, scheduling their activities, and deciding how they learn best. Learning is more meaningful when the students take ownership.

The belief that teachers should not guide all of the learning or make all of the decisions for the students was more prominent in this cohort, although consistent with the pilot cohort's conceptualization of the teacher's role as more of a facilitator. The teachers did discuss in the cohort sessions that turning this responsibility over to the students must be scaffolded so the teachers used starter activities to develop both their own skills and the skills of students, gradually releasing more responsibility and autonomy to the students (Vygotsky, 1978). Lori summed up the change in teacher perspective well when she reflected on her participation in the PPLC:

> I have always put 100% of myself into my classroom and my students, but I was the one "in charge". It has been unbelievably eye opening to take a step back and just guide them to become problem solvers, collaborate with their peers, and navigate their own learning process. I am a much better teacher (and learner) after participating in this cohort!

According to the Theory of Planned Behavior, these changes in teacher perspective make it more likely that they will change their behavior with regard to teaching and implementing these facets of PL in their classrooms (Azjen, 2002). To have teachers that believe in and are committed to the district goal of PL is of great value to the organization, particularly if the changes in these beliefs are shared with other peers and if they resulted in a change in behaviors in the classroom which will be examined as part of cycle 3 in the next section.

Category 3: Applied Value. This category focused on the indicators of change in practice and included innovations in practice, implementation of advice, solutions, and/or insights, the use of tools and documents to inform practice, the use of social connections, innovations in systems, and transfer of learning practices. Table 14 depicts the frequencies for these codes.

Table 14

Applied Value Code Frequencies

Code	Frequency
3a Innovations in Practice	106
3b Implementation of Advice/Solutions/Insights	31
3c Use of Tools and Documents to Inform Practice	30
3d Use of Social Connections	19
3e Innovations in Systems	71
3f Transfer of Learning Practices	165

The transfer of learning practices, innovations in practice, and innovations in systems had the highest frequencies in the coding. The teachers did report the use of social connections, particularly with regard to implementing the suggestions of their peers. Since there is some overlap with category one in terms of collaboration, networking, and the quality and value of the connections, I may have assigned those codes more frequently as I began coding with category 1. While teachers did use tools and documents that they created during the PPLC in their implementation of PL, the nature of the data collection somewhat limited my access to these tools and relied on their reporting of their use. When taken as a whole, the data create a compelling picture of changes in

professional practice, indicating applied value. Table 15 outlines the applied value recipients, assertions, and sample evidence.

Table 15

Applied Value-Value Recipients, Assertions, and Evidence

Category 3 **Applied Value, Indicators of Changes in Practice**		
Value Recipient	**Assertion/Conclusion**	**Evidence**
Organization	Change permeated beyond the PPLC members providing value to the organization	"I brought back a couple of the things that I did, like the problem-based learning unit, the activity sheets. I shared them with my colleagues in my department, so we were all doing it together. So there was collaboration amongst myself and the teachers who are not in the cohort. I mean we did projects together based on what I learned." "The math coach told me that she has been helping teachers implement personal learning in math. LAS school has been doing it across all of the 3rd and 4th grade with the help of the principal."
Individual	Meaningful, lasting change was implemented by the PPLC teachers which provided value to the teachers	"I will never go back to the other way. It has just been amazing watching them grow and take charge of their own learning and just everything that they've accomplished has been amazing." "I learned that students, especially the younger ones, can do a lot more than we think. They can really rise to the challenge." "I have the students set personal goals for the week." "I implemented an expert board. I have not tied any shoes since! It's been working well."

Assertion 1. *Change permeated beyond the PPLC members which provided value to the organization as a whole.* Personal Learning is a district goal and the superintendent and the board would like to see all teachers implementing PL strategies in their classrooms. The cohort members shared their learning with other teachers in their buildings and teachers outside of the cohort began implementing PL strategies in their classrooms, thus benefiting the organization by moving us closer to our goal. Lori commented,

> I brought back a couple of the things that I did, like the problem-based learning unit, the activity sheets. I shared them with my colleagues in my department, so we were all doing it together. So there was collaboration amongst myself and the teachers who are not in the cohort. I mean we did projects together based on what I learned.

This type of sharing was taking place among the majority of middle school teachers because the team-based set up facilitated this type of sharing. Sharing was happening at the high school as well. Deirdre had presented to the world language department and several teachers were going to pilot blended learning as a way of personalizing their classrooms. Steve had shared with his colleagues in the health and physical education departments and his team was planning to pilot personalized project-based learning.

As mentioned previously, the principals also reported that teachers outside of the cohort were implementing PL strategies in their classrooms. One principal, Darren, was facilitating this exchange of information. Beatrice, one of his 3rd grade teachers and a PPLC participant, was implementing competency-based math in her classroom and receiving very positive feedback from students and some parents. Additionally, one of

our board member's children attend Darren's school and she had met with Darren on several occasions, concerned that her children were being held back in mathematics during whole group instruction because they were capable of mastering the material much faster than the other students. Darren was looking for a way to meet the needs of his accelerated math students as well as the struggling math students. He wanted to leverage Beatrice's knowledge and success with competency-based mathematics instruction. He provided opportunities for Beatrice to share her knowledge with all of his 3rd and 4th grade teachers. He also provided each grade level with some common planning time and helped to facilitate the division of labor to create mathematics videos, activities, and guiding documents to facilitate competency-based mathematics instruction.

The district mathematics coach, Danielle, was also brought in to help facilitate this shift to competency-based mathematics instruction. I met with Danielle several times and she shared with me that the teachers were very nervous about trying this more personalized approach to mathematics instruction. They were concerned that the students would be off-task if they were left to work by themselves and that discipline problems would occur. She also reported that the teachers were afraid that the students would not learn the material without direct, whole group instruction. With encouragement from the principal and support from the coach, the teachers began trying to implement the competency-based program in one math unit. The coach reported that there were some challenges in the beginning, most of which were related to classroom procedures and transitions, but that students were making progress. She said the teachers were finding the change challenging because it was so different from what they had always done, and because it required that so much material and activities be planned in advance, but that

they all agreed this way of teaching was better for the students so they were not going to go back to traditional mathematics instruction. Danielle was arranging for these teachers to observe Beatrice in her classroom as well as to visit other teachers across the district who were also implementing competency-based mathematics instruction. By the end of the year, all of the 3rd and 4th grade teachers at Darren's school had made the shift to the more personalized competency-based instruction in math. Darren was going to share his approach with all of the other elementary principals this summer and he was going to roll it out with the 5th grade teachers in September, with the goal being that all of the 3rd and 4th grade teachers would be implementing competency-based math by the end of the next school year and a 5th grade pilot to run in Darren's school. This is one of many examples in which the PPLC participants shared their knowledge and expertise and were used as models for helping to expand PL across the district.

Assertion 2. *Meaningful, lasting change was implemented by the PPLC teachers which provided value to the teachers.* The teachers began transferring their learning early in the PPLC. I was surprised by how much they were implementing so early in the PPLC. They were implementing PL strategies after the second session. This necessitated adjustments to the PPLC implementation because I needed to add in the sharing and problem-solving sessions earlier than I had anticipated. The teachers were very eager to make changes and they had models in their buildings because there were teachers that had participated in the PPLC pilot the year before. Many of the teachers mentioned working with these teachers in their buildings and this may help to explain why they began implementation earlier than the pilot teachers.

The teachers implemented a variety of PL strategies including the use of a resource table, expert boards, activity boards, genius hour (or 20% time), competency-based math instruction, blended learning, and student goal setting and personal learning plans. The teachers reported enjoying these changes and discussed the benefits to the students and to themselves. Amy stated,

> Once they (students) establish and understand what they have to do, they go. So, it has freed me up to be able to step back and watch them instead of feeling like I always, like Annette says, "whack a mole." You're here. You're here. You're here. You're here. And then you can stand back and watch what unfolds.

Amy shared with the cohort that this allowed her to be able to observe her students and determine what type of progress they were making and who might need extra support. She also discussed how, as a special education teacher, she is required to complete detailed progress reports and she had struggled with providing sufficient detail in the past. She commented, "I just didn't know my students that well." She shared with the group that she is now able to provide more detailed information, such as whether they make eye contact with other students or how they share resources, and that, in addition to her own personalized supports, they are able to better determine if students require additional services such as occupational therapy or counseling.

Annette also described benefits to her and to her students. In addition, she indicated that she would never go back to teaching the way she had previously, before her participation in the PPLC. "I will never go back to the other way. It has just been amazing watching them grow and take charge of their own learning and just everything

that they've accomplished has been amazing." She added a description of what her classroom looks like after implementing PL:

> As far as the students, they are independent. They come in, they are able to completely unpack by themselves. Their executive functioning skills have really been stressed and really improved a lot. They run morning meeting. They help each other. They answer each other's questions. They work together. They collaborate. They check each other's work. It's just amazing what they are able to do. They're independent with the technology in the classroom. They are able to check themselves. They use a rubric to guide themselves with their learning. It's really unbelievable, what they're able to do at such a young age.

When Annette share this with the rest of the cohort, she described being less exhausted every day when she went home. "I'm not the one doing all of the work anymore; Now I can actually spend some time with my husband and kids."

This type of personal value was communicated by many of the teachers. As they shifted their teaching role to becoming more of a facilitator, they said that they felt less tired at the end of the day, allowing them to accomplish other things in their personal lives. Several of the teachers talked about going to the gym or engaging in hobbies. Steve mentioned being able to work on his car. Melony shared that she had gotten her camera out and that she had started taking pictures again. Noel was in a graduate program working on obtaining her administrative license and she shared that she felt as though she was doing a higher quality of work. Marie was pregnant and she shared that she had more energy to work on the baby's nursery. The teachers derived personal value from this change, but the students also benefited, which benefits the organization as a whole.

Another potential benefit to the organization might include teacher retention, since these positive indicators are less likely to lead to teacher burn-out (House & Lapan, 1979; Schlichte, Yssel, & Merbler, 2005). In addition, teachers who engage in and draw from their own personal hobbies and interests are more likely to be creative and successful (Henriksen, Mishra, & The Deep-Play Research Group Michigan State University, 2014).

Caleb, for example, reported starting with his financial literacy class because the idea of doing it in his math class seemed too hard at first. Because financial literacy is more of an elective class, he felt like he had more flexibility and freedom. Caleb also teaches algebra I, which is one of our tested subjects, and he was nervous to make changes in those classes initially because he worried about what would happen to their scores. After he worked with several financial literacy classes, (he gets a new class every 30 days), he slowly began to make some changes in math. He said he was energized by his work with the financial literacy and he developed the confidence to try PL in math. At the end of the cohort, he shared, "I am no longer teaching whole class math lessons. Instead, students choose how they want to learn and practice the target skill for the day. Students have to take an assessment and complete a reflection to determine if they have learned the content." He reported that this allowed him to work one on one with students or in small groups which improved student performance.

Research Question 2 Summary

Both the participants and the organization derived value from the PPLC. In terms of immediate value, the relationships the teachers developed in the cohort helped them to develop the ideas and the confidence for implementing PL. The teachers also created new relationships and networks outside of the cohort which helped to change the culture of the

district, particularly with regard to an acceptance of the need for PL and a willingness to learn more about PL instructional strategies.

With regard to potential value, the teachers gained a variety of knowledge which included learning more about themselves, their colleagues, and their students. The teachers also learned a variety of content related to PL such as UDL, executive function skills, the difference between compliance and engagement, and the difference between learning and practice. In addition, the teachers also gained a variety of new skills such as design and problem-solving skills, technology skills, and specific PL strategies such as the development of personal learning plans. The teachers also reported the development of dispositions they saw as critical to personal learning such as flexibility and open-mindedness. This personal growth was of value to the individual participants, but also to the organization as having more knowledgeable and qualified teachers benefits students and the district. It also addressed an identified need which was that 86% of the teachers had not received any professional development related to PL. The confidence levels of participants also increased as a result of the PPLC with regard to the implementation of PL, which makes it more likely that they will implement PL and share the knowledge and skills they have learned with others. Most importantly, the participants reported a change in their perspectives about teaching and learning which enhanced their commitment to PL and made it more likely that the shift to PL would be permanent because they were committed to meeting the needs of all learners and to the idea that students need to take more responsibility for and have more control of their learning.

In looking at applied value, it is clear that meaningful change was implemented in the participant's classrooms as they applied their new knowledge and skills to implement

PL. The teachers reported being committed to these changes and they articulated plans for expanding their work in the subsequent school year. They also communicated personal benefits derived from their participation in the PPLC and the implementation of PL in the classrooms, such as not being exhausted at the end of the day. More importantly, this change permeated beyond the boundaries of the cohort, with additional teachers and grade levels being exposed to PL and beginning their own implementations. One principal in particular championed the cause and helped to facilitate a shift to PL in math across two third of the school. He is also now leading PD for other administrators so that they can replicate his success. All of this moves the organization closer to the goal of implementing a personalized learning district.

Findings from Open Coding

As discussed in the Methods section, I conducted open coding in addition to coding for the *a priori* value categories in order to capture any important themes not anticipated by the research questions and the codebook as well as to provide additional context for the study (Saldaña, 2016). I implemented Strauss & Corbin's (1997) three steps of coding (Cresswell, 2003). First, I Open Coded the data by reading through it several times and then created tentative labels for chunks of data that summarized what I saw happening, based on the meanings that emerged from the data. Next, I engaged in the process of Axial coding by identifying relationships among the open codes. Finally, I implemented Selective coding in which I integrated and refined the categories and identified the core concepts and themes from the axial codes. Three key themes emerged from this coding: students, challenges/barriers, cohort leadership and design. In this

section, I will discuss each of these themes to provide a broader understanding of the study.

Students. Although students were not the focus of this research study, they were the recipients of the work that the teachers were implementing related to PL. The teachers spoke about student roles in a personalized learning environment and the types of skills that students needed to be successful in a PL classroom. They also discussed students' reactions to their approaches in terms of student satisfaction, motivation, work quality, and achievement. Student voice has been recorded through the communication of the teachers as well as through the researcher's journal which captured observations of students in the classroom and during presentations to the Board of Education. Figure 5 displays the typology for students that emerged from the coding.

Student Role	Student Skills Needed
Risk-takers Leaders Decision-makers Rule makers Problem-solvers Experts Discussants Schedulers Planners Questioners Owners Goal-setters Progress monitors Reflective thinkers Researchers/explorers Connectors Presenters Designers Focused/engaged	Critical thinking/reasoning Problem-solving/analytical Creativity Vision Risk-taking Flexibility Open-mindedness Adaptability Communication Collaboration Listening Empathy Social Deep thinking Global knowledge Perseverance Technology
Student Experience	**Student Accountability**
Enjoyable Fun Engaging Interesting Stimulating Motivating Challenging Learning from Failure/Failure OK Variation/flexibility Voices heard Choices offered Less stressful Helpers/contributors Problem-finders Helping to develop lessons Everyone gets what they need Mastery	Knowledgeable about themselves as learners Able to plan their own learning Aware of their own progress and performance More accountable for their learning Sight word mastery Math fact mastery Accelerated learning pace Exceeded learning goals Increased motivation Increased assignment submission Going above and beyond the requirements Improved quality of work Deeper understanding of content

Figure 5. Students and personal learning.

The teachers talked about how their roles changed from instructive to facilitative but they also discussed the ways in which student roles changed in a personalized environment. In an anonymous reflection, one of the teachers reported learning "to be okay with trying lessons that are out of the box and to make sure the students learn to be problem solvers." Another teacher stated, "Let the students solve it, build it, try it without the teacher jumping in." Students as problem-solvers was a theme that emerged strongly from the data. Toward the end of the cohort, teachers reflected on their initial conceptualizations, which were that as teachers, they were responsible to help students solve problems or to just solve problems for the students. They came to the realization though that this created dependency among the students. Students did not know how to solve their own problems because they were never given an opportunity to learn how to do so. This put an enormous burden on the teachers. They were trying to solve all of the problems of their students. The teachers concluded that the students needed to have more ownership of their learning. This is a broader problem in education. Trilling and Fadel (2009) identified a 21st century skills gap after employers indicated that college graduates were not prepared for work. This gap is estimated to cost over $200 billion a year, world-wide to educate an already educated workplace in 21st century skills such as critical thinking, collaboration, and work ethic.

Participation in the PPLC helped the teachers to see the importance of developing these skills in their students now. Audrey discussed her PL transition and the student response in her interview:

> I think it leaves the ownership up to the kids instead of me just holding their hands and coming in and saying this is what we are going to do. I think the kids, the students, actually, like being able to say like they're in charge kind of, of their learning, which I feel like in the beginning it's a little messy because they're so used to you coming in and saying, okay, this is what we're doing, this is how you're doing it, and this is what your end product is going to be. So, I feel once they kind of get the grasp of taking control of their learning, they like it and I like that they can become independent. They can help each other out.

This quote illustrates that students ultimately responded positively to this sense of ownership and that they could help one another with the transition, but the teachers quickly realized; however, that students were going to need new skills and support in learning and mastering these skills if they were going to take more ownership of their learning.

The teachers were heavily influenced by Sulla's (2018) book, *Building Executive Function: The Missing Link to Student Achievement*. There is overlap between Sulla's description of executive function skills and the necessary skills identified by the teachers, including skills such as persisting in a task, maintaining social appropriateness, seeing multiple sides of a situation, being creative, being open to other's point of view, setting goals, and self-assessing. The Clayfield Township teacher's list, however, included additional skills not defined by Sulla (2018) as executive function skills. The teachers would say that Sulla's (2018) executive function skills are necessary, but not sufficient. The teachers included vision. Deirdre stated, "It is not enough for them (the students) to

be able to set goals, they have to have a larger purpose…some sort of guiding vision for themselves."

The cohort teachers included adaptability which is implied in Sulla's (2018) executive function skills, but not stated outright. The teachers articulated that students must be flexible and adaptable in the PL environment as it may not look the same from day to day. Also, certain resources and tools might not be available on a given day, such as the technology. The teachers also included risk-taking. The teachers overwhelmingly said that students needed to be comfortable failing. Nadine said, "They have to see failure as a part of the learning process and not be deterred by it." When her 5th grade students presented to the Board of Education, they did discuss failure as an essential part of the design process. They also talked about it in terms of competency-based learning in the sense that if you failed a test, you just worked with the teacher or your peers to better learn the material, and then you took another test.

Technology skills also emerged as an important issue in the data. The teachers identified certain technology skills that were essential in the PL classroom, such as being able to create, edit, and share a Google document or to be able to upload an assignment to the LMS. Finally, the teachers identified the ability to use global knowledge as an important student skill. A part of this included a respect for diversity. The Clayfield Township schools is not a highly diverse district, although more diverse students were enrolling every year. There were a few incidents that occurred during the year which reflected a lack of sensitivity to or preparedness for this increased diversity. Incidents included name-calling, graffiti, racially-insensitive, online postings, and a physical fight. The teachers wanted students to be more open to and respectful of diversity. The teachers

identified this global perspective as being critical to student work. Audrey asked, “how can you study an environmental issue but only from the perspective of the U.S.? We are one global environment and you have to look at it from that perspective.” The teachers wanted students to be thinking this way and raising these implications in all of their work.

Since data was not collected directly from students, the student experience codes came from teachers’ reports of students’ responses to personal learning. Most of these were very positive. The teachers indicated that the students described their experiences as fun, enjoyable, interesting, and stimulating. The teachers reported that students found choice as very motivating and that they were, in general, submitting more assignments and that those assignments were of a higher quality than before they had implemented PL. Lori reported, “They really do like the personalized learning aspect to teaching. I mean, I like it, they like it. I try to do it a lot more now. And, like I said, they're always like, “Do we get to pick? Do we get to pick?" Marie reported a parent phone call that began with the question, “What have you done to my child?” She was about to “panic” when the parent followed up by stating that that their son had never been so excited about school before. In presentations to the Board of Education, the students described their experiences as less stressful because they did not take a test or submit an assignment until they were ready. They also discussed being able to move more quickly if they could or take more time if they needed to. The students also shared with the Board that their voices mattered and that they had input into the way their classes were run.

There were some challenges, particularly at the high school level. The teachers suspected that this was because it was easier for the students if the teacher “did

everything for them" and that they had become accustomed to a more traditional approach to learning. Deirdre explained,

> Some of the juniors, they're a little bit more whiny. My seniors are all honor students. Those are the ones have been successful doing it the old-fashioned way. From kindergarten up through 11th and 12th grade, they've been doing it that way. Now, I'm switching it on them, and they're like, "What?" It's just the way it is. Now that it's third marking period, they're starting to accept it.

When I spoke to Deirdre at the end of the year, she said that she thought the students were becoming more proficient with the work and that they very much enjoyed having choices. "That's what everybody loves. That's the best part of it." They had also learned to coach themselves. She said that "I know, prove mastery" was a common student statement by the end of the year. While there were some challenges, particularly among the high school students, overall, the students responded very positively to the changes that the teachers were making with regard to PL.

Another positive change included increased student accountability for their learning as reported by the teachers. Leighanne and Lori both commented on how the students knew themselves better as learners and were able to plan for their own learning, knowing their strengths and weaknesses. Lori said:

> My students have learned a lot about themselves as learners and have been able to make strong choices to help plan their learning. Students are held more accountable and they are more aware of their own progress and performance.

Marie, Audrey, Aggie, and Noel also reported that students were more motivated and more accountable for their learning. Audrey said,

> I think both motivation and achievement have improved. I think honestly, motivation wise because they know going into this they get to pick what they want and it's kind of geared to their interest and kind of what feels comfortable for them. So just letting them, work with their comfort level makes them more motivated, which then I think shows in their accomplishments throughout the year.

Annette said that her students had mastered the second-grade sight word list, whereas last year only about half of the class had mastered the kindergarten sight word list. She also reported that her class was several months ahead of where they were supposed to be in the curriculum and that she was going to have to start teaching them first-grade math concepts before the end of the year. Amy reported that all but one of her first-grade special education students had met or exceeded their reading and sight word goals for the year.

> And then well, everything is about data. So, I said, well, how do I measure if this is working or not because there's gotta be some accountability. And I took it from my reading SGO, and 19 of 20 achieved or exceeded the reading goal that we had set for them.

Teachers also reported that some students were going above and beyond the minimum requirements and that the overall quality of work had improved. Some noted students that had previously not submitted work were now submitting assignments more regularly. Noel (a middle-school teacher) said,

> The quality of their work has certainly improved. I think they understand on a deeper level things that I'm trying to get across to them instead of just

> understanding the surface and me spoon-feeding them information and them spitting it back to me in an assessment at the end. It's much more about getting involved in the material and truly understanding the life lessons or whatever it is, essential questions that I'm trying to get across.

While student achievement was not studied, it was the teachers' perception that student achievement had improved. Student achievement in PL classrooms might be an important research question for future studies.

In summary, student experience and performance were reflected in the data through the experiences of the teachers and the researcher. Overall, the student experiences with PL were very positive and initial indications were that students were demonstrating increased performance. The teachers also described a change in the role of students which involved them taking more ownership of their learning which required the development of new student skills.

Challenges. This section will identify some of the challenges experienced specifically by the second cohort of teachers, which differed slightly from the teachers in the pilot study. In this section I will also discuss how we attempted to address these challenges and offer recommendations for districts seeking to implement PL. The challenges identified by the second cohort of teachers fell into 6 categories which are depicted in Figure 6.

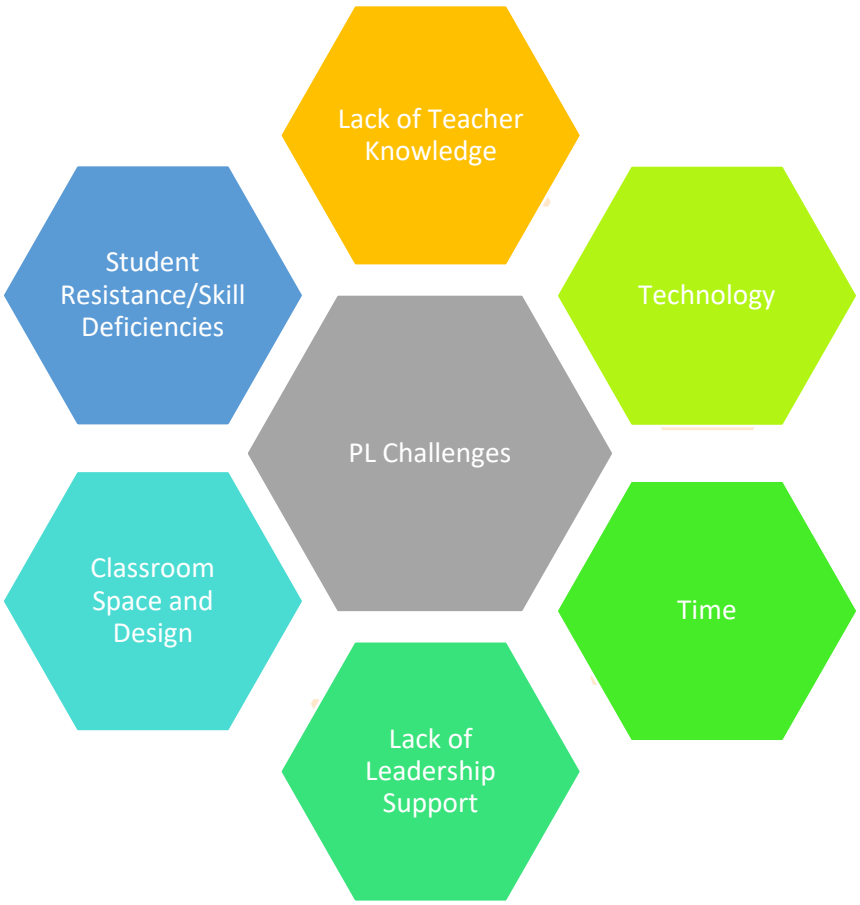

Figure 6. Challenges associated with implementing PL.

Lack of Teacher Knowledge. Early in the PPLC, one of the challenges participants faced was that they did not have the requisite knowledge to set up and implement PL classrooms. There were several learning challenges articulated early in the cohort. Leighanne expressed difficulty in distinguishing between access, express, and engage while trying to apply UDL to develop a digital backpack (learning plan). Several teachers expressed difficulty in knowing how to assess students in a personal learning environment. They asked many questions: If students were choosing or designing their own projects, how should the teachers evaluate these projects? When students are working at different learning centers, at different paces, and they might all be doing different work, what is the most effective way to track and monitor student progress?

Were students capable of high quality self-assessment and if so, how do you teach them to do this? Audrey struggled to figure out how to assess student-designed projects. Annette struggled in the beginning because she did not feel like she always knew how students were performing day-to-day. Mary grappled with how to check in on student progress before the summative assessment. The teachers also had difficulty finding and implementing content at different levels and to small groups. Marie, Mary, Melony, and Lori expressed challenges in finding worthwhile enrichment for those students who moved at a more rapid pace than other students. Melony, despite her best intentions, kept resorting to whole group instruction because she felt that the class needed so much guidance and it was just "easier to tell them all at once." Aggie summed up much of the group's frustrations when she said, "There are so many wonderful things that I want to put in my classroom but I just don't know how."

I addressed these challenges in several ways. First, I collected feedback at the end of every session that helped to plan the instructional activities for the next session. This step allowed me to provide targeted instruction and interventions. For example, we looked at formative assessment and ways to check-in on student progress prior to any summative type of assessment. We also explored standards-aligned rubrics as well as student developed rubrics. In addition, we examined online resources and digital repositories to find content on different levels. Second, I leveraged the expertise and experience of the teachers in the group. I provided opportunities for participants to discuss challenges as a group and in small groups and the participants were able to help each other out with many of their challenges. I also provided opportunities to celebrate these successes. There were many opportunities for teachers to share their successes and

for the group to congratulate and encourage them. Third, I had hired a consultant/coach who went into the teacher classrooms at least two times and supported them in the learning environment. The coach was able to observe a teacher's challenges first hand and then make suggestions for improvement during and after the class. The coach was available at five of the cohort sessions. She was also available to the participants by email and phone throughout the length of the cohort. Finally, I arranged for site visits in which teachers could observe PL classrooms and ask for assistance with their challenges.

The purpose of the PPLC was to help them to develop this knowledge over time. As discussed in the previous sections, the teachers did ultimately gain a variety of knowledge and skills and were able to transfer their learning. For future implementations, it would be important to make participants aware that, as Melony described it, the cohort work is "a huge learning curve" so that they are not expecting to change their classrooms immediately. I would also recommend celebrating small wins to provide teachers with encouragement as well as leveraging the community of practice for support. The teachers indicated that they found the support of the PL coach "invaluable" and that the site visits were also very helpful. Several of the teachers recommend additional site visits for subsequent cohorts. As Steve put it, "Seeing is believing." It is important to provide teachers with some time to learn themselves before any expectation of implementation and the teachers reported that seeing others implement similar work was an important part of the learning process.

Student Resistance/Lack of Skills. Teachers expressed challenges related to student resistance and a lack of skills needed for PL. The student resistance came primarily from the high school students. Mary reported resistance from the 9th grade

biology student when she stopped lecturing. Instead, she created learning centers with a variety of choices for the students. They could access material by reading articles, watching videos, participating in simulations, exploring manipulatives, and conducting experiments. Mary let them productively struggle. The students were initially “upset that the teacher wasn’t telling them exactly what to do.” If they had only experienced learning in this way in the past, it would be hard for them to make this type of adjustment quickly and without support. Deirdre noted that her high school students also experienced some challenges with the change when she implemented a blended learning model in which students were asked to make decisions and take more responsibility for their own learning instead of the teacher just telling them what to think and report. “From kindergarten up through 11th and 12th grade, they've been doing it that way. Now, I'm switching it on them, and they're like, "What?" Melony also expressed that her students were resistant at first. She said the students just wanted her to “tell them what to do.”

In the PPLC we discussed scaffolding some of the changes in the classroom so that teachers were slowly removing their supports as they provided students with opportunities to learn and practice new skills. Students became less resistant over time as they got used to new ways of teaching and learning. They also seemed to respond very positively to having opportunities for choice and the incorporation of their interests. It also seemed to help when the teachers explained to the students what they were trying to do and why. Lori and Leighanne had offered this as a suggestion since it proved helpful in their own classrooms. Mary, Deirdre, and Melony all confirmed that the students seemed to respond more positively when the teachers explained their PL goals. The students eventually expressed that while these new formats were more work for them,

they were ultimately more engaging and that they felt they were more involved in their own learning.

Steve, another high school teacher, experienced less resistance, which he attributed to the fact that he used to lecture for 58 minutes straight and "anything was better than that." The middle school teachers reported individual student resistance in some classes, but overall, the students seemed to respond positively to the PL strategies. None of the elementary teachers reported any student resistance; however, they struggled the most with a lack of student skills.

A lack of student skills was reported as a challenge by all of the teachers. A list of the skills that the teachers identified as necessary for students in PL classrooms was provided in Figure 4 in the previous section and included skills such as critical thinking/reasoning, problem-solving and analytical skills, creativity, vision, risk-taking, collaboration and communication skills, perseverance, empathy and open-mindedness. This is not surprising since the majority of these students had not had any exposure to PL and for the most part, no one had worked with them to develop these skills. They were not identified in the curriculum, which focused more on content. This is not surprising given the "creativity crisis" identified by Kim (2011). Kim found that younger children are becoming less capable of the critical thinking processes of synthesis and organization and less capable of capturing the essence of problems (Kyong Hee Kim, 2011). In addition, young people are growing up more narrow-minded, less intellectually curious, and less open to new ideas (Kim, 2011). Additionally concerning, people of all ages are losing their ability to elaborate on ideas and engage in reflective thinking. This is why initiative to support the development of creativity in teachers and students is so essential.

The PPLC participants took action to address these student skill deficits by overtly teaching these skills and providing students with the opportunities to practice them. The teachers implemented some of Sulla's (2018) suggestions for developing executive function skills which included the use of If…Then cards, visualization techniques, role-plays, task persistence cards, and a variety of self-reflection and self-assessment techniques. I also invited teachers from the previous year's PPLC to speak to the teachers about what they had learned with regard to teaching these important skills. One of the teachers from the first PPLC also brought some students to the Board of Education meeting to share their perceptions of PL. The students talked about their development of these skills which they identified as crucial for college and career. Some of the teachers then used the video of this presentation with their students so that they could hear from their peers how valuable it would be to develop these skills.

The primary elementary teachers expressed the most concern about developing the requisite PL skills in the younger students. Amy stated, "I find first graders, it's hard for them to self-reflect on anything ... You know, they're done and that's it." She went on to say that when she would check in with students they would say, they were "fine, fine, fine." Then she would follow up with them, "Well, did you have some trouble? Do we need to go over something?" The students responded, "No. I'm fine. I'm fine. And everybody would circle the happy face." The primary teachers continued to work with the students, overtly teaching skills and providing opportunities for practice. The teachers had to understand that, as with any other type of learning, some of the students may fail several times before obtaining mastery. For example, when a child learns to ride a bike for the first time, they typically fall several times in the process. These failures help them

to learn to make adjustments so that they can ultimately learn how to ride the bike. It is not important that they fell or how many times they fell but that they ultimately learned how to ride the bike. The same is true for learning math. Students will often make mistakes but they can learn from these mistakes to adjust and ultimately be successful at mastering the math standard. The teachers also learned to make changes more incrementally. Eventually, they experienced success. Annette said, "I learned that students, especially the younger ones, can do a lot more than we think. They can really rise to the challenge. I also learned that implementing personalized learning in the classroom is challenging and it takes time. The best thing to do is to take risks and implement different ideas over time." I observed Annette's classroom, and the students were running the class's morning meeting on their own. When they switched to language arts, Annette put up a virtual sign-up sheet for different activities and stations, the students signed up on their own, gathered their materials, and reported to their learning stations without any prompting from the teacher.

The teachers made several recommendations for improving what they referred to as "PL skills" in students across the district. First, they recommended that these skills be added to the curriculum across all disciplines and grade-levels. They also recommended additional professional learning for teachers that focused on how to develop these skills among students. In fact, some of the teachers volunteered to develop and facilitate this professional learning. They suggested that while these professional learning opportunities should be offered to all teachers, a concerted, mandatory program should begin in kindergarten and then "roll-up" to an additional grade level per year. In this scheme, the second year would focus on first-grade teachers, the third year would focus on second

grade teachers, and so on. They thought this sequence would ensure that the district's new students developed and enhanced these skills every year. They also thought this sequence would eliminate student resistance because the children would not have been exposed to learning any other way. The teachers also recommended that the district offer parent workshops on the importance of these skills and suggestions for how parents could help to reinforce and develop the skills over time.

Technology. The teachers reported a lack of consistent access to technology and technology support as a challenge in the implementation of PL. Deirdre summed up the concerns of many when she said, "We do not have enough technology to effectively pull this off." The Clayfield Township Schools did not have a one-to-one computer initiative. The district had invested heavily in infrastructure upgrades during the 2016-2017 school year and had increased the number of computer carts in the district, but there was not equity across grade-levels and buildings. The technology director estimated that, when taken as a whole, the district had close to a 1-to-4 ratio of computers to students, or one computer for every 4 students. The computers were primarily available on carts and had to be shared among teachers, with the cart to be reserved in advance. Some buildings had restrictions on how many days per week a teacher could sign out a cart. These policies were likely to promote equal use among teachers; however, there was no requirement for teachers to use the computers so some of the cohort teachers would get frustrated when they had used their maximum allowance for the week; however, the computer carts were not in use.

Another challenge was that Clayfield Township lacked an updated technology plan so the district also lacked updated, consistent technology. Some of the carts had

Chromebooks, others had laptops, and some had iPads. This made using the technology more challenging because they would have different devices at different times. Some of the classrooms had Smartboards, but many lacked the software to properly run them. Many of the classrooms had computer projectors, but there were still some rooms without any technology. “Teacher computers” were desktops, many of which were more than 7 years old. Wireless access points were added during the infrastructure upgrades, but there were still some parts of the buildings where the wireless technology did not work consistently. In the high school, for example, the health and physical education wing did not have consistent wireless access, which affected Steve’s ability to implement technology in the classroom. He discussed his excitement about creating a technology-infused classroom but also the subsequent frustration that came along with this:

> It's made me a little bitter about infrastructure, because now I'm so into it that ... I see what's out there and what we can be doing ... We're light years ahead of where it was a couple of years ago, which is awesome. But now I want computers, I want better internet. I want smart devices. I want all of these things.

Still another concern was a lack of technical support. The technology department had four employees: one technology coordinator, a technology secretary, and two technicians. The district had purchased online software to facilitate help requests; however, the system was not used consistently and sometimes the teachers with the loudest voices were the ones to have their concerns addressed first. The district had no instructional technology support. There was no instructional supervisor or coach for the district.

We responded to these challenges in a variety of ways. We first looked at ways in which PL could be conducted without technology in the first several cohort sessions. An activity sheet, for example, did not necessarily require computers for implementation. Next, once technology tools and strategies were introduced, we looked at ways that we could structure PL with minimal equipment. One learning center might have 5 or 6 computers, while the other learning centers did not require technology. Students would rotate through centers, be assigned based on needs, or make choices in their classrooms. This allowed several teachers to share one device cart. (We also continued to embed non-technology related strategies with technology-based strategies throughout the cohort.) Another way to address the lack of technology was to leverage a Bring Your Own Device (BYOD) program that allowed students to bring in their own devices from home and allow them to connect to our network. This also included the use of student phones in grades 6-8. This increased access to devices. I facilitated changes to policies that restricted the number of days that the teachers had access to the computers if the computers were not in use. Some of the principals agreed to give priority access to the teachers in the cohort because of the work they were doing. One other solution included teachers trading rooms with other teachers or using classrooms that were not in use that provided better access to the Internet and/or other types of technology.

The teachers employed a unique approach to the variation in the types of devices accessible in the classrooms. They turned a challenge into a strength. They used this as an opportunity to teach students a new skill: how to determine which device is most appropriate for a task. The teachers realized that we all use a variety of devices in our daily lives, but that some tools are more appropriate for certain tasks. For example, it is

easier to write an editorial or an essay on a computer as opposed to your phone, but there are also applications that are only available on a phone or iPad or applications that are much more easily used on a smaller, more mobile device. The students learned to make decisions about which devices were most appropriate for different type of tasks. The teachers reported hearing students verbalize this thinking in the classroom as they were working. For example, Lauren reported a student saying, "I need to go and get an iPad because there is an app I can use to do this better." The teachers also worked to develop an online library of device agnostic applications that would be available to students. These are tools or applications that work on multiple devices. They do not need to be used on just an iPad or a computer.

The technical support proved more challenging. The district was not able to hire any additional full-time people, though the technology coordinator was able to hire additional assistance on a contractual basis. This added staff member helped somewhat, but the district was still understaffed. We also leveraged our technology experts in the cohort and teachers supported and coached each other. Melony taught several computer classes and mini-lessons to other cohort teachers. Annette said, "I learned so much from Melony about technology."

The teachers had several recommendations for future implementations. They suggested that the district have a 1:1 laptop initiative but still have other types of devices available. The computers should have an update cycle of 3-4 years. They also recommended that the BYOD policy continue since some tasks are better done on a phone than a laptop. They also thought it necessary that each building have at least one technology support person housed in the building to fix technical issues. They also

recommended that technology coaches be assigned to every level in the district. They thought there should be one for the elementary grades, one for the middle grades, and one for the high school. These coaches could conduct professional development on instructional technology and could be available for support during the initial implementation of new technologies.

Time. The teachers often expressed concern about the amount of time needed to plan for and implement PL. When the teachers listed their challenges, several were listed that related to time: teachers require planning time, PL takes much longer time to execute, and executing PL is messy – it takes more time to clean up, and it takes time to learn. "Planning requires a tremendous amount of frontloading," said Aggie. If a district is operating a competency-based math program, for example, the teacher must have several math units prepared for those students who will move through and master the content quickly. If a teacher organizes students to work in learning centers, you might have to have 3 lessons prepared instead of one. Some of the teacher cloning strategies involved creating videos for student lessons, a step which required additional planning time. An activity sheet required the development of multiple assignments and corresponding rubrics to enable students to have choices in assignments. The teachers were also trying to teach themselves new technology applications such as Canvas and Padlet.

The implementation of PL was more time consuming because students were moving at their own pace, material was being covered in more depth, and sometimes the set-up and clean-up took longer. Content was being covered in more depth, and teachers were looking for mastery as opposed to "covering" content. Rather than providing a

lecture on the important aspects of a novel the students were reading in middle school English, for example, which might be able to be addressed in one day, the students were now spending several days discussing the novel, reading analyses of the novel, debating analyses of the novel, writing to apply similar strategies, or designing projects to explore topics and strategies in more detail, all of which provide deeper, more comprehensive learning experiences, but take considerably more time. In elementary math, the teachers used to teach the math lessons in our purchased math program sequentially. In this model, the teachers taught the content on a specific time-based schedule that was not dependent on student-mastery of the material. Those students who already knew the math content had to sit through the same lessons anyway and those that had not yet mastered the material were forced to move on to the next topic. In this model, the students may not have had their needs met, but the teachers had "covered" all of the required content required in the curriculum. In the competency-based model, the focus was on mastery so those students that had mastered the material could move ahead and those who needed more time could have it, receiving additional help until they mastered the content. The teachers could certainly "cover" more content by lecturing every day and while they did not prefer this, they were concerned about getting through all of their required standards. Marie really enjoyed the competency-based math model but had concerns about the students who needed more time. "What if they only get through half of 4th-grade math this year? Ashley shared a similar concern, "What if I don't get to everything? The social studies content standards are particularly thick." These concerns were shared by other teachers as well. They also wondered what to do if a student mastered all of their standards before the end of the year.

The teachers also worried that it takes some time for both teachers and students to learn to do PL. Their recommendation was to advise teachers to make changes incrementally and for both teachers and students to be patient with themselves and each other. The teachers thought both they and the students enhanced their PL skills over time and that as more teachers began implementing PL, the students would have an easier time from year to year.

The teachers shared several recommendations for future implementations. One was to continue to embed the design time (time for them to work on the design of PL lessons, into the cohort.) They felt strongly that this design time was really the only way that teachers could get started. “I feel that without that time I wouldn't have been able to get most of it done” Noel stated. The teachers also commented on how helpful it was to learn something new and then have time right then to apply that new knowledge. “My favorite thing was that we got to learn about it, play around with it, and then actually make a lesson with it,” said Audrey. Leighanne said, “I think every teacher never has enough design time. The more you can give, the better.” Another recommendation was to revise curriculum so that it focused, as much as possible, on depth as opposed to breadth. Participants also thought that teachers could use more professional development on the standards and creating standards-aligned lessons and assessments. They proposed eliminating marking period grades and issuing progress reports periodically throughout the year. They thought it would be better if they could just issue a final grade at the end of the year that corresponded to a level of mastery. “Otherwise, a student can only work at their own pace within the confines of a marking period because I have to issue a grade” explained Mary. The K-3 teachers were implementing standards-based reporting. Some

of the teachers though it more ideal to issue standards-based reporting rather than grades, but they acknowledged that they did not think students and parents were ready for this type of change yet. Finally, they recommended support with providing advanced or enrichment activities for students that move quickly through the standards and an online system so that teachers could track student performance across years. With this tracking, if a student going into 4th grade had already mastered the first math standard, the teacher would be able to see this and begin with the second.

Classroom Space and Design. The teachers also discussed classroom space and design as a challenge since classrooms were not originally designed to facilitate personal learning. When outlining their space challenges in the cohort session, the teachers listed the following:

- Classrooms being too small for students to spread out in learning centers or design spaces
- A lack of flexible seating and furniture
- Teachers not having their own classrooms

When there were population surges in the community, some larger classrooms were divided into smaller rooms to accommodate more classes. The teachers felt that some of the classrooms were too small to facilitate students having different learning centers or different learning spaces. For example, the quiet work area was not too far from the collaborative area and the design space, an arrangement which did not allow for very much quiet. Students could not lay on the floor or build large prototypes because they simply did not have the space. In some instances, the teachers used the hallway or moved the class outside (weather permitting). In other cases, the teachers signed up to use other

spaces that may have been available in the building such as the library or the gym. The teachers recommended considering classroom size as renovations are made because they thought larger spaces were more conducive to personal learning.

Another teacher concern was a lack of flexible furniture. Many of the classrooms are equipped with desks. In some cases, these desks are bolted to the floor and cannot be moved for cooperative work. Some of the desks and chairs are attached, and while they can be moved, the small size of the writing area for students and the fact that it is attached to the chair, make collaborative work spaces more challenging. Many of the rooms have whiteboards and projectors or Smartboards, but these are typically stationed at the "front" of the room and better support whole group instruction as opposed to several smaller student working groups. The district does not provide any type of soft seating or large tables. The teachers recommended purchasing more flexible types of furniture as furniture needed to be replaced. These would include adjustable tables on wheels with power so that students can use and charge computers on them. The wheels would allow for a variety of different configurations. The tables could adjust to accommodate standing desks. The teachers also recommended chairs on wheels so that they could be easily reconfigured. The teachers liked the idea of having some soft seating where students could comfortable read or hold discussions. They suggested carpet so that students could sprawl out on the floor if they desired. Finally, the teachers suggested some smaller presentation screens that could be placed in different areas of the room for small group student or teacher presentations.

At the middle and high school levels it is common for teachers to be assigned to different classrooms throughout the day. In Clayfield Township they are known as

"traveling teachers." The teachers found this arrangement enormously challenging when implementing PL because so many different types of materials were needed, and those materials were difficult to carry from room to room. In addition, different classrooms often had different set-ups. Some had a typical row seating structure, which did not facilitate PL. Others had immovable furniture such as science lab desks. Even when the furniture could be moved, the teachers found themselves in conflict with the other teachers that shared the same space because the other teachers may have preferred a more traditional arrangement.

The teachers offered a few suggestions to these challenges. One was to create PL classrooms in the middle and high schools that would be designated PL classrooms with flexible furniture and to assign teachers who are doing PL to those rooms. "Then I wouldn't have to fight with another teacher about having the desks in rows," said Deirdre. Teachers would opt into these classrooms. They also suggested creating some larger innovation spaces in every building. These could then be reserved on an as-needed basis. "This way when a PL lesson involved some type of making or design, we can spread out and do the work" suggested Audrey. The teachers also recommended that as principals replaced furniture, they refrain from buying all traditional desk-style seating and begin to add in flexible seating purchases including balance balls, bean bag chairs, standing desks, couches, etc. I was also able to supply some non-traditional seating to cohort participants because I wrote and received a grant for flexible seating. We divided this up among the cohort teachers, each of whom received almost $1,000. They used this money to purchase whiteboard tables and wall coverings, standing desks, beanbag chairs, stability balls, carpets, and chairs on wheels.

Lack of Leadership Support. Some of the teachers reported challenges associated with a lack of leadership support with regard to PL. I was hired as the Assistant Superintendent in September of 2015 and was responsible for implementing PL in the district. The superintendent that had led the development of the previous strategic plan and had been a proponent of PL retired prior to my start date. An interim superintendent was hired for the 2015-2016 school year. It was during this year that I began my cycles of research associated with personal learning. It became clear early in the year that there was no consistent definition for personal learning and no specific PL programming was underway. In this year, I offered a leadership book study using Bray and McClaskey's (2015) book *Making Learning Personal: The What, Who, Wow, Where, and Why*. The interim superintendent instructed me to make the book club optional. Seven out of 12 principals participated in the book study, and 4 of the 8 supervisors participated. The interim superintendent's contract was renewed for the 2016-2017 school year. In May of 2016, I proposed the pilot of the PPLC. The superintendent approved of the proposal as long as I could support it from my own budget and both the union and the board of education approved the proposal. Both the union and the Board of Education approved the plan for the PPLC. In September of 2016, I scheduled a full-day professional learning opportunity facilitated by Barbara Bray. This session was mandatory, and all district administrators participated. The focus was on developing a common language for PL in the district, examples of other district and school initiatives, and how to cultivate an environment that encourages PL. I then planned several subsequent workshops to follow up on the work that was done in this session; however, all of these sessions were postponed at the direction of the superintendent and never rescheduled. The

superintendent instead used the time to focus on other district issues that she deemed more urgent. Some of these issues were associated with special education changes in the district, personnel issues, and student discipline. The cohort met from September through June, but the interim superintendent did not attend any of the sessions despite being invited on multiple occasions. The PPLC pilot data was presented to the Board of Education and the interim superintendent and the PPLC was again approved to run in the 2017-2018 school year with revisions based on pilot teacher feedback.

A new superintendent was hired for the 2017-2018 school year. I met with him only once prior to his start, and the cohort began in the fall. The new superintendent asked for information about the first cohort session and stopped by the session for about 10 minutes. He did not ask about or attend subsequent sessions, although he did invite past and present cohort teachers to present at monthly Board of Education meetings to highlight their work on personal learning. After about 4 of the cohort sessions, the superintendent called me in to inform me that he had received a complaint from a parent about the number of days the teacher had been out of the classroom. He agreed that the intent of the PPLC was important but indicated that I could not pull teachers out of their classrooms for the same number of days in the future. He told me that I would have to think about ways to run the PPLC differently in the future because teachers needed to be in their classrooms on a regular basis. He also asked me to look at whether there were cohort sessions from which this specific teacher could be excused to appease the parent.

I again planned a full-day leadership workshop on PL for the 2017-2018 school year; however, it was postponed several times because other district issues were identified by the superintendent as having higher priority. These issues included bullying,

school discipline, school safety, teacher evaluation, the implementation of a data warehouse, and the revision of the strategic plan. The revised strategic plan did include as one of its 4 goals the expansion of the implementation of personal learning. The full-day leadership workshop was held in April. The focus of the session was how to develop a roadmap to facilitate PL in their buildings and departments. The superintendent did not attend the session, and he called out one of the principals for two hours to complete his evaluation during the workshop. He excused three of the other principals altogether.

Not all of the leadership professional development on PL was mandatory, the new superintendent did not attend these sessions and as not heavily involved in the PPLC itself, and he responded to the parent complaint by directing the reduction of professional development time in the PPLC. All of these choices may have sent conflicting messages to the leadership team about the district's prioritization of PL. Subsequently, there were varied levels of support among the other district administrators. Administrators were invited to attend cohort sessions, but only 3 administrators ever attended any of the sessions. Teachers reported that their evaluations were affected by PL implementation. In some cases, a teacher's scores increased because of the increased student leadership and ownership in the classroom. The high school assistant principal called me to tell me how wonderful Deirdre's evaluation was because the students were so engaged. In other instances, teacher evaluations were negatively impacted by PL implementation. But some of the administrators expressed concern about the noise or the mess in the classrooms. Some of the teachers received lower ratings in areas that were focused on the role of the teacher such as teacher communication and classroom management. One principal asked

one of his teachers to let him know when she would be actually teaching again so he could conduct her observation.

I experienced some conflict with one of the content area supervisors regarding the cohort participation of one of her teachers. In November, the supervisor reached out to me, concerned about Mary's performance in the classroom. She said that she was receiving complaints from students and parents about the teacher's performance and that the teacher was responding that she was merely implementing what she was learning in the PPLC. I asked for more information and documentation about the complaints. I only received documentation of one parent complaint via a forwarded email. The parent was expressing concern that the teacher was abdicating some of her responsibility by making the students take more responsibility for their learning. She did not like that the students were expected to "figure things out" on their own and "teach themselves." The teacher offered to support the student however she could. I offered to meet with the supervisor and the teacher to discuss any concerns and work through solutions, but the supervisor refused to meet with the teacher and myself. Instead, she contacted the superintendent, who facilitated a meeting between the supervisor and myself. In this meeting he determined that some of Mary's behaviors as reported by the supervisor, such as customizing assessments, was not in fact PL. I was not asked for my assessment nor was Mary consulted. The superintendent instructed the supervisor to work with the personnel director to put Mary on an action plan and to document her performance for the remainder of the year. I expressed my concerns about how this would affect teachers' willingness to take risks in the implementation of PL. I also suggested that we meet with Mary and look at what she was implementing in the classroom and support her in the

context of the cohort. The superintendent insisted on the action plan but said that Mary could remain in the cohort.

Mary came to me and told me that she felt that the supervisor did not understand PL and was now targeting her for dismissal. While an experienced teacher and administrator, Mary had only been in Clayfield Township for 3 years and was non-tenured. She asked if there was any way to provide the administrators with additional information about PL. I began to set aside time in our leadership meetings to share the work we were doing in the cohort, but often this time was pre-empted for other items. In some cases, I sent out document and articles via email when I was not provided the opportunity to work with the leadership team in person.

The teachers did not address this leadership concern in their interviews, likely because they did not feel comfortable criticizing their administrators on tape. However, they did express concerns in the anonymous feedback surveys and in person during the cohort sessions. Some of the teachers were concerned about what was happening to Mary and suggested that all of the administrators needed a greater tolerance for taking risks in the classroom for the benefit of the students. Ultimately, Mary resigned before the end of the year. She took a job with a prominent vendor in which she was going to support teachers in schools across New York City personalize instruction using their product.

In retrospect, I should have included the professional development for leaders in the initial PPLC proposal. It may have been helpful to run a leader cohort first before running a teacher cohort. I should have obtained a commitment from the superintendent to support the professional development for the leaders as well as clarified the ways in which the superintendent would contribute and/or support the PPLC. I should also have

leveraged the varied expertise of the leaders to support the work of the cohort. If principals and supervisors were facilitating components of the PPLC, there may have been more of a shared sense of ownership of the cohort. There were leaders who supported the efforts of the PPLC, and their support is evident by the PL work done in their departments and schools. Overall, the PPLC achieved the goal of increasing teacher self-efficacy, knowledge, and skills with regard to the implementation of PL, but a lack of consistent leadership support did present challenges.

Cohort Design. During the open coding process, there were three themes that emerged related to the design of the cohort that would be important considerations for future implementations. Figure 7 depicts these themes.

Model PL Pedagogy	• Balance independent and collaborative activities • Embed voice and choice • Use of assessment data to drive learning
Design Time and Support	• Opportunities to create and test • Job-Embedded Coaching
Seeing is Believing	• Videos • Site Visits

Figure 7. Cohort design

Model PL Pedagogy. Teachers need modeling and opportunities to try new ways of teaching in order to effectively change their instructional practice. In order to provide effective modeling and opportunities for practice, the cohort was designed to model personal learning strategies. I attempted to design a high-level framework for the cohort that would demonstrate a personalized approach to learning that was similar to what they would eventually practice. To accomplish this, I used the framework of UDL which included providing multiple means of representation, multiple means of action and expression, and multiple means of engagement. I also emphasized participant choice and voice in the design of the sessions and was careful to design content and activities that would meet the needs of teachers from all different grade levels and content areas. Recalling Wenger's paradox of design, I was deliberate in allowing for flexibility in the sessions and opportunities for the learners to drive the work. I realized later that I was not as deliberate or clear in thinking about the role of the facilitators.

As explained in Chapter 3, I hired Innovative Designs for Education (IDE) as a consultant firm to support the work of the PPLC for several reasons. One was time. My role as assistant superintendent did not include the PPLC and so this work was all above and beyond my typical workload. It was very helpful for me to have this support. While the work of IDE was not focused on personal learning, they were facilitating professional

development focused on the creation of more student-centered classrooms, and they provided several concrete strategies to get teachers started in moving toward a PL classroom. Finally, I wanted the teachers to have a partner and coach who did not work for the district so they could feel comfortable discussing challenges that they were having without fear of its being reflected in their evaluations. Patricia was our assigned consultant who joined us at the third cohort session and she remained for the duration of the cohort.

Patricia and I discussed the plan for the cohort over the phone and I sent her all of my planning information. I was to facilitate sessions 1 and 2 and 7-10 by myself with Patricia taking the lead on sessions 3-6 with support from me. I thought it was important to build community in the first two sessions since I was trying to cultivate a community of practice. We began with ice-breakers and "getting to know you" activities which were followed by some trust-building activities. The first 2 sessions were student-centered and there was considerable participation, but the activities were almost all whole-group instruction and activities. Sessions 3-6 were facilitated or co-facilitated by the IDE consultant Patricia. Prior to the consultant coming in to facilitate the third session, we had discussed the types of content that would be addressed, but I later realized that we had not discussed the structure or delivery of this content. The consultant arrived and projected an interactive schedule with a website link so that the teachers could pull up the schedule themselves and click on the various learning activities. She stated her name and asked the teachers to log in and pull up the schedule. She had set up some materials on a table labeled "Resource Table," but she said nothing else. The teachers were looking around confused. Some were sitting there doing nothing. Others had pulled up the

schedule but were sitting and waiting for additional instructions. A few of the teachers were talking, most likely assuming that the consultant would pull them back together when she was ready to continue. The consultant continued to say nothing to the group.

I felt very uncomfortable. The group was used to beginning with some sort of ice-breaker and then some direction from me. I felt like we were not doing anything. Then I was hit with the realization that this anxiety is what the teachers might feel when they start to make the shift to the role of a facilitator. It is uncomfortable at first. I paid careful attention to these feelings so that I could analyze them later and debrief the teachers on their experience as recipients of this organization.

The teachers also seemed uncomfortable initially, but then they appeared to become more comfortable directing themselves and making choices from the various activities provided on the syllabus by the fourth session. They also picked up any needed materials from the resource table. I was struck by how quiet the room was because they were all working independently. Many were using headphones to complete the various activities. I became concerned that this independent work was not taking advantage of the community to advance learning. After all, my goal was to cultivate a community of practice. It seemed as though the consultant was trained to avoid whole group instruction at all costs and to minimize interactivity among participants.

This was a big "aha" moment for me. I realized that the consultant and I may not have the same conceptualization of PL. In her thinking, personal learning meant individual work and everyone alone at their own pace on their own projects. In my conceptualization, personal learning might contain elements of individual work or pursuits, but peer interaction and collaboration were also essential components. It also did

not preclude the teacher from working with the whole class as a group, particularly when trying to build community. I also realized that our conceptual model did not overtly address this and should be updated to include collaboration. I became concerned that this solo work was not exactly the type of personal learning we wanted to model. I had visions of the classrooms where every student is on their own computer in a cubby and they never interact with anyone else. In our conceptualization of PL, personal should not mean forever alone. This was a great learning opportunity; however, because it meant that this was something we needed to overtly address with the teachers as they designed PL classrooms.

The consultant and I ended up being good partners because we each brought different perspectives to the cohort design. She pushed me to take more of a facilitative role, and I pushed her to include more small and whole group discussions and activities to leverage the community for learning. In the end, it was a good combination that seemed to work well for the teachers. As Steve said, "I think that the cohort was set up exactly the way that you're trying to teach us to teach and that your level of participation was personalized." Overall, the teachers' summative feedback indicated that this was a good experience for them. When asked what they might tell another teacher about the PPLC experience, the feedback was very positive and included comments such as, "I want them to know that the idea of personalized learning might seem scary and difficult to implement, but it's not. This cohort would be a great experience for every teacher in the district" and that this was "A great way to learn and grow in a safe and supportive environment." One teacher thought every teacher in the district should participate at some point: "It is a valuable experience that can help any and all teachers and should be

attended at some point in everyone's career." Much of the teachers' positive experiences and increased self-efficacy with regard to the implementation of personal learning can be attributed to the fact that the cohort modeled PL pedagogy.

The teachers appreciated having voice and choice in cohort activities. They liked being able to pick from several different activities in the sessions. Some content and activities were more appropriate than others given their roles, because the teachers taught different grade levels and content areas. In addition, the teachers were at different stages with regard to student-centered or student-led learning. On one of the feedback forms a teacher wrote, "Keep giving us choices. I love this!" It was also helpful to implement different types of assessment throughout the PPLC including feedback forms at the end of each session, discussions of successes and challenges, and checks for understanding. The teacher appreciated that we adjusted future sessions based on their feedback. In one session, we began with a formative assessment and planned the afternoon based on their feedback. As one participant put it, "There was something for everyone."

Design Time and Support. The design time and design support that were embedded within the PPLC facilitated the development of teacher's self-efficacy, knowledge and skills with regard to the implementation of PL. As mentioned previously, many of the teachers did not think that they would have been able to implement PL if not for the design time that was embedded in the cohort. Teachers were able to learn something and then immediately work on applying it to their own classrooms. Steve said,

> We'd go over the stuff in the cohort and then you'd say we'd have that second half of the day to work on stuff and that's like prime time because you just picked

something up, you have all these ideas going in your head, and then being able to design and create those projects was perfect timing.

Audrey said of the design time, "That was my favorite thing... that we got to learn about it, play around with it, and then actually make a lesson with it." Implementation of PPLC with design time facilitated translation of principles into practice, a critical dimension of efforts to promote pedagogical change. For example, one of the cohort sessions addressed competency-based assessment. Teachers then had time in the session to brainstorm with their colleagues and develop a competency-based unit while receiving support from myself and the IDE consultant.

Another design element that teachers reported as important to their development with regard to the implementation of PL was the support they received in the form of job-embedded coaching. Teachers were visited in their classrooms at least two different times by the PL coach. The coaching sessions took place in December and February. The coach scheduled the coaching sessions in advance so the teachers could plan to implement PL strategies in which they felt they could benefit from some support or assistance. The teachers had the following to say about the coaching:

- "The coaching experience helped me see my lesson through a different lens."
- (I learned) "a much better way to introduce lessons and capture the attention of my students."
- "It was great to have someone to show me and walk me through the process."
- "Coaching was great. Personal visits were very helpful. The more you can offer us, the better."

Most of the teachers would have liked additional coaching sessions. The other advantage of the coaching sessions was that teachers did not miss class for them as they did with the regular cohort sessions. The teachers recommended moving two to three of the cohort sessions to the summer which would limit time out of the classroom and provide them with a head start before their students arrive for the year. Then, those sessions could be substituted for coaching or site visits.

***Seeing is Believing*.** The final theme to emerge from the data related to the cohort design was the idea that seeing is believing. The teachers reported over and over again that being able to see what PL looks like in other classroom implementations is invaluable. One of the teachers said this on the feedback survey, “The most valuable aspect was getting to go into the classrooms to view other teachers in action with personalized learning/ student centered classroom.” Steve said, “The site visit was incredibly helpful, like the phrase "seeing is believing." We can read and talk and study all of this, but personally, being able to see this happen and be successful was incredibly rewarding and motivating.”

The PPLC attempted to show the teachers examples of PL in several different ways. The teachers read accounts and descriptions of PL classrooms, they watched videos of PL classrooms, they participated in virtual site visits to PL schools and classrooms, and finally, they participated in face-to-face site visits. The teachers found the face-to-face site visits most valuable. When asked in a survey about which aspects of the PPLC were most valuable, one teacher responded, “The most valuable aspect was getting to go into the classrooms to view other teachers in action with personalized learning/student centered classroom.” Another teacher wrote “Seeing the personalized learning in action,

and in different situations. Also, being able to speak to the [other school's] teachers after the visit was incredibly helpful, being able to ask them questions about how they started and how they continue to be successful." Many teachers suggested that more site visits be included in future cohort sessions and that they mirror their current teaching assignments. Annette stated, "I would like to see more personalized learning in action-such as visiting other early education classrooms." Katie struggled as a music teacher because her content and schedules were so different than those of the other teachers. She said, "I would love the ability to visit an instrumental classroom that is using personal learning to get some ideas and to talk to someone with experience using it in this subject area." This illustrates some of the challenges we had in finding available models across multiple subject areas. In these instances, teachers had to extrapolate from current, available models and then apply these learnings to their own unique situations. As PL expands, more models will be available both in and out of the district.

The teachers recommended a second year of the project in which they would meet 2-3 times per year to continue to share their experiences with one another and participate in additional site visits to continue to hone their craft and expand their networks. They also asked for additional coaching sessions in year 2 that would be facilitated by an in-house PL coach. This indicated a desire to continue the work of PL beyond the formal structure of the PPLC as well as highlighted the need for the district to think about opportunities for follow up to continue to support the desired pedagogical changes.

In conclusion, there were several themes related to the PPLC cohort design that emerged in the open coding that can serve as recommendations for future implementations. First, the cohort design should model PL pedagogy with specific

attention to balancing individual and collaborative work, embedding teacher voice and choice, and using assessment to guide instruction. Second, the design time and design support delivered through job-embedded coaching were critical to the learning process. Finally, the teachers benefited from the ability to observe models of the desired pedagogy which included readings, videos, and site visits.

Summary

In this chapter I discussed the results in light of the two research questions and then introduced additional information derived from the open coding that provides important information with regard to additional cycles of research or transferability as well as to provide additional context for the study. RQ1 examined the extent to which participation in a community of practice affected teacher's knowledge, skills, and self-efficacy for implementing personal learning. The quantitative data revealed a change in pre and post test values of 9 PL constructs which was substantiated in terms of the pre-test variation and is statistically significant taken one-by-one if the sample were a random draw. This means that there was real and meaningful change in teacher's self-efficacy with regard to implementing PL in the 9 constructs after their participation in the PPLC. The qualitative data also supported this in that teachers reported increased confidence levels in planning for PL, implementing PL, making modifications for improvement to their PL lessons, and sharing their knowledge of PL with their colleagues. Further, the teachers reported increased knowledge and skills with regard to the implementation of PL.

RQ2 focused on the extent to which the PPLC community of practice provided value to the individuals and to the organization. The PPLC provided value to both the

individuals and to the organization in terms of immediate value which included the development of relationships both in and beyond the cohort; potential value in the development of knowledge and skills related to PL, increased confidence levels, and a change in perspectives about teaching and learning; and in applied value which resulted in meaningful classroom changes both in and beyond the cohort.

Finally, three additional themes emerged from the open coding process: students, challenges, and cohort design. While students were not the focus of this research study, their responses to the PL implementation were recorded through the interactions with their teachers. It was the perception of the teachers that the student role was changing in their PL classrooms which required the development of new student skills. The teachers reported the development of these skills at varying levels throughout their work this year. The teachers also reported that students seemed to enjoy the implementation in their classrooms and that this led to increased motivation and academic performance among students. It would be beneficial to examine student satisfaction and achievement in PL classrooms in a future study.

While the PPLC increased teachers' knowledge, skills, and self-efficacy with regard to PL and the PPLC generated value for both individuals and the organization, the process was not without challenges. Several challenges emerged throughout the year including a lack of teacher knowledge, a lack of technology and technological support, a lack of leadership support, student resistance and a lack of student skills, and challenges with time and space for PL implementation. Some of these challenges were mitigated by the PPLC such as the lack of teacher and student knowledge and skills as well as student resistance. Others should be considered during the development of the new strategic plan.

It will be important to examine leadership commitment to PL as well as the ways in which leaders will be educated about and supported in PL implementation. It will also be important to develop a revised technology plan, increasing the number of devices and technical support available to teachers. Teachers would also benefit from additional time to focus on the implementation of PL which could be provided in common planning time, PL time for teachers, after school during contractual hours, on professional development days, release time, and in place of traditional faculty and department meetings. Finally, principals should consider the ways in which furniture and space can either facilitate or inhibit the implementation of PL in the classroom and should explore flexible seating options and classroom set up and sharing that promote PL implementation.

Several themes emerged with regard to the PPLC cohort design that should be considered in future implementations of the PPLC or for others who might be looking to use a community of practice model to promote learning and change in their organizations. First, the instructional design should model the desired instructional strategies. In this case, the participants benefited from a design that modeled PL. For PL, special attention should be made to modeling the balance between individual and collaborative activities in the cohort, embedding participant voice and choice, and using assessment data to guide the learning and development of future cohort sessions. The teachers also benefited from another important design factor which was design time and support. The inclusion of design time as well as the support of an instructional PL coach, was critical to teacher development with regard to the implementation of PL. Finally, the teachers reported that "seeing is believing." The cohort design should continue to allow for the observation of

models of the desired practice which might include reading descriptions, watching videos, observing other classrooms virtually, and conducting face-to-face site visits.

Chapter 5

DISCUSSION

The purpose of this study was to examine the effectiveness of the community of practice model in providing professional development to improve K-12 teacher self-efficacy with regard to the implementation of personal learning (PL). Recall that one of the main district goals was to personalize learning, yet there was no common understanding of PL, and the teachers reported a lack of professional development and knowledge in the area of PL. To address these issues, I designed an innovation called the Personal Professional Learning Cohort (PPLC) using the Communities of Practice (CoP) framework. Key goals of the program included developing and implementing a district-wide framework for personalization as well as enhancing teacher self-efficacy with regard to the use of personalization strategies in the classroom.

The research questions were as follows:

> RQ1: To what extent does participation in a community of practice affect K-12 teachers' knowledge, skills, and self-efficacy for implementing personal learning?
>
> RQ2: To what extent does the PPLC create value for individuals and the organization?

With these questions guiding the study, I gathered and analyzed both quantitative and qualitative data collected from participant pre and post self-efficacy surveys, participant interviews, and PPLC feedback forms and artifacts. In this chapter, I examine the study's quantitative and qualitative results in relation to one another. Following this integration of the data sets, I discuss the outcomes from this study in relation to theoretical

frameworks and previous research. Finally, I present lessons learned, limitations, implications for practice, implications for future research, and final conclusions.

Integration of Quantitative and Qualitative Data

This study employed a mixed-model design in which the quantitative and qualitative methods were implemented concurrently for the purposes of triangulation (Johnson & Onwuegbuzie, 2004; Mertler, 2014). Hammersley (2008) identified different types of triangulation. The ones most relevant to this study are triangulation for validity checking and to seek complementary information. Erzberger and Kelle (2003) described triangulation as "the use of different methods to investigate a certain domain of social reality can be compared with the examination of a physical object from two different viewpoints or angles. Both viewpoints provide different pictures of this object that might yield a fuller and more complete picture of the phenomenon concerned if brought together" (p. 461). In the PPLC study, both quantitative and qualitative data were collected to develop a more complete picture of the teachers' experiences. In this section I will explore the complementarity of the data.

For RQ1, I conducted pre and post self-efficacy assessments. This quantitative data indicated that teacher's self-efficacy increased in all 9 of the PL constructs on the post-test, but this data alone does not provide detail in the ways that teachers felt more confident nor does it tell us why the teachers might feel more confident in implementing PL in their classrooms. The qualitative data collected from interviews, feedback forms, the research journal and PPLC artifacts supports the conclusion that teachers' self-efficacy increased, and they provide a more detailed explanation of how and why.

Teachers reported that their confidence had increased in several areas. The teachers, for example, felt more confident in planning for PL. Having been provided opportunities to apply their new knowledge and skills in the cohort while receiving support from their peers helped them to develop effective planning strategies for PL that they were then able to transfer to their traditional planning time. The teachers also reported feeling more confident taking risks in their classrooms to improve instruction. This willingness to take risks likely led to their increased levels of confidence with regard to the implementation of PL. The teachers also expressed confidence in reflecting on their practice and making modifications for improvement. This is probably attributable to the deep relationships they developed in the cohort and their willingness to give and receive ideas for implementation as well as to share their failures with one another and to problem-solve as a group. The teachers also reported receiving positive feedback from the students and involving them in the cycle of modification for continuous improvement. As students participated and continued to provide more positive feedback, this student input likely contributed to the teachers' levels of confidence with regard to implementation and improvement. Finally, the teachers reported increased confidence in sharing their knowledge of PL with others. This sharing of knowledge was of great benefit to the organization because it exposed more teachers to PL and resulted in more teachers outside of the cohort implementing PL in their classrooms.

The qualitative data analysis also helps explain why the teachers' self-efficacy may have increased. Recall the assertion that teachers gained a wide variety of knowledge from their participation in the PPLC. Participants reported learning more about themselves, their colleagues and their students. The teachers were then able to

apply this information to make changes to their practice. The changes in practice led to a more personalized approach to learning. The teachers also reported having a better understanding of the conceptualization of personal learning that may have helped to foster its implementation. In addition to knowledge, the teachers also gained a variety of skills from their participation in the PPLC. These skills included design and problem-solving skills, which seem to support the claim that teachers felt more confident in planning for, implementing, and problem-solving PL. The teachers also reported the development of new technology and PL facilitation skills which may explain their increased confidence in implementing and revising PL lessons. Taken together, the results from the quantitative and qualitative data pertaining to RQ1 seem to exhibit strong complementarity.

Outcomes Related to Theoretical Perspectives and Previous Research

In this section, I discuss the outcomes of this study in relationship to the theoretical frameworks that framed the study as well as the previous cycles of research that provided feedback for the PPLC study. First, I examine the outcomes related to the theoretical perspectives of self-efficacy and communities of practice. Next, I present the outcomes in relationship to previous cycles of this action research study.

Outcomes related to theoretical perspectives. I will first examine the outcomes in relation to the theory of self-efficacy. Next, I will present the outcomes in relationship to community of practice theory.

Self Efficacy. The construct of self-efficacy refers to an individual's belief in his or her capability to "organize and execute the course of action required to manage prospective situations" (Bandura, 1997, p. 2). The goal of the PPLC was to increase

teachers' self-efficacy with regard to the implementation of personal learning, because much of the research indicates a relationship among self-efficacy, teacher effectiveness, and student outcomes. Self-efficacy has been consistently recognized as an important attribute of effective teaching and appears positively correlated to teacher and student outcomes (Tshannan-Moran, Hoy, & Hoy, 1998). Empirical research has demonstrated that self-efficacy is related to several work-performance measures such as adaptability to advanced technology, coping with career-related events, managerial idea generating, managerial performance, skill acquisition, and newcomer adjustment to organizational settings (Stajkovic & Luthans, 1998).

It was critical that the goal to increase teacher self-efficacy be explicitly included in the design of the PPLC professional development opportunity (Bray-Clark & Bates, 2003). Designing professional learning opportunities that explicitly seek to develop teacher self-efficacy can affect the extent to which a teacher's professional learning opportunity promotes the acquisition of knowledge and skills. In the PPLC study, the teachers reported the acquisition of a variety of new knowledge and skills as well as some dispositions they thought were important to PL implementation. Other research suggests that positive self-efficacy beliefs can increase the extent to which teachers are willing to transfer skills learned through professional learning to the classroom (Bray-Clark & Bates, 2003). This is consistent with the findings of the PPLC study in that the teachers did transfer their learning to the classroom. They all implemented PL strategies in their classrooms both during and after their participation in the PPLC. For example, a choice-driven, competency-based approach to math was implemented in the elementary and middle levels. In addition, research has also shown that teachers with high levels of self-

efficacy tend to explore more alternative methods of instruction, seek improved teaching methods, and experiment more extensively with instructional materials (Allinder, 1994). This finding is consistent with the increased risk-taking reported by the PPLC teachers and observed by the researcher as well as their desire to improve upon their methods by seeking feedback from one another, their PL coach, and their students. Further, directing resources at enhancing self-efficacy can initiate and sustain an on-going process of individual improvement because of the nature of the reinforcing feedback cycle, a cycle in which initial increases in self-efficacy beliefs lead to increased teacher effectiveness that in turn enhances subsequent self-efficacy beliefs (Bandura, 1991). This too, seemed to play out in the PPLC. As teachers worked to improve upon their PL methods, they received supportive feedback from their peers, their PL coach, their students, and in some cases, the parents. This seemed to enhance their self-efficacy, resulting in continued risk-taking and a more comprehensive implementation of PL in the classrooms. For example, a teacher might start out with an activity sheet and the use of the resource table. When students responded positively and the teacher felt more confident giving students more responsibility, the next time the teacher might let the students design all of the activities themselves.

Social cognitive theory (Bandura 1977) outlined four sources of self-efficacy: enactive mastery, vicarious experience, social/verbal persuasion, physiological arousal. Each of these was considered and applied to the design and implementation of the PPLC.

Enactive mastery. Enactive mastery refers to accomplishments from previous experience or professional development. The goal of enactive mastery is to provide teachers adequate opportunities to master new techniques/content before they implement

them in the classroom. The PPLC provided teachers with opportunities to explore definitions, frameworks, and research associated with personal learning. Participants also had the opportunity to practice skills and simulate classroom experiences. Several of the teachers taught mini-lessons to other participants to practice and test out ideas. Although mastery experiences are the most powerful efficacy changing forces, they may be the most difficult to deliver, but thoughtfully designed professional learning opportunities can provide efficacy-building mastery experiences (Goddard, Hoy, & Hoy, 2000).

Vicarious experience. Vicarious experience occurs when teachers observe a significant model engaged in an activity that they perceive as being aligned with their needs and capabilities. To achieve vicarious experience, the PPLC examined several other school and district models of personal learning. Participants read about PL examples, watched videos of PL classrooms, connected virtually with other PL schools, and participated in face-to-face site visits at PL schools. In addition, cohort teachers had opportunities to visit the classrooms of previous cohort members to see how they were implementing PL. The teachers reported the importance of PL in action prior to implementing it themselves. In addition, the nature of the cohort model provided opportunities for social comparisons made with other individuals which can also produce vicarious experiences (Bray-Clark & Bates, 2003).

Verbal persuasion. Verbal persuasion refers to the communication of verbal judgments from respected or influential others that can affect self-efficacy beliefs. Bandura (1997) cautioned against artificial praise; the behavior-related information must be compelling and delivered in a manner that disrupts the pre-existing disbelief in one's capabilities. The PPLC provided collaborative planning sessions, opportunities for peer

observations, sharing sessions, and mentoring and coaching relationships, all of which offered opportunities for learning and receiving verbal support that contributed to efficacy beliefs.

Physiological arousal. Bandura (1978) argued that self-efficacy is a good predictor of people's physiological arousal under stressful situations (Bandura, 1978). Low self-efficacy is generally accompanied by high performance arousal, while a strong sense of efficacy is associated with low performance arousal. Therefore, teachers judge their capacity by their perceptions of their anxiety levels in different situations. The PPLC was designed to provide a safe, supportive, and non-threatening environment. Effective coping strategies, problem-solving, and stress-reduction techniques were embedded in the cohort content to help teachers develop a repertoire of coping strategies. The cohort also provided a safe place for teachers to connect and support one another. The teachers exhibited increased coping strategies as the cohort progressed which contributed to increased risk-taking and subsequent implementation of PL.

Communities of practice. The term community of practice is usually attributed to Lave and Wenger's (1991) book on situated learning, in which they proposed the theory of Legitimate Peripheral Participation (LLP), whereby a learner does not merely gain information but gains membership in a community of practice. Lave and Wenger provided an ethnographic account of traditional apprenticeships, and Brown and Duguid (1991) first applied the theory to an organizational context (cited in Hoadley, 2012). Wenger (1998) then published a more detailed description of a community of practice in the context of claims processors at an insurance company. Since then, the concept of communities of practice has been applied to different types of organizations and has been

shown to have a positive impact on learning and improving the efficacy of work (Brown & Duguid, P., 1991; Goddard, Hoy, & Hoy, 2000; Hoadley, 2012; Lin & Kim, 2013; Wenger, 1998; Wenger, Trayner, & de Laat, 2011; Wenger-Trayner & Wenger-Trayner, 2015).

Wenger, McDermott, and Snyder (2002) identified several benefits of implementing communities of practice (CoPs), both to the individual and to the organization. They describe both short-term and long-term value. In the short-term, an employee can get help with an immediate problem, receive multiple perspectives on an issue, and practice risk-taking and problem-solving in a supportive, collaborative environment. This was evident in the PPLC. Teachers asked for help with challenges they encountered in working with students in a more personalized environment. They also received ideas and different perspectives on issues. The teachers commented on how helpful it was to have the perspectives of different grade levels and subject areas. The teachers were also able to practice risk-taking in a supportive environment.

In the long-term, the community of practice structure helps the employee to develop professionally and engage in productive ongoing practices. Employees may develop a new manual or improved skills, and they may also develop intangible benefits such as a sense of trust and an ability to innovate. CoPs are both strategy-implementing and strategy-making. They help employees implement existing strategies and develop new ones. Ultimately, they connect professional development and the strategy of the organization (Wenger, McDermott, & Snyder, 2002). These long-term benefits were also evident with the PPLC. The teachers definitely developed a sense of trust with the other teachers and their PL coach. They shared strategies and challenges. They invited their

peers, their coach, and their assistant superintendent into their classrooms when they weren't sure of the outcome of a particular PL strategy. The teachers reported the development of new knowledge and skills, which they then shared with other teachers across the district, connecting this professional development with the district's personal-learning goals.

Communities of practice are defined as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger-Trayner & Wenger-Trayner, 2015, p.54). Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human enterprise. Wenger (2002) identified three critical elements that constitute a community of practice: (1) The domain, which includes a shared interest; (2) the community, in which members interact and learn from one another; and (3) the practice, in which participants develop a shared repertoire for working together (Wenger, McDermott, & Snyder, 2002; Wenger-Trayner & Wenger-Trayner, 2015).

Over time, the concept of community of practice has evolved from a descriptive one (Lave, 1987; Lave & Wenger, 1991) to a more prescriptive one (Cox, 2007; Wenger, McDermott, & Snyder, 2002). Communities of practice occur naturally, but can they be cultivated? The goal of the PPLC was to cultivate a community of practice by applying Wenger, McDermott, and Snyder's (2002) design principles. Each principle was carefully considered in the design of the PPLC.

Design for evolution. According to Wenger, McDermott, and Snyder (2002), design elements should be catalysts for a community's natural evolution, "because communities are built on existing networks and evolve beyond any particular design, the

purpose of a design is not to impose a structure but to help the community develop" (p. 53.) I specifically designed the PPLC differently from the typical professional development offered in the district, which is planned in advance by whomever is conducting the session without input from the participants. In the case of the PPLC, I designed structures to facilitate natural communication and collaboration among the members of the group but allowed for flexibility in the sessions. From the first session, the teachers participated in developing the goals and parameters of the group and selecting the content to be studied. In the first 2-3 sessions, I played more of a role in the facilitation of the sessions, however, the group subsequently took over the much of the facilitation of their own meetings. When I planned specific learning activities in advance, they were designed to be completed in a portion of the day so that the group could participate in the design of the cohort and to allow for flexibility as the community developed.

Open dialogue between inside and outside perspectives. An insider perspective was necessary to appreciate the issues specific to the Clayfield Township Schools as well as the culture of the district. As the Assistant Superintendent, I was familiar with the district goals, the curriculum, our current student achievement, and the challenges faced by the district. I knew some of the teachers, I was familiar with the student demographics and the idiosyncrasies of the different schools. This helped me to build trust among the teachers and to design the cohort with the district needs in mind. My familiarity with the district prevented a "this won't work here" resistance from the teachers, which I have found to be a common form of protest in other innovation initiatives I have been a part of in which I was an outsider. While this type of deep understanding of community issues

can only be achieved by an insider, good community design also requires an understanding of the community's potential to develop and manage knowledge, which often necessitates an outside perspective to fully see the possibilities. To address this need, I designed the PPLC to encourage online and face to face dialogue not only among inside perspectives, but among outside perspectives as well. I facilitated the development of partnerships with other schools and districts. I also chose Innovative Designs for Education Corporation (IDE Corp.) to facilitate portions of the professional development as well as the PL coaching, providing job-embedded support and bringing with them their experience of supporting other schools and organizations with personal learning and promoting student agency. Teachers also visited in person other schools who were trying to implement PL.

Invite different levels of participation. People participate in communities for different reasons and it is unrealistic to expect that all community members will participate equally (Wenger, McDermott, & Snyder, 2002). The key to good community participation is to design community activities that allow participants at all levels to feel like full members (Wenger, McDermott, & Snyder, 2002). Rather than force participation, successful communities "build bridges" for those on the sidelines (Wenger, McDermott, & Snyder, 2002, p. 56). I designed the PPLC to provide a variety of different options for participation. Participants had the opportunity to take leadership roles in the cohort by participating in cohort design and teaching their peers. Participants also had a variety of opportunities for whole group participation and discussion. In addition, the cohort provided opportunities for small group and partner interaction and participation. Participants could also participate individually as they viewed content and models,

completed work on their lessons and units, and interacted one-on-one with their PL instructional coach. Members were also provided opportunities for private and semi-private interaction in the online space. Steve commented on how he appreciated the flexibility in terms of how he could participate with the group and how his participation varied from session to session. Most of the teachers attended all of the sessions and looked for ways to participate when something prevented them from doing so. For example, one of the teachers was injured on the job and not permitted to come into work but she attended the cohort session virtually from home.

Develop both public and private community spaces. Wenger, McDermott, and Snyder (2002) argue that a common mistake in community design is to focus on public events, thereby missing opportunities to work the private space between meetings by discussing current problems with members, providing and linking them to resources, and promoting other back-channel discussions that help to contribute to the public meetings (p. 58). I designed the PPLC to provide activities in both public and private spaces that use the individual relationships to enrich events and use events to strengthen individual relationships. The PPLC had public, semi-private, and private interactions. We began with public, face-to-face sessions which were then followed by opportunities for teachers to work in small groups and individually as the face to face sessions had unscheduled time that was often used for networking or one-to-one interactions. Following the sessions, teachers were able to interact in the online space. Some of them also got together within their buildings on their own time to continue the work of the PPLC.

Focus on value. Rather than attempting to determine the expected value of a community in advance, communities need to "create events, activities, and relationships

that help their potential value emerge and enable them to discover new ways to harvest it" (Wenger, McDermott, & Snyder, 2002, p.59). The PPLC encouraged celebrations of successes and small wins. Community members were encouraged to be explicit about the value of the community. The value of the PPLC was shared with the larger district community as well through a series of Board of Education presentations and during faculty meetings and professional development time.

Combine familiarity with excitement. Communities need to provide patterns of familiarity such as monthly meetings, weekly discussions, and regular website activity so that members can feel comfortable participating in candid discussions, asking for advice, and sharing their ideas. I designed the PPLC to provide both familiarity and excitement. The group held regular meetings and participated using the online platform on a regular basis. These routines provided stability in the group. I also embedded other types of activities to promote excitement such as opportunities to engage with the external consultant, visit other schools, and participate in conferences and presentations. The teachers were very excited about our field trips to other schools. They talked about them both before and after the trips creating a sense of adventure. They also got very excited about the coach coming to visit their classrooms and providing them with individualized attention and support.

Create rhythm for the community. Vibrant communities of practice have a rhythm which Wenger, McDermott, and Snyder (2002) cited as the strongest indicator of the "aliveness" of the community (p. 62). There are many different types of rhythms in a community including "the syncopation of familiar and exciting events, the frequency of private interactions, the ebb and flow of people from the sidelines into active

participation, and the pace of a community's overall evolution" (p. 62). It is difficult to plan the rhythm of a community; however, there are factors that can help the community to achieve its own rhythm, factors such as the combination of whole group and small group activities and gatherings, a mix of idea-sharing and tool-building projects, and casual connections and directed community action. The PPLC design included many of the recommendations of Wenger, McDermott, and Snyder, including opportunities for small- and whole-group interaction, regular meetings, consistent online participation opportunities, and a mix of idea-sharing and skill-building work. The groundwork was laid, but the community had to develop its own rhythm which included a group or team building activity at the beginning of each face-to-face session, the inclusion of time for sharing and learning, and concluding the day with design time. This rhythm also included similar pacing for the face to face sessions and patterns of partnership and work outside of the face to face sessions. The language arts teachers, for example, met together outside of our formal meetings and used online technology to collaboratively develop personal learning lesson plans.

Cultivating a community of practice is not an easy endeavor. Wenger (1998) referred to it as the paradox of design. No community can fully design the learning of another, yet, no community can fully design its own learning. The application of the seven principles for cultivating communities of practice provided a foundational structure for the PPLC as a starting point for the group, from which a lively community developed. The project was successful in cultivating a community of practice. The teachers had a shared domain of interest: personal learning. They developed a community in which they participated in joint activities and interactions and they learned from one another. They

also engaged in practice. They developed a shared repertoire of resources, tools, and techniques for personal learning. Members of the group expressed an interest in continuing to meet the following school year to continue their shared practice.

Outcomes and the broader problem of practice. Earlier cycles of action research focused on teacher and administrator perceptions of PL with the pilot study leading to the development of a conceptual framework for personal learning. Through these cycles of action research, I identified several barriers to the implementation of PL. The pilot study of the PPLC included pre and post self-efficacy assessments. In this section I will discuss the current findings as they relate to the conceptualization of PL, barriers to the implementation of PL, and the self-efficacy assessment results.

Conceptualization of PPLC. Initially, there was a lack of clarity about personal learning (PL) in the district. I interviewed teachers and administrators about PL, and there was no accepted consensus about its meaning, although there were some commonalities in their thinking. Principals prioritized student choice as well as active student roles in which students were designing and creating based on their own talents and interests. The principals also saw the teacher role as shifting to more of a coach or a facilitator in a PL environment. When I interviewed the teachers initially, they also prioritized student choice and they added the importance of student voice. The teachers also talked about the use of PL to address diverse student needs. The teachers indicated that PL would require students to take a more active role in leading their own learning, but interestingly, they did not anticipate changes to the teacher role. At the end of the Personal Professional Learning Cohort (PPLC) in the pilot year, I conducted focus groups which led to the development of a conceptual framework for PL that emphasized teacher and student

empowerment as well as changing roles for both teachers and students. The model also addressed the negotiation of what must remain consistent and what must be variable in a personal learning model, as well as the barriers associated with the implementation of personal learning.

The teachers who participated in the second year of the personal learning cohort concurred with the preceding cohort's idea that both teachers and students must be empowered in a PL model. They also agreed that PL necessitated a shift in teacher and student roles. They agreed that the teacher role must shift to that of a facilitator or a coach. They also supported the idea that teachers must be willing to let go of some of their control. They emphasized the importance of being flexible and open-minded. The second group of participants also agreed that the student role must become a more active one and that students must play a larger role in setting goals and managing and directing their own learning. This group of participants expanded upon the work of the first group by adding dimensions to the student role such as risk-takers, leaders, decision-makers, rule-makers, problem-solvers, experts, and designers. They also specifically identified the skills they believed students needed to be successful in a PL environment. These skills included creativity, vision, creative thinking and problem-solving skills, empathy, collaboration, and global knowledge, among others. The identification of skills needed for personal learning is an important finding because if we know what skills students need to be successful in a personal learning environment, we can overtly teach them.

The second group of PPLC participants also agreed that it is difficult to define exactly what a PL environment might look like since so much of it is contextual. There are many things that might be variable. In the last cohort session, I presented the

conceptual model again and asked them if it needed to be changed or updated in any way. I also asked them if their own conceptualizations of PL had changed over the course of the PPLC. Lori stated, “Personal learning is really more of a philosophy. It is a whole approach to teaching and learning, not merely a specific strategy or lesson.” The rest of the cohort agreed with her. Audrey commented, “It’s not like any one strategy makes or breaks it. It is not necessarily PL if students have flexibility with pace, but it doesn’t mean it isn’t PL if they don’t.” The teachers thought that the conceptual model included beliefs and dispositions critical to the philosophy of PL such as empowerment, shifting roles, the importance of overtly teaching PL skills, and a focus on a competency-based approach which underlies the belief that PL can be implemented with required standards. In reference to what should be different, the teachers thought that parents were missing from the model but could not agree on how they should be added to the model, only that they must be considered. They also suggested that they would enlarge and bold-face the teaching of executive function, or PL skills, to highlight its extreme importance. The discussion of barriers will be addressed in the next section.

Barriers to the implementation of personal learning. In the preliminary cycles of this action research project, several barriers to the implementation of PL were identified. These included a lack of sufficient time for PL planning, a lack of professional development in the area of PL, a teacher fear of “letting go” of control in the classroom, concerns about meeting district, state, and federal mandates, and concerns about standardized test score performance since this is linked to the evaluation of many of the teachers. Barriers were also identified in the final PPLC study with both similarities and differences.

The PPLC was designed to address some of the barriers identified in the preliminary research cycles and the pilot study. The PPLC was an 8-month professional development program on PL which was meant to address the lack of professional development PL offerings identified by both the teachers and the principals. This barrier did not come up in the same way during the final PPLC study since the teachers were in the PPLC receiving professional development on PL. They did, however, express concerns about the teachers who have not yet had an opportunity to participate in a personal learning cohort, which was why many of them volunteered to lead PD sessions on PL for other teachers. A lack of teacher knowledge was identified as a barrier in the (pilot? main?) PPLC study. The data from which this was coded was collected early in the study as teachers expressed frustration about their own lack of knowledge about PL initially. As the cohort progressed, the teachers became more knowledgeable and confident in their abilities. They did recommend that new teachers learn to teach in this way rather than having to learn to change from a more traditional teacher-driven approach.

The PPLC included design time to address the teacher concern about planning time. While the teachers initially expressed concern about the amount of planning required for PL in the final study, this was primarily in the beginning of the cohort as they were first learning to plan for PL. Time became less of a barrier because design time was included in the cohort, and the teachers became more efficient at planning. Other solutions to the time challenge included collaborating with other teachers to lighten the workload. Additionally, some of the teachers enlisted help from their students, lessening the teacher burden. It should still be noted, though, that planning for PL can be more

intensive because more material has to be developed up front. For example, if a teacher is running a competency-based math program and the students can move at their own pace, lessons have to be ready for the more advanced students. If a teacher is offering an activity list or choice board, it requires planning out several options ahead of time with corresponding rubrics, rather than preparing one activity for a whole group lesson.

The fear of letting go of control in the classroom was identified as a barrier in previous cycles of research but was not identified as a barrier in the final PPLC study. The teachers did discuss the necessity of certain teacher dispositions for the effective implementation of PL such as open-mindedness and flexibility and that their participation in the cohort helped some of them to develop these dispositions. They may have benefitted from being in the second cohort as there were 19 teachers in the district that were already practicing PL. The participants in the second cohort also seemed to find support in their community which seemed to lessen their fears and promote risk-taking.

The organization of classroom space was not identified as a barrier in the previous cycles of action research but did emerge as a challenge in the final study. This may be because the teachers in the second PPLC started implementing PL sooner and may have run into challenges that the other PPLC group had not encountered during their time in the cohort. The space barrier had to do with the way our current classrooms are set up. Some only have traditional desks arranged in rows or furniture that is bolted to the floor, which is not conducive to PL. Some of the teachers felt that their classroom spaces were too small to have students spread out the way they had initially designed. Many of the teachers planned to set up different types of work areas in the classrooms, such as collaborative spaces, design space, and quiet space, which would have required new

furniture. An additional challenge at the high school level was the fact that teachers often taught in many different classrooms throughout the day, which made their desired classroom set-up very difficult. To address the challenge, we applied and received a flexible learning grant. We also spoke to the principals about buying different types of furniture when it was time to replace furniture, as well as assigning teacher classrooms based on pedagogical preferences rather than departmentally.

Concerns about meeting required mandates and standardized test scores were identified as barriers in the pilot study. I specifically made adjustments to the second PPLC design to address these concerns, and the PPLC looked at the ways in which standards could be addressed in a PL environment. Members of the PPLC even discussed standards-based or competency-based environments, which several of the teachers embraced. They did not express concerns about meeting their standards or about student performance. In fact, they generally reported increased student productivity and performance in response to their PL implementation.

A lack of student skills needed for PL was identified as a challenge in the second PPLC study. I suspect that some of these challenges existed for the teachers in the pilot study, but because they did not implement PL as deeply and as quickly as the second group, they may not have encountered as many of these challenges. They also may have articulated them differently. The lack of student skills could be perceived as a teacher deficit in terms of not knowing how to adequately prepare students for PL. It was helpful to identify this as a challenge so that the PPLC could identify the skills students needed to be successful in a PL environment and then overtly teach them to the students and provide opportunities for them to practice them. The teachers did indicate that they

thought this would become less of an issue as more teachers were implementing PL, particularly in the younger grades. A few of the high school teachers also identified some student resistance as a challenge initially. This was primarily because the students perceived PL as more work for them and something very different than what they were used to. All of the teachers did indicate that the students came to prefer PL over time, particularly when the teachers explained their purpose in implementing PL was to better engage students and to better prepare them for college and career.

The final barrier identified in the second PL study was a lack of adequate technology hardware, software, and support. Interestingly, the district made significant infrastructure upgrades and purchased more than 850 new devices for the 2017-2018 school year so there was more technology available than ever before. I think it was reported as a challenge because more of the teachers were using technology in the second cohort than in the previous pilot. As teachers became more aware of different types of software programs through the cohort and their various networks, they wanted to be able to use them, but the district did not have a repository of online software. Additionally, as the teachers were able to leverage technology for PL, they wanted more consistent access to it. Technology support has been an ongoing issue in the district. They do not use adequate systems to manage technology problems and they are understaffed. To address this problem for the (2017-18 or 2018-19) year, more computers were purchased, moving the district closer to a one-to-one environment and additional technicians were hired on a contractual basis. The superintendent also committed to having an external technology audit conducted.

Self-efficacy survey results. The teachers demonstrated increased growth in all 9 PL constructs both in the pilot study and the final PPLC study. The difference in growth was larger in all but one of the constructs in the final study. The increased growth can probably be attributed to the fine-tuning of the PPLC design and a more specific focus on some of the constructs, such as technology and competency-based learning. Interestingly, the one construct in which the pilot group experienced a larger change on the post-test was instruction. The second PPLC group did experience growth in instruction, but it was not as large a change as the pilot group. The second group rated themselves higher on the pre-test, so it is possible that they had less room to grow on the 0-100 scale. It is also possible that they did not perceive instruction to be specifically tied to PL in the same way as the other constructs. For example, the teachers were always responsible for implementing instruction, but they were not required to create personal learning paths for students. In summary, both groups experienced growth on the post-test. The low *p* values for the changes suggest that the pre-to-post changes in the constructs can be trusted.

Lessons Learned

I have been conducting this action research study and writing the resulting dissertation for more than three years now and throughout this process I have learned much about conducting mixed methods action research, the value of a theoretical framework for guiding the project, and the development of my philosophy for leading educational change. This section discusses each of these lessons learned in more detail.

Mixed methods action research. With regard to research design, mixing methods, rather than relying on one type of research method, provided a richer and more nuanced understanding of the experiences of the teachers in the PPLC study. The

quantitative data provided information with regard to changes in teacher's self-efficacy for implementing personal learning after their participation in the innovation, and the complementarity of the qualitative data provided rich detail and stories about the teachers' experiences. The qualitative data described the various areas in which the teachers expressed increased confidence levels as well as the knowledge, skills, and dispositions gained through their participation in the PPLC. These data also told the story of their fears, the risks they took, and the barriers they overcame to make meaningful changes in their classrooms. In summary, I learned that employing a mixed methods research design by collecting data using different strategies, approaches, and methods in such a way that the resulting mixture or combination is likely to result in complementary strengths and non-overlapping weaknesses can be superior to monomethod studies. In addition, employing a mixed methods research design can provide a more comprehensive and deeper understanding of the problem of practice.

Theoretical frameworks guiding the project. I can still remember being asked to identify theoretical frameworks to guide my research in the first spring semester of the program. I felt very overwhelmed and was unsure as to how to select these frameworks or why I needed them at all. My course work and preliminary cycles of research helped me to understand the importance of a theoretical framework to guide the study. According to Grant and Osanolo (2014) the theoretical framework is "the foundation from which all knowledge is constructed (metaphysically and literally) for a research study" (p. 12). The theoretical framework provides the structure and support for the rationale for the study as well as the purpose and significance of the research. It also serves as the grounding base for the literature review as well as the methods and the analysis. The PPLC study was

grounded in the theory of self-efficacy and communities of practice. These theories proved critical in the success of the PPLC. As a leader, I had underestimated both the power of self-efficacy in influencing behavior and the importance of community as a vehicle for learning. The PPLC would not have been as effective without taking these frameworks into consideration in its design. In summary, I learned that, without a theoretical framework to guide the study, the vision and structure for the study is unclear and will likely lead to a poor study with poor findings (Grant & Osnaolo, 2014).

Leadership for educational change. I have been working as an educational leader for about 14 years. Most of my work has centered around leading educational change. Educational change is challenging as it is hard to change hearts and minds in meaningful ways. This experience was different. This experience felt more successful and I learned several things that I will continue to implement in leading educational change which include building community, celebrating small wins, cultivating a culture of risk-taking, and focusing on naming and solving problems. First, to enact effective and meaningful change, I would support learning through the cultivation of communities of practice. Much of what made the PPLC successful was the community. The participants felt a certain energy and synergy in working with others toward the same goal. They helped to inspire one another and they solved problems together. Feeling a part of a group also made them more comfortable taking risks because they had the feeling of being "in it" together. I learned the value of cultivating an environment in which individuals feel comfortable taking risks and sharing failures so that the group can help them to problem-solve solutions to their challenges. Celebrating small wins was an extremely important part of the process and helped to encourage teachers to continue to productively struggle

through the process of change. Finally, I was inspired by Hess's *Cage-Busting Leadership* (2013) to identify problems and name them, rather than just focusing on "reform." This was helpful in communicating the "why" for personal learning. All students are not having their needs met – how do we address this problem? Focusing on and naming specific problems was also helpful in overcoming barriers to the implementation of PL. In the second cohort, fewer barriers were identified and more were overcome than in the first cohort, and I attribute this change to the focus on solving specific problems. In conclusion, my leadership philosophy, specifically in the area of leading change, has developed to include building community, cultivating a culture of risk-taking, celebrating small wins, and identifying and solving problems.

Limitations

As with any research study, this action research study has some limitations that should be considered. Limitations are features of the study that may decrease confidence in the findings because they raise concerns about validity and reliability. The potential limitations of this study include maturation, pretest sanitization, the Hawthorne effect, and the experimenter effect. Each of these limitations are discussed in the following section.

Maturation. Maturation is a threat to internal validity and occurs when certain events internal to the participants may be responsible for the changes in the dependent variable (Smith, & Glass, 1987). For example, if a certain type of psychological development occurred naturally through the course of time. If the natural processes occur at the same time as the independent variable, they may pose rival claims for the cause of the dependent variable (Smith, & Glass, 1987). This is a possible threat to my study

because it was a single group design. To mitigate this impact in the study, none of the participants were involved in any other professional development during the timeframe of the PPLC.

Pretest sanitization. Pretest sanitization refers to the potential effect that a pre-treatment assessment may have on the participants in a study. For example, the test anxiety of the participants may decrease due to a greater familiarity with the format or the test administrator. This practice effect can result in higher posttest scores even when the treatment itself had no effect on the outcome variable. This is a concern for my study since I am using a pretreatment pretest and then a post treatment posttest. Smith and Glass (1987) do note that the likelihood of the practice effect being responsible for the posttest difference decreases as the length of time between the administration of the two tests increases. This may be an advantage in my study as the pre and posttests were be separated by 8 months during the treatment period. I was also able to examine the qualitative interviews and artifacts to obtain additional information and to triangulate data.

Hawthorne effect. The Hawthorne effect is a threat to the ecological external validity of a study. It refers to a situation in which a change among the participant group occurs because the group is being singled out for study – because they are receiving some type of special treatment rather than by the independent variable itself. In my study, the PPLC participants were singled out and they received access to an intervention that was not made available to other teachers. I was the researcher, but also the assistant superintendent in the district. The teachers met frequently with me in the face to face sessions and communicated with me online and via email. I also observed many of their

classes. In addition to this attention, my celebrations of successes or small wins may have influenced increased levels of engagement and participation as well as the desire to implement PL in the classroom.

Since the Hawthorne effect poses a threat to validity for many participant-observers, Oswald, Sherratt, and Smith (2014) developed a 6-stage protocol for minimizing the Hawthorne effect. Stage 1 involves gauging the person and the setting. Since I worked as the district assistant superintendent, I had many opportunities to gauge teachers in a variety of different settings. Stage 2 is to create a non-threatening perception. I spent a lot of time explaining that my role was non-evaluative and that the results of the study, whatever they were, would help us to continue to develop programs to promote PL in the district. I also worked to create an environment tolerant of risk-taking. Stage 3 involves introductions. We spent a considerable amount of time in the PPLC sessions doing introductions and ice-breakers to make the participants more comfortable and to promote the development of relationships. Stage 4 is to establish rapport. I worked to establish rapport with all of the participants in the study. Stage 5 is to strive for relaxed signals in which a participant might make a joke or share something personal to indicate that they are comfortable with the researcher. Teachers often shared personal stories, jokes, and failures with me, indicating a certain level of comfort. The last stage of the protocol is for the researcher to link conversations to the area of interest. Much of my conversations with participants focused on PL, but in cases where we were talking about other things, I was able to bring the conversation back to PL to gather data for the study.

The Experimenter effect. The experimenter effect can affect external validity and occurs when an experimenter, because of their charm and energy motivate their participants to perform particularly well, distorting the participant's typical level of motivation. This is a potential limitation of the study; however, there were some steps I took to minimize this threat to validity. I did not present at every session. Sessions were often designed for participants to lead themselves through sessions. Throughout the duration of the study, participants interacted with other "experts" in the field. I also hired a consultant who worked with the group and served as their coach so there was no single person that was perceived as being the "lead experimenter."

Self-Selection bias. Self-selection bias can occur when participants self-select into the study resulting in a biased sample. It is possible that the participants were pre-disposed to change because they volunteered for the program.

Key Contextual Issues That Shaped the Study

It is important to note that personal learning was a district goal and had been embedded in the strategic plan. I had the support of the Board of Education to create the PPLC for the purposes of advancing the goal. Funds were budgeted to pay for substitutes to cover the teachers' absences from class as well as to hire the consulting firm, IDE, to assist with the facilitation of some of the face to face sessions and to provide the job-embedded coaching. The district also provided the teachers with laptops and a stipend of $550 to cover some of the work they were doing outside of contractual hours. The teachers that participated in the study were all volunteers and they were drawn from across the district to create a diverse group. They had varied educational backgrounds and years of experience and they taught different subject areas and grade levels, which

contributed to the diversity of perspectives and ideas in the sessions. The sessions were held in a central location where we had a room dedicated to professional development. In addition, I had access to a learning management system to host content and to facilitate activities in between sessions.

Since the participants self-selected into the program, they may have been more pre-disposed to change, however, it was beneficial to begin with participants that may be more likely to change because it allowed for the development of proof of concept. It was helpful to have some teachers who were successfully implementing PL for other teachers to observe. It was then also helpful that the participants shared their experiences with teachers outside of the cohort. Having teachers implementing PL allowed for some students to experience PL in the classroom and to be able to communicate their desire for additional PL to the Board of Education as well as to other teachers. I did have some teachers outside of the cohort ask for assistance in implementing PL because they received requests from the students.

Implications for Practice

Outcomes from the PPLC study suggest several implications for practice. In this section I offer implications for practice for the district in the continuation of the PPLC project as well as connect the outcomes from this study to current issues in educational practices.

First, I was able to successfully cultivate a community of practice in designing the PPLC, which facilitated increased teacher knowledge, skills, and self-efficacy with regard to the implementation of personal learning. In addition, the community of practice generated value for both the individuals and the organization, much of which revolved around the development and expansion of relationships and the use of these relationships

to change perceptions about teaching across the district. I would recommend that the district continue to offer the PPLC to teachers for the 2018-2019 school year and beyond. As more teachers enter into the community and have access to sustained and job-embedded professional development, the culture will continue to change across the district with regard to PL, thus moving the district closer to its PL goal. I would recommend that the district continue to draw teachers from multiple subject areas, grade levels, and years of experience, in large part because the teachers reported benefits from this diversity. I would also recommend that the cohort continue to model PL pedagogy and have access to models of PL as the participants reported that "seeing is believing." In the future, however, many of these site visits can take place within the district, as it now has several teachers implementing PL in their own classrooms. In addition, rather than hiring the consultant to work with the district, the district can leverage past participants to facilitate portions of the PPLC professional development. The district may also want to consider setting up a mentor model for the new cohorts, using past participants as mentors for new PPLC teachers. An additional recommendation would be for the district to hire a PL coach that can support the work of the teachers in the new PPLC as well as to continue to support the work of past participants. Finally, I would not change the number of sessions for the PPLC; the design time proved very important to teacher development and PL implementation. In addition, because absences from class posed challenges for both the principals and the teachers, I would recommend moving 2-3 days of the cohort to the summer, before school begins. This way, teachers would have an opportunity to prepare classroom set up and routines as well as preliminary materials before the first day of school, and this schedule would also minimize class absences and the need for

substitutes. The remainder of the cohort should still take place during the school year so that teachers can implement what they learn with their students and solve problems with their colleagues in the context of classroom implementation.

Given the number of participants and the research methodology, the PPLC study is not generalizable, but it may have transferrable value (Mertler, 2014). If other districts are seeking to implement personal learning or other educational initiatives to address a myriad of educational problems such as achievement gaps, a lack of college and career readiness, a lack of student engagement, or low graduation rates, they may also be able to cultivate a community of practice to prepare teachers for implementation and to begin to shift the culture of their school or district. I have been an educational leader for more than 12 years, and in my experience, it is often difficult to enact fundamental changes in schools. Employing Wenger, McDermott and Snyder's (2002) framework for cultivating a community of practice and investing in a consistent, job-embedded collaborative approach to professional development that allows for design time and application may hold promise for instituting meaningful educational change.

Implications for Future Research

Upon completion of the PPLC study, there are several areas of interest that I would recommend for future cycles of action research. These areas include the exploration of student experience and achievement in PL classrooms and the role of leadership in implementing changes in culture and teaching. Each of these areas will be discussed in terms of future recommendations for action research.

This study explored the ways in which the PPLC impacted teachers in terms of their self-efficacy to implement PL and the value they derived from their participation in

a community of practice. A natural next question would be: How does PL in the classroom affect students in terms of their experience and their achievement? Some of this was captured through the experiences of teachers but it would be important to interview students directly to hear how PL affected their experiences in the classroom. In addition to exploring the student experience, it is important to look at what type of growth students experience in a PL classroom and how this might compare to growth in a traditional classroom in terms of the development of their executive function skills as well as their academic achievement. Finally, it would be beneficial to further examine the cultivation of communities of practice as a model for advancing change and innovation in schools.

One of the challenges identified by the participants was a lack of leadership support. It would be interesting to see whether the development of a community of practice could increase leader's self-efficacy for supporting the implementation of PL. A community of practice could be cultivated similarly to the PPLC in which leaders participate in structured and unstructured activities to design plans for supporting the implementation of PL in their buildings. The research question might be: To what extent does participation in a community of practice affect K-12 school leaders' knowledge, skills, and self-efficacy for supporting the implementation of personal learning? A self-efficacy instrument for the leadership of PL could be developed and a pre and post test administered to the leaders before and after participation in the innovation community, or a researcher could design a study based on the work of Ajzen and the Theory of Planned Bahavior. Interviews could be conducted with the leaders and artifacts such as lesson plans and observations could be used to assess the implementation of PL.

Final Conclusions

The nation is struggling to figure out how to adequately prepare our students for college and career, to promote creativity, and to eliminate achievement gaps so as to compete in a new and rapidly changing global economy. Given this desire and the many challenges we face in schools, there are frequent calls for reforming education. One of the more recent reform initiatives is personal learning (PL). Many policy-makers, funders, vendors, board members, and school leaders have jumped on this bandwagon, yet there is no consensus on what this term actually means and there has been little support for schools in trying to implement PL. The Personal Professional Learning Cohort (PPLC) project offers one approach that may be helpful in supporting school districts to work toward creating more personalized learning environments.

The PPLC study, including the pilot and initial cycles of research, spanned three years and successfully developed a common language for personal learning in the school district. After participating in the study, I developed a better understanding of why there is no agreed upon definition of personal learning because so much of it is based on the specific context of the district and the classroom. The conceptual framework developed by the Clayfield Township Public Schools may or may not work for other school district contexts. The process of developing a conceptual framework of personal learning prior to or as a part of the professional learning process is essential; however, otherwise there can be no understanding of or commitment to the goal, as was the situation when I initially arrived in the Clayfield Township Public Schools.

In working with the teachers, listening to their stories, observing in their classrooms, and hearing feedback from students, the most important component of

personal learning is student agency. Ferguson, Phillips, Rowley, & Friedlander (2015) defined agency as the "capacity and propensity to take purposeful initiative" (p. 1). Agency and agency-related factors are helpful concepts for encapsulating multiple educational goals including the academic skills measured by standardized testing, but also the emotions, behaviors, skills, and dispositions necessary for effective learners and problem solvers (Hitlin & Elder, 2007). Agency plays a key role in students' academic success (Friedlander, et al., 2015). Bandura (2001) stated the critical importance of agency:

> Through agentic action, people devise ways of adapting to remarkably diverse geographic, climatic, and social environments; they figure out ways to circumvent physical and environmental; constraints, redesign and construct environments to their liking, create styles of behavior that enable them to realize desired outcomes, and pass on the effective ones to others by social modeling and other experiential modes of influence. By these inventive means, people improve their odds in the fitness survival game" (p. 22).

Agency helps humans fit in and adapt to their environment, solve problems, develop and communicate our identities and be future-oriented (Hitlin & Elder, 2007). This is consistent with the mission and vision of Clayfield Township Public Schools and is likely consistent with the goals of schools across the country.

The purpose of the final study was to examine the effectiveness of the community of practice model in providing professional development to improve K-12 teacher self-efficacy with regard to the implementation of personal learning. I gathered both quantitative and qualitative data to assess changes in teachers' self-efficacy with regard to

personal learning as well as to assess the value of the community of practice to the individual participants and to the organization as a whole.

The participants demonstrated increased self-efficacy with regard to the implementation of personal learning. They also demonstrated increased knowledge and skills related to personal learning and identified changes in dispositions that helped to facilitate the implementation of personal learning. All of the teachers transferred their learning by implementing personal learning strategies in their classroom. More importantly, their initial PL work with students reaffirmed their commitment to PL and resulted in them sharing their work with others across the district. As a result, this created value for the district because the culture began to change, with more and more teachers seeking out information about PL. Additionally, more students are having access to personalized classrooms, which is one of the district's 3 main goals. The cultivation of job-embedded communities of practice that model desired pedagogies, offer opportunities to observe the desired pedagogical practices, and include design time for the application of new knowledge and skills may offer districts a way to shift pedagogical cultures to offer a more personalized approach to learning.

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APPENDIX A

SELF-EFFICACY INSTRUMENT

Teacher Questionnaire

This questionnaire is designed to help us gain a better understanding of the kinds of things that can create difficulties for teachers in their school activities. Please rate how certain you are that you can do the things discussed below by writing the appropriate number. Your answers will be kept strictly confidential and you will not be identified by name.

Rate your degree of confidence by recording a number from 0 to 100 using the scale given below:

0	10	20	30	40	50	60	70	80	90	100
Cannot do at all				Moderately certain can do				Highly certain can do		

Instruction I am confident I can ...	**Confidence** **(0-100)**
Get through to the most difficult students	
Get students to learn when there is a lack of support at home	
Keep students on task with difficult assignments	
Increase students' memory of what they have been taught in previous lessons	
Motivate students who show low interest in schoolwork	
Get students to work well together	
Overcome the influence of adverse community/family conditions on students' learning	

Get students to do their homework	

Learning Profiles I am confident I can ...	**Confidence** **(0-100)**
Summarize the student's strengths, weaknesses, and progress, drawing on multiple sources of information, including standardized tests and other information.	
Summarize students' goals, interests, and aspirations.	
Develop a personalized plan for students to accomplish instructional goals.	
Allow students to update their learning plan.	
Allow a parent to update their child's learning plans.	

Personal Learning Paths I am confident I can ...	**Confidence** **(0-100)**
Provide one-on-one academic supports for students that are tailored to their learning needs.	
Allow students to make choices about the content and structure of their learning.	
Use a variety of instructional approaches and curriculum materials to meet students' needs.	
Provide students with meaningful learning opportunities outside of school.	
Competency-Based Learning I am confident I can ...	**Confidence** **(0-100)**
Provide students with opportunities to review or practice new material until they fully understand it.	

Require students to show they understand a topic before they can move on to a new topic.	
Different students work on different topics or skills at the same time.	
Give students the chance to work through instructional material at a faster or slower pace than other students in the same class.	
Data Use I am confident I can ...	**Confidence** **(0-100)**
Use high-quality assessment data to help me adapt the pace or content of instruction to meet students' needs.	
Collect student data to help me meet their needs.	
Use a data system that provides real-time actionable data.	
Interpret standardized test scores to understand student needs.	

Choice I am confident I can ...	**Confidence** **(0-100)**
Provide a variety of materials and instructional approaches to accommodate individual needs and interests.	
Allow students to choose what topics they focus on in class.	
Allow students to choose what instructional materials they use in class.	
Connect what students are learning with experiences they have throughout the day or outside of school.	
Adapt course content to meet students' needs by providing additional assignments, resources, and activities for remediation or enrichment.	

Technology for Personalization I am confident I can ...	**Confidence** **(0-100)**

Provide students opportunities to access instructional materials both in and out of the classroom.	
Allow students to keep track of their own learning progress using technology.	
Use technology to real-time data on students.	
Be accessible to students via electronic communication outside of class.	

College and Career Readiness I am confident I can ...	**Confidence** **(0-100)**
Implement the Common Core State Standards.	
Design activities that are intended to develop college and career readiness.	
Develop students' non-cognitive skills such as "habits of mind."	

Project-based Learning I am confident I can ...	**Confidence** **(0-100)**
Assign projects that are inter-disciplinary	
Assign projects that extend over several weeks or months.	
Give students opportunities to provide input into the design of project work.	

APPENDIX B

INTERVIEW PROTOCOL

PPLC Initial Interview Protocol Form

Project: Personal Professional Learning Cohort

Date _____

Time _____

Location _____

Interviewer _____

Interviewee _____

Release form signed? ____

Notes to interviewee:

- You have been selected for this interview based on your participation in the Personal Professional Learning Cohort. Thank you for your participation. This research is being conducted as a part of my doctoral work at Arizona State University and is designed to learn more about personalized learning and the knowledge and skills teachers need to effectively implement personalized learning. The research will also examine the effectiveness of communities of practice to prepare and support teachers to implement personal learning. I believe your input will be valuable to this research and in helping grow all of our professional practice.

- To facilitate my note-taking, I would like to audio tape our conversations today. Only the researchers on this project will be privy to the tapes which will be eventually destroyed after they are transcribed. Confidentiality of responses is guaranteed. There is no risk to participants.

- Approximate length of interview: 20-30 minutes, ten major questions.

Questions:

1. How would you describe your level of participation in the cohort?

   Notes to Interviewer for Clarification/Prompts: [meeting attendance, participation in online discussions, submissions of assignments, participation in class activities and discussions]

2. How would you describe your level of engagement in the cohort?
   Notes to Interviewer for Clarification/Prompts: [presence/mindfulness, intensity of discussions, challenging of assumptions, length of responses/assignments, depth of responses/assignments]

3. How would you characterize the quality of interactions in the cohort?
   Notes to Interviewer for Clarification/Prompts: [debates on important issues, development of knowledge, questions being answered, problems being solved, bringing experience to the practice of learning, sharing, supporting]

4. What types of collaboration have occurred in the cohort?
   Notes to Interviewer for Clarification/Prompts: [joint projects, sharing, peer supports, co-teaching, co-authorship, observations]

5. Has participation in the cohort expanded your professional network?
   Notes to Interviewer for Clarification/Prompts: [connections to different participants, number of new connections made, number of connections with outsiders]

6. To what extent do you ascribe value from your participation and connections in the cohort?
   Notes to Interviewer for Clarification/Prompts: [learning, fun, friendships, changes in practice, benefits to students, inspiration]

7. Has your perspective on teaching and learning changed as a result of your participation in the cohort?
   Notes to Interviewer for Clarification/Prompts: [role of the teacher, role of the students, student empowerment]

8. What knowledge and/or skills have you gained from your participation in the cohort? What (if any) value have you derived from these learnings?

9. Has your participation in the cohort led to changes in your teaching practice?
   Notes to Interviewer for Clarification/Prompts: [new processes, requests for changes in policies, new ways of doing things, new concepts/language, leveraging connections in the accomplishment of tasks]
   If so, what have been the results?
   Notes to Interviewer for Clarification/Prompts: [student achievement, student satisfaction, teacher workload, teacher satisfaction]

10. Do you have any other comments? Is there anything about your participation in the cohort that I missed?
11. Do you have any questions?

Closure:

- Thank you for participating in this interview process.
- Reassure confidentiality
- Ask permission to follow-up if necessary.

APPENDIX C

PPLC CODEBOOK

PPLC Codebook

This codebook is organized by categories of value adapted from of Wenger, Trayner, and de Laat's (2001) conceptual framework for assessing the value of a community, along with data generated in previous cycles of action research. It is divided into three sections based on categories of value. Category 1, Immediate value/ activity/interactions, contains indicators that refer to community and networking activities in and of themselves. Category 2, Potential Value Knowledge Capital, includes indicators that reflect the various types of knowledge capital that can be produced by the community including human, social, structural, reputational, and learning. Category 3, Applied Value/Indicators of Changes in Practice, contains indicators that include the use of knowledge, tools, and social relationships. In each category, there are code labels, definitions of these code labels and potential sources of data. Each category also contains examples of data that were drawn from previous cycles of research.

Category 1 Immediate Value, Activity/Interactions		
Code Label	**Definition**	**Potential Sources of Data**
Level of Participation	This refers to how much a person participated in cohort activities.	• Meeting attendance • Logs and website statistics • Assignment submissions • Research Journal • Self-assessments • Feedback surveys • Interviews
Level of Engagement	This refers to the level of cognitive and/or emotional engagement of an individual participant.	• Observation of face to face sessions • Online discussion posts • Assignments • Self-assessments • Feedback surveys • Interviews
Quality of Interactions	This describes the quality of interactions among cohort participants.	• Observations of face to face sessions • Online discussion posts • Joint work products • Self-assessments • Feedback surveys • Interviews
Collaboration	This refers to the ways in which participants might work together, i.e. joint projects, peer support, co-authorship, etc.	• Observations of face to face sessions • Online discussion posts • Joint work products • Self-assessments • Feedback surveys • Interviews

Networking	This refers to the number of connections made with outsiders.	• Online discussion posts • Joint work products • Self-assessments • Feedback surveys • Interviews
Value of Connections	This refers to the specific value that participants ascribe to their interactions.	• Frequency of interactions • Online discussion posts • Self-assessments • Feedback surveys • Interviews

Examples from Previous Cycles of Research

- Attendance records indicated that of the 19 cohort participants, 16 of them attended 100% of the sessions. Three of the other participants missed only one session due to illness or other unforeseen circumstances. One participated virtually when he could not attend physically.
- 100% of the participants participated in the online discussions.
- 17 of the participants completed 100% of the online assignments. Of the other two participants, one participant completed 70% of the online assignments and the other 90% of the assignments.
- Website logs indicate that 16 of the cohort participants logged in weekly even when no work was required in a particular week.
- According to survey data, all of the participants joined at least one online group or followed at least one educational leader on Twitter, with several of the members joining multiple groups, and participating in online Twitter discussions.
- Half of the participants published their "personal learning stories" which included excerpts from their blogs and journals. One teacher developed a YouTube Channel.
- Two participants reported ongoing communication with teachers they met on the site visit to Mine Hill. Seven of the participants have maintained contact with teachers they met on the site visit to Morris Township.
- Participant comments from focus groups:
    - "I love our discussions!"
    - I really love how we have so much time to talk. I learn so much from my colleagues."

    - "I would not have had the courage to try some of these things if not for the support of my colleagues."
- Participants reported several different types of collaboration:
    - A 6th grade teacher partnered with a 3rd grade teacher and they had their students working together on an authentic project in which they were creating history guidebooks for a museum.
    - Three of the participants worked together to launch competency-based math programs. This included observing on another and creating joint documents and plans. They also worked together outside of the cohort to solve problems.
    - Five of the teachers worked together on the implementation of "Personal Learning Projects." This also involved observing one another and the creation of a joint website for the projects.
    - Two of the teachers worked on an anti-bullying PSA campaign together where students designed their own anti-bullying campaigns. They supported one another with videotaping the work leading up to the final presentations and the final presentations.
- Participant reflection:
    - "It was going to Mine Hill and being able to see this work in action… being able to see the students managing their own classroom and having the opportunity to talk to those teachers that really allowed me to take these risks in my own classroom."

Category 2 Potential Value/ Knowledge Capital		
Code Label	**Definition**	**Potential Sources of Data**
Knowledge Acquired	This refers to knowledge gained as a result of participation in the cohort.	• Online discussion posts • Completed Assignments/Activities • Self-assessments • Feedback Surveys • Interviews
Skills Acquired	This refers the development of new skills as a result of participation in the cohort.	• Online discussion posts • Completed Assignments/Activities • Self-assessments • Feedback Surveys • Interviews
Change in Perspective	This refers to changes in perspective related to teaching and learning.	• Observations of face to face sessions – Research Journal • Online discussion posts • Completed Assignments/Activities • Self-assessments • Feedback Surveys • Interviews
Inspiration	This refers to new ideas and the enthusiasm of participants.	• Observations of face to face sessions • Online discussion posts • Completed Assignments/Activities • Self-assessments • Feedback Surveys • Interviews
Confidence	This refers to the level of confidence the participants have with regard to the	• Observations of face to face sessions • Online discussion posts • Self-assessments

	implementation of personal learning.	• Feedback Surveys • Interviews
Production of Tools and Documents to Inform Practice	This refers to the development of tools and/or documents developed to support the understanding and implementation of personal learning.	• Online discussion posts • Completed Assignments/Activities • Participant-Generated Documents

Examples from Previous Cycles of Research

- From feedback surveys:
  - "One of the most valuable things we learned today is that there is no research to support the theory of learning styles and that this can actually be harmful to students because they might believe that they can only learn in one way. It can be limiting. A better approach is to design classroom lessons using Universal Design for Learning. This promotes accessibility and is based on brain research."
  - I found UDL to be really helpful in my approach to teaching. I was doing some of those things before but not with any intentionality. Now I intentionally design for accessibility and to meet a variety of different student needs."
  - Learning how to develop a classroom snapshot has been an amazing tool. I now can develop snapshots that allow me to plan for the different needs of over 100 students."
  - "Design Thinking was really eye-opening for me. I now think of myself as a designer and use this process if designing my personal learning classroom. I also taught this to my students. I now recognize them as designers too."
  - "I had never heard of Genius Hour before. I used this to begin my journey into personal learning and the students just loved it. I will be thinking about how I can use this approach to cover my required standards and curriculum."
- From focus groups:
  - "I now really recognize the value of executive function skills and I embed strategies to help my students to develop them."
  - "I see my role now as being more of a facilitator of learning."
  - "In some cases, I am learning right along-side of my students and that's okay…"

    - Sometimes the things I try in class don't work out that well but I feel more confident in taking these risks because we are all doing it and we are doing it for the benefit of students. I also know that I can come to anyone in here and ask for help."
- From Research Journal:
    - "A teacher came to me over the summer to drop off a quote for a whiteboard table. (She is one of the flexible classroom grant recipients.) She stopped in to tell me about her new classroom set up and the fact that she is diving in full force. She removed her classroom desk and the doors on all of the cabinets because she did not want any barriers between she and the students and she wants the students to feel like it is their classroom. She also told me that she is the most excited to start this school year as she has been for almost 20 years."
    - "MB, one of the HS teachers contacted me over the summer to let me know that one of her students has continued with her personal learning project and actually created a 503c organization and developed a high school club. In order to get the high school club approved, she had to make presentations to the high school administrators. The teacher forwarded me an email from the student sharing the good news."
- The cohort produced several documents, tools, and artifacts including a "Genius Hour" packet, "Personal Learning Guidelines," Directions for creating a "Classroom Snapshot," Choice-Boards, Student Generated Rubrics, and videos of student work and student interviews.

Category 3 Applied Value/Indicators of Changes in Practice		
Code Label	**Definition**	**Potential Sources of Data**
Innovations in Practice	This refers to changes in practice.	• Self-Assessments • Online Discussion/Reflection • Classroom observation • Interviews
Implementation of Advice/Solutions/Insights	This refers to the implementation of advice solutions, and insights offered by other participants.	• Online discussion posts • Face to face discussion • Self-Assessments • Feedback Forms • Interviews • Classroom observations
Use of Tools and Documents to Inform Practice	This refers to the use of documents and tools developed in the cohort to support the implementation of personal learning.	• Online discussion posts • Face to face discussion • Self-Assessments • Feedback Forms • Interviews • Classroom observations
Use of Social Connections	This refers to participants setting up collaborative arrangements related to the implementation of personal learning or the leveraging of connections in the accomplishment of new tasks.	• Self-assessments • Interviews • Classroom Observations
Innovations in Systems	This refers to the implementation of new processes and/or requests for changes in policy.	• Self-assessments • Interviews • Classroom Observations

Transfer of Learning Practices	This refers to the application of knowledge, skills, processes, tools, or networks for learning in other contexts.	• Self-assessments • Interviews • Observations

Examples from Previous Cycles of Research

- Two of the teachers from the cohort presented at the District Evaluation Advisory Committee Meeting, sharing information they had learned in the cohort (UDL).
- Seven of the cohort members presented sessions on aspects of what they learned in the cohort on our district professional development day.
- One cohort participant presented at the Morris-Union Jointure to superintendents and other administrators about how they might advance personal learning in their district.
    - "When I presented at MUJC, the superintendents could not believe how advanced we were in our pursuit of personal learning. They were shocked that we had a personal learning cohort. They want to come and do a site visit here so they can see what we are doing."
- Ten of the participants presented to their colleagues during faculty meetings about their personal learning work.
    - When Therese presented some of the student work from her personal learning efforts, the teachers who had had some of those students were shocked. Just shocked. They were like; you got Johnnie to do that? I had Johnnie and he was a problem…" (school principal)
- Three of the teachers presented on aspects of their learning at our Professional Development School (PDS) Governance Meeting.
- From the focus groups:
    - "I am so grateful to Shannon for sharing her Genius Hour documents. This allowed me to try this right away."
    - "I can't thank Rosie enough for letting me go in and observe her classroom. I used a lot of her ideas in my own personal learning implementation."
    - "I would never go back to teaching math the old way now. I realize now, how many students I was holding back who were ready to move ahead. Whole group math instruction just does not work for the majority of students…"

APPENDIX D
SAMPLE OF COMPLETED CODEBOOK

Category 1 Immediate Value, Activity/Interactions			
Code Label	**Definition**	**Sources of Data**	**Evidence/Qualitative Data**
Level of Participation	This refers to how much a person participated in cohort activities.	• Research Journal • Self-assessments • Feedback surveys • Interviews	• "Every person participated in whole and small group activities." • I'd like to think I discussed a good amount with my colleagues' conversation. • "I would say overall, I feel like I participated pretty high." • "I really participated. I never participate in this kind of stuff. I have been avoiding it for years. I thought I knew all I needed to know and that I was really too old to be learning new things but I dived right in and started trying it and it really paid off." • "I was very excited to do it this year. I was excited to participate and it was really engaging." • "I don't think I missed any of the cohorts, I was there for every single one • "I came to each cohort meeting very eager to see what I could do, and then I'm the type of person who immediately puts it into action the next day. So that night, I'll be changing my lesson plan, trying to experiment with something I learned in the cohort. That's what I did throughout the year. I can tell you later on about some of the things I did, but that was my experience."
Level of Engagement	This refers to the level of cognitive	• Observation of face to face sessions	• "There was a lot of energy and enthusiasm in the room."

	and/or emotional engagement of an individual participant.	• Online discussion posts • Assignments • Self-assessments • Feedback surveys • Interviews	• "They were very enthusiastically engaged in this endeavor because the superintendent came into the room and the teachers did not even notice." • "When I was there, I'm picturing that, I definitely was focused." • "I think I can say I was pretty engaged in what was going on and again, being able to use some of that in my own classroom, so I would say I was pretty engaged." • "So, I was very excited to do it this year. I was excited to participate and it was really engaging." • "Yes, I was highly engaged. I really appreciated having this time to learn and work so I made the most of it. I am a hard worker in general but I was not going to waste that time. I got a lot done in every session."
Quality of Interactions	This describes the quality of interactions among cohort participants.	• Observations of face to face sessions • Online discussion posts • Joint work products • Self-assessments • Feedback surveys • Interviews	• "Everyone seemed very open to sharing even though they might be partnering with someone they did not know." • "I would say that the interactions were probably one of the most beneficial things that we all took in." • "The last day, we actually did a lot of sharing back and forth, from the language arts perspective, about how to use some of this stuff that we learned in language arts, so that was good. Yeah, I met a few people that I thought were ... it was great, that I didn't know before. So I felt that the interactions were

			great and the fact that you're at the table always helps because ... things that we were working on together, so it was good." • "That was one of the best parts. Sharing ideas with everyone else. Getting ideas from everyone else. Everyone was really engaged. I even learned things from working with high school teachers which I never thought would happen. I learned so much from Marci about technology."
Collaboration	This refers to the ways in which participants might work together, i.e. joint projects, peer support, co-authorship, etc.	• Observations of face to face sessions • Online discussion posts • Joint work products • Self-assessments • Feedback surveys • Interviews	• "The collaboration was extremely helpful." • "Yeah, I mean at first I was sitting with a couple of people from our school, which was nice because I normally don't get to speak with those people. Then as the cohort went along, we started branching out and then I even started working and talking with the language arts teachers from other schools. On the last day, we even said, "Wow, we never really got to talk to one another." • "The last day, we actually did a lot of sharing back and forth, from the language arts perspective, about how to use some of this stuff that we learned in language arts, so that was good. Yeah, I met a few people that I thought were ... it was great, that I didn't know before. So I felt that the interactions were great and the fact that you're at the table always helps because ...

			things that we were working on together, so it was good." • "The collaboration also, that piece of it is really helpful. Patricia was really helpful in the whole process for me as well. Just having her come and see it, and just the reassurance of knowing what you're doing is working, and it's the right thing. And then giving me some more ideas, that was helpful as well." • "A lot of times I sit there and I'm coming up with ideas while we're talking about stuff so I really enjoyed doing that. I liked being in the room and bouncing ideas off of people and I liked that we always had our little time to talk and stuff like that, and then hear things and then bounce ideas off of people and then hear what they did and then talk about things that I did, and it was just really nice being able to talk to everybody while we were there." • "I think that's what made it the most important, was that community basically."
Networking	This refers to the number of connections made with outsiders.	• Online discussion posts • Joint work products • Self-assessments • Feedback surveys • Interviews	• "Yeah. Oh yeah, we talk here, and have noticed, recently in the last month or so here. Now, I got other people from other classes and grade levels who are coming to me and asking, "Listen, I gotta teach health this marking period. What's this thing you're doing in health right now? That's been going on. I have at least two other people who

			are now gonna be on Classroom delivering Project Based learning also." • "I just would like to share that I am very thankful for being a part of the cohort. We're all. I felt like it's given me so much in terms of just strategies and a network of colleagues that can support my ideas and at the same time I can bounce my ideas off of, which is really neat, I feel like, because I do have a smaller network, but now I feel like my network is much larger, and we are all in it together. In doing it together, I find that other colleagues are starting to ask more about it. So I do feel like it's a shift that's happening slowly, but it's definitely happening. So that's probably it." • "I mean having those connections in the other schools, I think, and, as I shared with you from going to this convening, it's expanded it even outside of the school because I'm able to talk about what we were doing with teachers from other school districts in New Jersey when I went to this convening, so it expanded even outside of Clayfield Township." • "I love when we went to visit the school, but if we can create those connections going out and seeing how people are doing is this invaluable."
Value of Connections	This refers to the specific	• Frequency of interactions	• "A lot of sharing of ideas – inspiration type stuff. I got a lot of

	value that participants ascribe to their interactions.	• Online discussion posts • Self-assessments • Feedback surveys • Interviews	ideas from others. Sometimes I would share my plan with them ahead of time and get feedback. They might be like, no, don't do it like that, I tried it like this and it worked better this way. I would share my choice boards, things like that, you know, just to get some feedback or additional ideas." • "The group was great especially since I had Lori and Audrey and Noel who were on my grade level, so I was able to really sit and really plan with them. I really liked being able to see how it was working in other schools. It was actually very interesting to see how it was in Kindergarten. When we were, when we first started, I'm like how can we in Kindergarten ... students' families say do this. When the other teachers were telling us how Kindergarten, and I think it was second or first grade was using it, and I was like that's amazing." • "it was easier to plan out lessons because we were able to kind of like act as springboards for each other. So I think the act of planning in the cohort is what helped it be as successful was it was in my classroom." • "Yes. It was very, very helpful because there were high school teachers together, so we could talk together on a high school level about how it had to meet our age group." • "We had different age groups, so that was a new perspective"

			• "Dealing with other colleagues that have completely different subjects and completely difficult age groups and seeing what they have to deal with. Sometimes they had a different perspective and they can give me an idea, "Why don't you try this?" Then, I could do the same for them. It was really cool. I liked it a lot." • "it was nice to be able to troubleshoot stuff as a group." • "The other huge benefit was being able to sit with people from your own school or even other schools, because now I can talk to, say Melony, who's been using Classroom for years, and doing project based learning. We can now communicate back and forth. We're in each other's classes. So, we can see what the other person is doing. So it was huge to build and practice it with the group, but also now, have a little ... Well, I don't know a little cohort from your own building to be able to discuss with when you need help or advice." • "I think this has been just such a learning experience for me. I know I'm sharing out with others who have not, don't know, I guess about the cohort or haven't participated in it. I've been pushing it on them. I've been saying such great things about it. • "Definitely. Meeting people from different buildings that if I wasn't in that cohort I'd probably never meet or anything like that, and then

			being able to contact Patricia, for example, at any time, like I didn't know her before and now it's like that open communication with her and just with other people in other buildings, not only from the cohort but when you're explaining it to people in your building, then you're building that community within your own little community, so it's cool. Then having to explain it, it's like a different way of learning because you're explaining what you just learned to somebody else and that they can learn, and it's like a cycle- a circle.”

APPENDIX E
GLOSSARY OF TERMS

Glossary of Terms

Term	Definition
Activity List	A list of learner activities that includes the following: an expected timeframe for each activity, intermediate deadlines/due dates, individual, paired, and group activities, required, choice, and optional activities. Learners select from required and choice activities to plan their learning path. Optional activities allow for further personalization based upon students' readiness. Activity lists take into consideration individual and collaborative activities, as well as timeframes and group goals.
Answer Garden	A web 2.0 tool used for getting feedback from a group. Students key in answers to questions or click on existing answers to make a word cloud.
Blended Learning	An education program (formal or non-formal) that combines online digital media with traditional classroom methods. It requires the physical presence of both teacher and student, with some elements of student control over time, place, path, or pace.
Choice Boards	These are boards which list a variety of learning activities from which students can choose based on their abilities and/or interests.
Competency-based progression/learning	In this type of education program, students advance upon demonstrated mastery rather than seat or lesson time. Competencies include explicit, measurable, transferable learning objectives that empower students. Assessment is meaningful and a positive learning experience for students. Students receive timely, differentiated support based on their individual learning needs. Learning outcomes emphasize competencies that include application and creation of knowledge, along with the development of important skills and dispositions.

Connectiles	A team-building puzzle mean to be done in small groups in which participants use cryptic clues to align printed tiles to produce a 5X5 grid.
Design Time	Time allotted for the work of design, in this case, learning design.
Digital Backpack	A digital backpack is a tool developed by Bray & Mc Claskey (2016) in conjunction with the Center for Applied Special Technology (CAST) using the lens of Universal Design for Learning (UDL). To create a digital backpack, a learner completes a self-assessment in which they identify how they access information, engage with content, and express what they know and understand. This assessment is then used as a tool for discussion between the teacher and the learner in which learners can identify learning strengths, challenges, and interests. The teacher and the learner then work together to identify tools, resources, strategies, and skills that can support learning. The teacher then helps the learner identify online resources and technology that can support their learning.
Facilitation Grid	A chart with skills/concepts across the top and student names down the side that teachers use to gather assessment data. Observable data is coded to describe student mastery and plan for future instruction.
Facilitation Roadmap	Similar to a flowchart, this is used when a student is grappling with a problem to solve or trying to learn a new skill or concept. It provides suggestions for teachers to support the student at different phases in the process.
Flexible learning environments	Flexible learning environments provide students a choice in what kind of learning space works best for them, and help them to work collaboratively, communicate, and engage in critical thinking. Typically, furniture is moveable and varied including standing desks, conference spaces, design spaces, soft seating, etc.
If-Then Cards	This is an activity designed to build executive function. It is designed for students who may have challenges with

	attention or behavior. The goal is to have a student plan how they will eliminate distractions. It is a chart that includes If…, Then I will… and How did I do today? For example, if a student starts talking to me, then I will move my seat. At the end of class, the student reflects upon the implementation of their plan.
Interactive Boards	Interactive boards are designed to increase student responsibility and collaboration while providing student support. Students may require assistance during any point of the school day. Assistance might be requested in the form of clarification, one-to-one support, small-group instruction, or the provision of enrichment opportunities. Given the teacher's role as facilitator, he/she may be occupied with other students. The use of interactive boards enables teacher concentration on a student conference or small-group, mini-lesson while providing students an outlet to share feedback on the learning process. There are four types of interactive boards: (1) Help Board; (2) Expert/Peer Tutor Board(s); (3) Mini-Lesson Request/Sign-Up Board(s); (4) Parking Lot
Layered Discussion	A layered discussion provides opportunities for students to encounter a carefully crafted series of questions, move at their own pace, collaborate with peers, and delving deeper into areas of interest. Such discussion-based activities can take a variety of forms, based on what will engage learners as well as available resources. An example includes the Placemat Activity.
Learner profiles	Learner profiles are records of student's individual strengths, needs, motivations, progress, and goals used to inform learning. Goals are generated cooperatively by teachers and students. Student data is generated from multiple sources including projects, tests, presentations, quizzes, and software. Student data are provided to students, and teachers and students discuss these data.

Lucid Chart	A web-based service that allows users to collaborate in real time to create flow charts, organizational charts, mind maps, and other diagrams.
Nearpod	A device agnostic online platform that allows teachers to create interactive lessons/presentations with quizzes, surveys, open-ended questions, and drawings. The software provides analytics of student performance.
Padlet	An application to create online bulletin boards. It can support text, pictures, videos, and links. The boards can be interactive allowing students to answer questions and respond to the posts of others. It can also be used to create collaborative virtual bulletin boards.
Pear Deck	An interactive presentation tool from which audience members can log in to the presentation in real-time from any device. The presenter can ask questions and display the results.
Personal learning paths	Students are held to performance standards but the school model allows for multiple pathways to achieve and demonstrate mastery of these standards. Students make choices about the content and structure of learning and the school uses varied instructional strategies and curriculum materials to meet the needs of all learners. Time for one-on-one academic supports is built into the school day and there are opportunities for students to engage in meaningful learning experiences outside of school.
Placemat Activity	A tool for the facilitation of discussion. A small group is provided large chart paper in which they record individual responses to a question or topic on the outside perimeter of the paper. The small group then discusses these responses and synthesizes them in the center of their paper. This is followed by a whole group discussion in which the groups share their work by reporting on what they wrote in their center circle.
Popplet	A web-based tool that allows users to collaboratively visualize ideas by creating graphic organizers, timelines,

	and other visual diagrams. It can also be used as a presentation tool.
Quizlet	A mobile web-based application is designed to help students learn vocabulary words through tools and games.
Resource Area	A table or area in the classroom where all materials are student accessible. Table captains or student helpers can retrieve and distribute materials at the start of a lesson and/or unit. Students then go to the table or area, on an individual basis, to take any materials they need to complete their assignment.
Scaffold for Learning	Teachers use this visual tool to plan for differentiated learning experiences around curricular goals at the unit level.
Socrative	A cloud-based student response system that allows teachers to create surveys or quizzes. It allows users to see responses and has a game features where students can compete against one another. Teachers can download reports. It also provides a feature for a virtual exit ticket.
Speed Networking	This is an activity in which learners interact rapidly with their peers to share a concept, idea, or experience.
Task-Persistence Cards	This is an activity designed to increase executive function for students who have difficult persisting in a task. Students fill out a card with these categories: I Feel; Because; But I will Try To… For example, I feel frustrated because I do not understand this math problem but I will try to get some assistance from the teacher.
Teacher Cloning	As a teacher moves to a more personalized classroom, it is important to create supports for students and to give the impression that the teacher is everywhere. With these constructs, students feel supported, even if the teacher is working with their peers. The teacher "clones" themselves to ensure that students become proficient with skills "just-in-time" for them. An example might be a pre-recorded video at a learning station.
Tic-Tac-Toe Boards	This activity provides different activities/assignments from which students can choose. They must complete

	three in a row. Many teachers put a required activity in the center and explain that students must go through the center to achieve tic-tac-toe.
Todays Meet	A web-based discussion tool that allowed backchannel chat, pools, forms and surveys as well as virtual exit tickets. The service closed as of June 2018.
Totally 10	A list of different activities/assignments from which students can choose. A point value is assigned to each option and the students can pick whichever choices they want as long as they total 10. Activities at foundational levels of thinking are worth fewer points, so students will have to complete a greater number of activities in order to reach 10. A student that selects more difficult activities will complete a smaller total number of activities.
Transfer Tasks	A transfer task requires students to apply knowledge that has been acquired through an authentic learning unit, which acts as a high-level summative assessment of students' mastery of the content.
Universal Design for Learning (UDL)	Universal Design for Learning is a set of principles for curriculum development that give all individuals equal opportunities to learn. UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone--not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs. UDL focuses on recognition networks or the "what" of learning, strategic networks, or the "how" of learning, and affective networks, or the "why" of learning. The principles advocate that teachers provide multiple means of representation, or present content and information in different ways, multiple means of action and expression, or differentiate the ways students can show what they know, and provide multiple means of engagement, or stimulate motivation and interest for learning.

Visualization Techniques	A technique in which a person visualizes themselves achieving a desired outcome such as passing a test or completing a performance.