PROVIDING ENGLISH LANGUAGE LEARNER TEACHERS
PROFESSIONAL DEVELOPMENT THROUGH DIGITAL BADGES

by
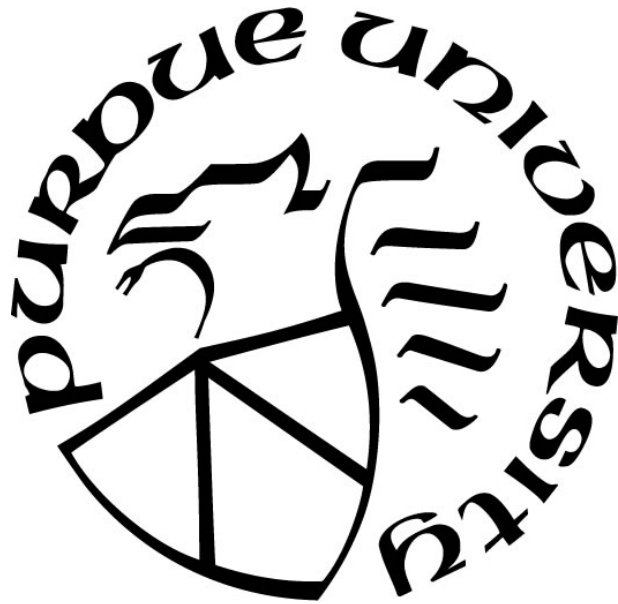
Rodolfo Rico

A Dissertation

Submitted to the Faculty of Purdue University

In Partial Fulfillment of the Requirements for the degree of

Doctor of Philosophy

Department of Curriculum and Instruction

West Lafayette, Indiana

August 2019

THE PURDUE UNIVERSITY GRADUATE SCHOOL
STATEMENT OF COMMITTEE APPROVAL

Dr. Tim Newby, Chair

       Department of Curriculum and Instruction

Dr. Wayne Wright

       Department of Curriculum and Instruction

Dr. Jennifer Richardson

       Department of Curriculum and Instruction

Dr. Sunni Watson

       Department of Curriculum and Instruction

Approved by:

       Dr. Janet Alsup

              Head of the Graduate Program

Para mi Madre Y Padre

ACKNOWLEDGMENTS

know how to connect my interest in learning technology to my desire to help students from immigrant families.

To Dr. Watson, thank you for teaching me how to collaborate on research and believing that I could help your research group when I was new in the LDT program. The experience I gained on those projects helped prepare me for conducting my own research and gave me the confidence to present at conferences when I didn't feel like I could. When I look back at the key points in my graduate education, I always think of our weekly meetings and how much I learned from watching you and Dr. Ertmer talk about the data.

To Dr. Richardson, thank you for teaching me how to be an instructional designer and consult with faculty. Your consulting and online development course was key to preparing me for my current role. The courses I consulted on provided me the experience I needed to know what questions to ask when developing a course and how to work with faculty who may not be familiar with online course design.

To my friend and colleague in second language acquisition research Youngae Choi. You inspired me when didn't think I could complete what I started. Seeing you progress through your studies and become the scholar you are gave me the guidance I needed when I needed direction most. I thank you for all the words of wisdom, patience and kindness you showed me in my journey through my doctoral studies.

And finally to all my classmates in the LDT program. When I entered the program in 2013 I had the privilege to meet some amazing people. Erin Besser, Elizabeth Besse, Adrie Kohler, Jieun Lim, and Yizhou Quan. You all made my day-to-day experience a joy. Working with each of you in EDCI 270 was one of the best parts of being in the LDT program and I will always have fond memories of our time together in the lab. To Aggie and Rhonda, who were always ready to help with any administrative issue I came across—the program would not be what it is without the support you both provided all of the faculty and students.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Author: Rico, Rodolfo. PhD candidate
Institution: Purdue University
Degree Received: August 2019
Title: Providing English Language Learner Teachers Professional Development through Digital
    Badges
Major Professor: Tim Newby

The purpose of this qualitative study was to investigate the use of a digital badge system to provide professional development (PD) for teachers of English language learners. The study asked several research questions to determine if Purdue's Passport system was effective at delivering ELL teacher PD. First, the study asked, is a digital badge system a viable tool for delivering professional development to in-service teachers of English language learners? This question helped determine if the in-service teachers participating in this study would be able to obtain the training materials and navigate the online system on their own to obtain the digital badge.

Then, the study asked, what types of training do ELL teachers think could be converted to digital badges? This question was asked to identify the types of trainings the participants in this study believed could be transferred to an online system such as Purdue's Passport system and delivered as individual badges teachers could complete with little to no assistance. This question also helped investigate how teachers perceive the current training they attend in face-to-face sessions.

The final question the study asked was, what are ELL teachers' perceptions of digital badges and their role in professional development? The final question was asked to determine if

the participants' attitudes toward digital badges changed throughout the study and what the participants believed digital badges' role could be in delivering ELL teacher professional development.

The data collected in this study included the participants' written reflections within the digital badge system, pre and post-surveys and interviews after they completed the running record badge. The results of this qualitative study suggest that for in-service teachers there are some benefits to delivering ELL teacher PD through digital badges. Results indicate that the participants enjoyed the ability to complete the training on their own schedule and had no issues viewing the content within the running record digital badge. The participants also had numerous recommendations for the types of training they believed could be converted to digital badges and how a digital badge system could be implemented at their school.

CHAPTER 1. INTRODUCTION

With about 4.6 million English language learners (ELL) currently in public schools across the United States (NCES, 2017), more teachers who are prepared to help linguistically diverse students are needed to keep up with the steady increase in the ELL student population. Due to cultural and linguistic differences, ELLs are a group of students that have unique learning needs (Snyder, Witmer, & Schmitt, 2017). Nonetheless, most teacher education programs do not provide the experience required to help meet the needs of ELLs in the classroom (Estapa, Pinnow, & Chval, 2016).

To help meet the learning needs of diverse sets of learners, K-12 classroom teachers are constantly in search of new knowledge to improve their instruction. While some teachers may return to a traditional university to obtain a graduate degree, most in-service teachers have attended professional development workshops that are targeted towards issues they may be struggling with in the classroom. One issue that has received increasing focus from educators is the significant increase in the English language learner student population (Molle, 2013). Students identified as English language learners (ELLs), come from diverse backgrounds and need additional support as they acquire a new language. Providing support can often be a challenge for teachers who may or may not have been trained on strategies to support English language acquisition. Consequently, the responsibility of training teachers who work with ELLs falls on the school and frequently comes in the form of individual professional development sessions (Smith, 2014).

Teachers who work with ELLs face a number of obstacles that can make classroom instruction a challenge on a daily basis. One reason why ELL instruction can be difficult for

inexperienced teachers is the wide range of reading, writing and speaking abilities ELL students may have in their native language. There is a common misconception that ELLs all have similar reading abilities in their native language, when in fact there is as much range in reading ability as a teacher would find in a monolingual English classroom (Ford, Cabell, Konold, Invernizzi, & Gartland, 2013).

1.1 Teaching English Language Learners

As the population of English language learners continues to increase it is critical that teachers are prepared to support ELLs cognitively and linguistically (Coronado & Lewis, 2017). Training on assessing ELL students' reading, speaking and writing abilities is typically provided to all new bilingual teachers through professional development sessions. However, for teachers working with ELLs, it is important that they consider not only a student's reading ability but also consider their cultural background to make instruction meaningful (Buteau, Gerard & True, 2009). Teachers not taking a student's culture into account may find it difficult to deliver subject matter content due to the lack of background an ELL student may have with a specific subject.

One subject area where ELL teachers often struggle is in science education. Training science teachers who are prepared to work with ELLs has long been a challenge, and improving learning of ELLs is one of the most important challenges currently facing science education (Shaw, Lyon, Stoddart, Mosqueda, & Menon, 2014). Consequently, ELL students continue to fall behind academically when compared with native English speakers.

Due to the importance of reading in every subject area, it is also critical that ELL students are supported linguistically throughout their entire schooling. Recent data indicates that ELL

students in eighth grade are losing gains in reading test scores they had previously made. The National Assessment of Educational Progress (NAEP) shows that eighth-grade ELL students' reading scores have declined and eighth-grade ELLs score about 45 points less on the reading assessment than non-ELL students (NCES, 2016). This points to a need for providing support for ELLs at all grade levels.

As school districts increasingly focus on ELL student achievement, teachers are engaging in more professional development to improve their skills and pedagogical knowledge (Friend, Most, & McCrary, 2009). Professional development could provide part of the solution to help teachers understand the needs of linguistically diverse learners and ensure gains made are not lost as students progress from elementary to high school.

1.2 Statement of the Problem

While the need for teachers working with ELLs to engage in additional professional development is clear (Teemant, 2014), the amount of time teachers spend on training to work with ELLs ranges drastically. Although the number of ELL students continues to increase nationwide, less than half the states mandate that teachers working with language learners receive training (Hansen-Thomas, Grosso Richins, Kakkar, & Okeyo, 2014). The lack of consistency when it comes to ELL teacher preparation is one key issue that needs to be addressed because teacher training can have a great impact on ELL student learning.

Findings indicate that the quality of literacy instruction vastly improves when ELL teachers receive training (Buysse, Castro, & Peisner-Feinberg, 2010). However, we often discover that teachers who work with ELLs are provided minimal training for working with language learners.

Due to the lack of training, teachers often feel ill-equipped to help ELLs, and a majority of them indicate they would like specialized training to help ELLs (Franco-Fuenmayor, Padrón, & Waxman, 2015).

With the increase in online learning opportunities, school districts struggling to train teachers could look to online options, which have been shown to improve teacher pedagogical knowledge and practice (Dash, Magidin De Kramer, O'Dwyer, Masters, & Russell, 2012). As more online options become available, such as digital badges, the viability of online teacher PD needs to be studied to identify areas of effectiveness and areas of improvement.

1.3 Purpose of the Study

The purpose of this study was to evaluate if an online badge system could be used to effectively deliver training to teachers currently working with English language learners. Based on prior findings, digital badge systems has been used to incentivize students in positive learning behaviors, identify student progress and credential achievement (Gibson, Ostashewski, Flintoff, Grant, & Knight, 2013). However, since digital badges are relatively new, there are still questions about what role badges can play in addressing some of the current issues with in-service teacher PD (Diamond & Gonzalez, 2014). This is especially true when it comes to ELL teacher PD, where a search of numerous databases found no studies on the topic.

Due to the lack of research on digital badges and their use for in-service teacher professional development, the study's purpose was to determine if a digital badge system could be used to deliver training to in-service ELL teachers. The viability of the digital badge system was explored to identify both advantages and disadvantages of digital badges. With the aim of this study being

to investigate the outcomes of completing a digital badge for English language learner teacher PD, the study focused on the following research questions:

1. Is a digital badge system a viable tool for delivering professional development to in-service teachers of English language learners?
    a. Do ELL teachers think it is comparable to previous professional development they have received face-to-face?
    b. What are the advantages and disadvantages of PD administered face-to-face, online or in hybrid formats?
2. What types of training do ELL teachers think could be converted to digital badges?
    a. What types of training would ELL teachers prefer to complete online through digital badges?
3. What are ELL teachers' perceptions of digital badges and their role in professional development?
    a. How much time would they be willing to spend completing PD on a digital badge system?
    b. What barriers might hinder teacher use of a digital badge system for PD? What are the perceived advantages if any?

1.4 Significance of the Study

The study investigated how teacher professional development could be supplemented through the use of an online digital badge system and evaluated if such a system is appropriate for in-service ELL teachers. With the growing ELL student population, the need for teachers who are prepared to work with language learners will only continue to grow (Lucas & Villegas, 2013). Studies suggest that even teachers who have taken coursework on working with ELLs struggle teaching language learners once they get into the classroom (Figueiredo, Hammill, & Fredricks, 2011). Consequently, it is important that all methods that can help prepare ELL teachers are explored.

Online modules are increasingly being used to deliver in-service professional development and are especially beneficial to teachers in rural areas who lack opportunities for ongoing training (Mims & Baker, 2016). Since the growth in the ELL student population is more rapid in rural versus urban areas, delivering training to teachers is often a challenge (Shim, 2013). Distances between schools can make attending off-site PD an issue and hamper the options to follow up on training. Online professional development has the benefit of allowing teachers to customize their own training path and complete training at their own home at a time convenient to their schedule (Green & Cifuentes, 2011).

Since digital badges are completed entirely online, they could provide many of the advantages of online modules and could be an option to train teachers on specific skills for success with ELLs. While there are current grant funded projects by Dr. Joyce Nutta, at the University of Central Florida, investigating how digital badges can be implemented for EL teaching skills, at the time of this study's inception the use of digital badges for in-service ELL teacher PD had yet to be explored. This study therefore helped in determining if teachers can benefit from online training through digital badges. The results of this study are relevant to universities, teacher preparation programs and in-service teachers who work with English language learners. Study results could also benefit school districts and state education agencies, which may be looking for alternative methods of delivering professional development. My hope is that the results of this study will help answer if ELL teachers will buy into taking PD online to earn digital badges, how effective digital badges are when compared to face-to-face PD and if ELL teachers can gain the types of experiences needed through digital badges to be successful when helping students learn a new language.

1.5 Research Design Overview

For this study, I used an exploratory design to investigate delivering professional development for ELL teachers using a digital badge system. An exploratory research design was selected because it has traditionally been used to investigate areas where research is limited and identify potential categories for further study (Marshall & Rossman, 2011). An exploratory design allows the flexibility and open-mindedness necessary to investigate topics where prior research is scarce (Stebbins, 2001). This study employed a basic interpretive approach, which is commonly used in qualitative research studies in education to examine how participants interpret their experience (Merriam & Tisdell, 2016). Consequently, since the use of digital badges for providing ELL teacher professional development has yet to be assessed, this exploratory study sought to gain insight into the digital badge systems potential for delivering PD to in-service ELL teachers. The qualitative data collected included teacher interviews, surveys, and the teacher's reflections on the ELL student videos within the digital badge system training. All the data was used to determine if the digital badge system could be used to deliver professional development to teachers working with ELL students.

1.6. Dissertation Overview

For this dissertation, I have included six chapters and provided the surveys and interview protocol as part of the appendices. The first chapter provides a background to the issue of ELL teacher preparation and states the significance of the study. The second chapter provides a summary of relevant literature in the field of ELL teacher professional development and the current application of digital badges. The third chapter provides an overview of the running record digital badge development process. The fourth chapter goes into the research methods used to conduct the study, how participants were recruited, the collection of data including the participant's use of

the digital badge system, and the instruments used to collect data. Fifth chapter includes the results

of the study by research question. The final chapter presents the discussion of the results and the

implications of the results for teachers of English language learners.

CHAPTER 2. LITERATURE REVIEW

Based on a review of various scholarly journal databases, the study presented in this dissertation is the first to examine the use of a digital badge system for teachers currently working with students identified as English language learners. The following literature review consequently focuses on how professional development is currently delivered to teachers of English language learners and how digital badges are being used in various settings.

2.1 Professional Development For Teachers of English Language Learners

While the number of ELL students continues to increase nationwide, few states mandate ELL teacher training (Hansen-Thomas et al., 2014). With the vast increase of ELL students, it is important that teachers working with language learners feel prepared and competent to be successful. What is often overlooked is how the teacher's own beliefs about diverse learners can impact an ELL student's learning experience. When working with ELLs, it is important that the teacher not only sees himself or herself as capable of helping diverse groups of students, but also recognizes that just because ELLs cannot speak English, that does not mean they are deficient as learners. Teachers who have limited experience working with ELLs tend to have lower expectations of them, and thus training should be provided to not only help teachers pedagogically, but also help make them aware of their own dispositions toward ELLs (Jiménez et al., 2015). Professional development could then focus on cultivating teacher self-efficacy, which could help teachers develop their ability to interact with ELL students and deliver instruction.

Part of the reason why this issue exists is that while the number of ELL students from diverse backgrounds continues to increase across the United States, diversity in the teaching

profession is lacking. Typically, teachers who work with ELLs are predominantly white females, from middle-class backgrounds who only speak English (Knight & Wiseman, 2005). Accordingly, it is vital that professional development for teachers of ELLs includes multicultural skills and helps raise teachers' awareness of instructional strategies that are effective with language learners.

Students entering U.S. classrooms for the first time are also at a disadvantage in that they are unfamiliar not only with our western style of teaching but also because students may have had gaps in formal schooling (DeCapua & Marshall, 2011). To address this issue, multicultural professional development could be an area of focus for schools with large ELL student populations and could help teachers who may lack experience with diverse learners. A survey of teachers working with ELLs in North and South Carolina found that teachers were uncomfortable with ELLs initially, but once they received training and resources they felt prepared to help their ELL students (Kolano, Lachance, & Coffey, 2014). The majority of teachers surveyed also indicated they could benefit from more direct experience with ELLs and course work to understand the struggles their ELL students face culturally and linguistically. These findings point to a need for more field experiences with diverse students for all pre-service teachers and the need for additional courses that focus on multicultural education.

Since going back to school for additional course work is not an option for all teachers, schools have used PD successfully to train teachers who work with ELLs. A study conducted with mathematics teachers of ELLs found that PD helped improve their instructional practices, classroom management and ability to engage their ELL students (K. E. L. Ross, 2014). The results of this study are promising, especially for math educators, and show some of the areas that site-based PD could emphasize for ELL teachers. Nonetheless, this study also recognized the lack of

PD available for mathematics teachers working with ELLs and mentioned the need for more focus on ELL teacher development.

As more schools look for solutions to prepare their teachers to work with diverse student populations, there are areas PD should focus on that are crucial to ELL student success. One area that needs more emphasis is the teachers' own knowledge of ELLs. Findings suggest teachers would benefit from training on strategies to work with the wide range of language levels that they see from ELLs in their classrooms and strategies on how to explicitly teach English language skills to ELLs (Hernandez, Herter, & Wanat, 2008). The teachers in the study also stated there is a need for parent education to help ELLs at home and connect them to resources in the community. This is indicative of another major challenge many ELLs face, which is the lack of literacy support at home. As one participant in the Hernandez et al. (2008) study said, "A lot of times I've had parents who don't have the literacy skills." To help meet the need for additional parent involvement, recent educational policy updates also provide Title III funding for language instruction programs than include requirements for parents and community engagement (U.S. Department of Education, 2016).

Combined, these challenges can be daunting for most teachers who work with ELL students and lead to added stress for educators who have to go beyond their normal role. In addition to their instructional role, teachers who work with ELL students have to be advocates for their students with administrators and mainstream teachers, and also set up programs for parents on their own time (Trickett et al., 2012). Furthermore, since many ELL students enroll later in the school year or leave for extended holiday breaks, the transient nature of ELL student populations can cause a disruption to the overall learning process. Therefore, a focus for PD could be to provide

teachers with coping strategies to manage the additional roles and stress they may experience when teaching ELLs.

However, while the literature indicates that teachers benefit from focused PD on providing ELL support (Buysse et al., 2010; K. E. L. Ross, 2014), there is still a need to identify how to best deliver the training to teachers who already have countless demands on their time. Traditionally, PD is offered at school as individual sessions on specific skills that school districts determine teachers need to develop. These sessions can take place as part of a whole day of trainings or after-school mini sessions. One of the challenges with current PD is that it can be cost prohibitive for schools to provide regularly. Consequently, since most are held as isolated trainings, there is no opportunity to master skills in follow-up sessions (Smith, 2014). This may be part of the reason why current PD models are rarely seen as effective and teachers are usually left dissatisfied with the quality of the training they receive (Digital Promise, 2015).

Yet notwithstanding the dissatisfaction with current professional development, research on what makes PD effective is still lacking (Zhang et al., 2012). While teachers often attend PD workshops, most teachers indicate they are still in need of training that is relevant to them for interacting with students (Downer, Kraft-Sayre, & Pianta, 2009). Research suggests that while the methods schools use to train teachers are similar in rural and urban areas, schools rarely use methods that are seen as effective for delivering in-service training (Wallace, 2014). Studies consequently need to be conducted to evaluate what makes PD successful and how to best deliver training to ELL teachers.

2.2 Delivering Professional Development to In-Service Teachers

Professional development comes in many forms, but not all PD is effective at improving the quality of teachers' daily instruction (Soine & Lumpe, 2014). One of the issues with current PD is that it typically lacks the follow-up needed to master the targeted teacher skills (Smith, 2014). This lack of follow-up can lead to teachers not implementing the instructional strategies in their classrooms. Lack of implementation, along with lack of teacher-centeredness and fragmentation are features often associated with ineffective PD (Bissonnette & Caprino, 2014). To be successful, professional development has to include several features. Typically PD that is seen as effective is ongoing, incorporates strong leadership, offers opportunities for collaboration and implements practices to support student learning (Parsons, Ankrum, & Morewood, 2016).

Professional development that is effective also shares several core features, which include the focus on content, providing opportunities for active learning, and training that is coherent to overarching learning goals for the teachers (Quick, Holtzman, & Chaney, 2009). Furthermore, PD is more likely to be effective when it is based on student data and includes on the job coaching (Castillo, March, Tan, Stockslager, & Brundage, 2016). Thus, it is important for school administrators to review their current PD and determine if they are modeling effective learning practices.

In 2015, the Elementary and Secondary Education Act (ESEA) was reauthorized under the Every Student Succeeds Act (ESSA) mandates the establishment of procedures for assessing ELLs (Rivera & Miller, 2019) The ESEA act also provides guidelines for how professional development is developed and facilitated. The guidelines recommend that PD training be a sustained, ongoing collaborative process that allows for personalization, is an integral part of district wide

improvement plans, improves classroom management skills, and is designed to give teachers of English learners, and other teachers the knowledge and skills needed to provide appropriate language support services (U.S. Department of Education, 2016). ESEA guidelines require that part of Title III funds be allocated toward providing ongoing PD for teachers of ELLs and also for delivering effective language instruction educational programs. The table below indicates how professional development is defined under the new ESEA guidelines.

Table 1: ESEA Guidelines for PD

A) Are an integral part of school and local educational agency strategies for providing educators with the knowledge and skills necessary to enable students to succeed in a well – rounded education and meet the State academic standards and:	B) Are sustained (Not short-term workshops) intensive, collaborative, job-embedded, data driven and classroom focused.
PD activities may include: - Improve and increase teachers' knowledge of academic subjects, -Understanding of how the students learn, ability to analyze student work and adjust instructional strategies. - Are an integral part of broad school-wide and district-wide educational improvement plans. - Allow for personalization plans for each educator to address the educator's specific needs identified. - Advance teacher understanding of effective instructional strategies that are evidence based and improve student academic achievement.	- Are designed to give teachers of English learners, and other teachers the knowledge and skills to provide appropriate language support services to those students. - Include instruction in the use of data and assessments to inform and instruct classroom practice. - Are designed to give teachers of children with disabilities or children with developmental delays the knowledge and skills to provide instruction and academic support to those children. - Provide follow-up training to teachers who have participated in activities described that are designed to ensure that the knowledge and skills learned by the teacher are implemented in the classroom.

2.4 Digital Badges

Digital badges come in a variety of forms but essentially are visual representations of an acquired skill. When it comes to certifying skills obtained, digital badges are quickly gaining acceptance from companies that are looking for practical solutions to employee training. Survey results suggest that while the use of digital badges is relatively new, employers are willing to use badges or learn about how badges can help certify employee skills (Raish & Rimland, 2015).

There are some differences in how digital badge systems work, and sharing accomplishments functions differently depending on if the user is in an open or a closed badge system. In a closed digital badge system, badges earned can only be displayed within the online environment in which all the tasks associated with the badge were completed. This means that those who obtain a digital badge are only able to display their accomplishments on the website in which it was earned (O'Byrne, Schenke, Willisiii, & Hickey, 2015). For those earning digital badges, this feature of closed badge systems can make it difficult to display achievements to potential employers, who may not have access to the system. Thus, using a system that makes digital badges available for display on any website would benefit educators seeking to share their newly acquired skills with those outside the digital badge system.

In contrast to a closed badge system, in an open digital badge system, badges earned can be displayed on any website and carry embedded data about the assignments completed to earn the badge (Buckingham, 2014). This is valuable to digital badge earners because it allows them to share their accomplishments on social media or their own online portfolio (Hansen-Thomas et al., 2014).

Another distinction to be made is in how digital badges are implemented. While open badges can consist of just the assessment needed to certify mastery of specific competencies, instructional digital badges also include examples, demonstrations, and instructions for the student to learn new skills (Newby, Wright, Besser, & Beese, 2016). By scaffolding the activities toward mastering a new skill, the digital badge becomes more than the certification of skills but also a tool for delivering instruction. Digital badges therefore offer instructors many options for teaching and assessing various skills in an online environment.

Digital badge systems, such as Purdue University's Passport system, also provide many of the features of learning management systems. For example, Purdue's Passport system allows for instructors to provide students with feedback and grade student submission. The Purdue Passport system also gives instructors the ability to embed videos and documents as additional resources for students. The instructor also has the flexibility to create their own digital badge, including selecting the image that will be displayed when students are awarded the badge (Bowen & Thomas, 2014).

The capabilities of digital badge systems, such as Purdue's Passport, to offer the capabilities of a learning management system and the ability to develop digital badges to assess a variety of skills show some of the reasons why digital badges are becoming increasingly popular with employers. One big advantage for teachers is the flexibility of completing a training at their own pace and earning the badge completely online. Additionally, digital badges include metadata about the awarding institution and task completed (Gamrat, Zimmerman, Dudek, & Peck, 2014).

Digital badges can also motivate employees to complete training because badges earned can be shared on various social media platforms. Furthermore, by allowing trainees to select the digital badge they would like to complete, badges also help promote self-regulated learning and provide an incentive for completing the training (Cucchiara, Giglio, Persico, & Juliana, 2014).

Additionally, since an undergraduate degree only offers entry-level skills needed for some professions, there is potential for digital badges to be implemented to deliver professional development (Lewis & Lodge, 2016). In professions such as K-12 teacher education, it is typical for state education agencies to require proof of ongoing professional development for renewal of teacher licensure. A digital badge system could therefore offer a solution for both state education agencies and teachers to track and report PD as required for licensure renewal.

Digital badges also offer flexibility to training developers and can be implemented to learn a variety of skills, from instructional software to teaching strategies. School districts are starting to recognize the capability of digital badges to motivate teachers and have began offering digital badges as professional development. For example, one district in Prosper, Texas, started with offering teachers digital badges to learn Google tools (Ullman, 2017). The badges included video tutorials and an assessment to earn the digital badge on each specific Google tool. Once their teachers completed the Google badges, they asked for more digital badges. The district complied by offering not only digital badges on technology tools but also badges on implementing the substitution, augmentation, modification or redefinition (SAMR) model of technology integration.

Conducting professional development through a digital badge system also has the advantage of providing ongoing feedback as teachers complete assignments online. Prior studies

suggest that teachers liked how digital badges "chunk" content throughout a PD training and show progress toward mastery of each skill (Diamond & Gonzalez, 2016). Digital badges can also help improve teacher self-efficacy because as badges are acquired, the learner gains confidence in the skill the digital badge represents (Randall, Harrison, & West, 2013). Since most teachers who work with ELLs tend to lack confidence in their instruction (Franco-Fuenmayor et al., 2015), digital badges could thus be implemented to train teachers on the skills needed to be successful with ELL students.

By allowing the user to see specific tasks that need to be completed to earn the digital badge, these systems also offer the added advantage of transparency in the credentialing process (Buckingham, 2014). Research suggests that ELL teachers tend to play additional roles in the students' lives (Trickett et al., 2012). Consequently, due to the added demands on their time, ELL teachers could benefit from the clearly outlined tasks needed to earn a digital badge.

Moreover, in allowing companies to view exactly the task the employee completed to earn the badge, digital badge systems also add credibility to the training process (Grant, 2014). Additionally, digital badges allow for various types of assessment and would allow teachers to train on a wide range of skills (Casilli & Hickey, 2016). Badges could therefore be created to train all teachers on specific skills, and those teachers working with ELLs could select badges that are most relevant to their students' needs. Therefore, the purpose of this study is to evaluate if an online badge system can be used to effectively deliver training to teachers currently working with English language learners.

CHAPTER 3. DEVELOPMENT OF RUNNING RECORD BADGE

Various companies have developed digital badges that are currently being used to train people on a variety of skills. One popular digital badge system is Mozilla's Backpack, which according to their own website has over one million badges stored. The digital badge system used for this study, Purdue's Passport system, is currently being used to train students at the university on a variety of technology skills including using screen capture software, web design, conducting research in scholarly databases and developing interactive assessments. However, since this study's purpose was to investigate the ability of the digital badge system to train in-service teachers who currently work with English language learners, a new badge needed to be developed.

Training teachers to conduct running records was selected as the digital badge objective due to the assessment's frequent use in assessing a student's reading level and progress as a reader (Gillett & Ellingson, 2017). To conduct a running record, the teacher will listen as the student reads a short passage and make note of any words the student struggles with. Research indicates that schools that implement running records outperform schools that don't in reading and writing (J. Ross, 2004). Therefore, the new badge was developed to train teachers on how to conduct a running record and analyze the results to determine a reading level that the student is comfortable with.

To begin the development of the digital badge, permission was obtained to use a subset of videos that were recorded with students at various schools in Tippecanoe County, Indiana. The videos were part of a larger project to develop a website for Dr. Wayne Wright in the language and literacy education program. The videos recorded assessed the students ability to read in

English and were embedded in a website that was developed as a repository for ELL teacher training materials. The repository came to be known as the Purdue English Language Learner Language Portraits or Purdue ELLLPs.

The Purdue ELLLPs website design team included my colleague Marquetta Strait and I, and we consulted with Dr. Wayne Wright to determine the features the website needed to include. Since the objective was to hold both videos and assessment tools, a design was recommended that included embedded videos with forms that could be downloaded to a student's personal computer. Furthermore, the design team also recommended that the website be hosted outside of the Purdue network and therefore Square Space was selected to design and host the website.

The next step included the design of the website and developing the forms needed for the assessment. The forms were initially Microsoft Word documents but were converted to PDF files using Adobe Acrobat Pro. The objective was to have students in the teacher education program view videos and using the forms included on the website, determine the reading level of the student in the video. Each student language portrait on the Purdue ELLLPs website included a writing sample, an oral interview and a reading sample.

In total the Purdue ELLPS website featured language profiles for 12 elementary school students, 6 middle school students and 8 high school students. To develop the language profiles I worked with Dr. Wright and traveled to various schools across central Indiana. Permission was obtained from the teachers and administrators at each school and we interviewed and recorded students reading various texts. To determine their level for English reading fluency, the students

in the language profiles were asked to read books at various levels of difficulty. Interviews were then conducted and when needed I provided translation for the student to understand interview questions and writing samples were then obtained from the students and used to develop the individual profiles on the website. A subset of videos was then selected to develop the running record digital badge for this study. The videos selected included one middle school student and two high school students.

In accordance with the waivers, pseudonyms were used to maintain the students' anonymity. Recording and editing of the videos was completed in the spring of 2016 and development of the ELL running record badge began in June 2016. The digital badge was developed using Passport and included four challenges. The first challenge included a completed running record and the video of the student reading, which participants were to analyze to gain familiarity with conducting a running record. The other three challenges included videos of students reading short passages and gave participants practice completing a running record on their own.

The videos are about one minute each, which is the typical length of time a teacher would listen to a student reading to conduct a running record in the classroom. The forms were attached to each challenge as downloadable PDF files, and each challenge also included a text box for teachers to write a reflection about the student's reading ability. The learning outcomes were also stated at the start of the badge, as well as instructions for how to complete each challenge. The initial badge development was completed in August 2016 and reviewed by an expert in English language learner education in September 2016.

Figure 1. Screen Shot of Running Record Digital Badge

In addition to the review by an expert in ELL education, a group of students in an English as a foreign language class also tested the badge in the fall of 2016. Based on feedback from both the ELL expert and the student group, updates were made to the running record digital badge. To update the badge, a revision of the first challenge was made to include a training video rather than just an analysis a running record. The updated badge challenge included a new 20-minute video explaining the process of conducting a running record and the forms required to complete a practice running record. Forms with comprehension questions and student responses were also added to each of the student video challenges. Updates also included the addition of interactive

PDF files that could be edited on screen, which the student group indicated as a preference to printing and scanning the completed running record form.

Figure 2. Screen Shot of Running Record Video

The badge was designed to take between two and three hours to complete, which is the typical length of an in-service professional development workshop. The running record badge was also designed to be flexible and allow participants to log in and complete challenges on their own time.

Challenge 2 includes a video that is 1 minute and 29 seconds in length with a seventh-grade student in middle school reading a 107-word passage on settling New England from a history

textbook. The student's native language was Spanish, and he briefly lived in Mexico before moving to the Midwest.

Figure 3. Screen Shot of Running Record Challenge 2

The video in the third challenge is 1 minute and 13 seconds and includes a ninth-grade high school student whose native language was Spanish. The student is reading a text that is somewhat challenging and participants are instructed to determine if the text is at the student's instructional level. Running records are typically used to find books that are neither too easy nor too difficult for the students; therefore the running record badge was designed to feature students at various stages of English language reading development.

Running Record 2

ELL Running Records Badge

Instructions
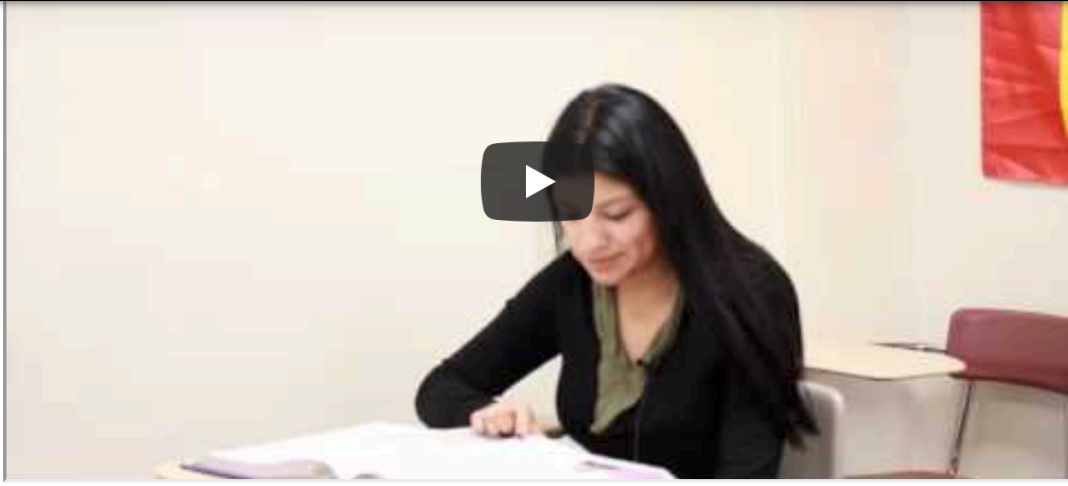
Just as you conducted the first Running Record, follow along with the form below and record any instances where the student has difficulty with the text. When you are done, take the number of words the student read correctly and divide them by the number of total words. This will help you determine if a text is at the students instructional level.

To complete this challenge:

- Download the forms below.

- Watch video and using the Running Record form record any miscues in the students reading of the text.

- Complete the Running Record evaluation using the Comprehension Questions and Answers (Mary RR Q&A)

Figure 4. Screen Shot of Running Record Instructions

The student is reading from a science textbook, and the passage is 104 words on the theory of evolution. This student was an immigrant from Mexico and at the time had only been in a U.S. public school for a few months.

Figure 5. Screen Shot of Running Record Challenge 3

The final challenge includes a video with an 11th-grade foreign exchange student from Japan. The student in the fourth challenge is reading from a history textbook on the topic on the American reconstruction in the 21st century. The video is 1 minute and 4 seconds long, and the passage consists of 72 words.
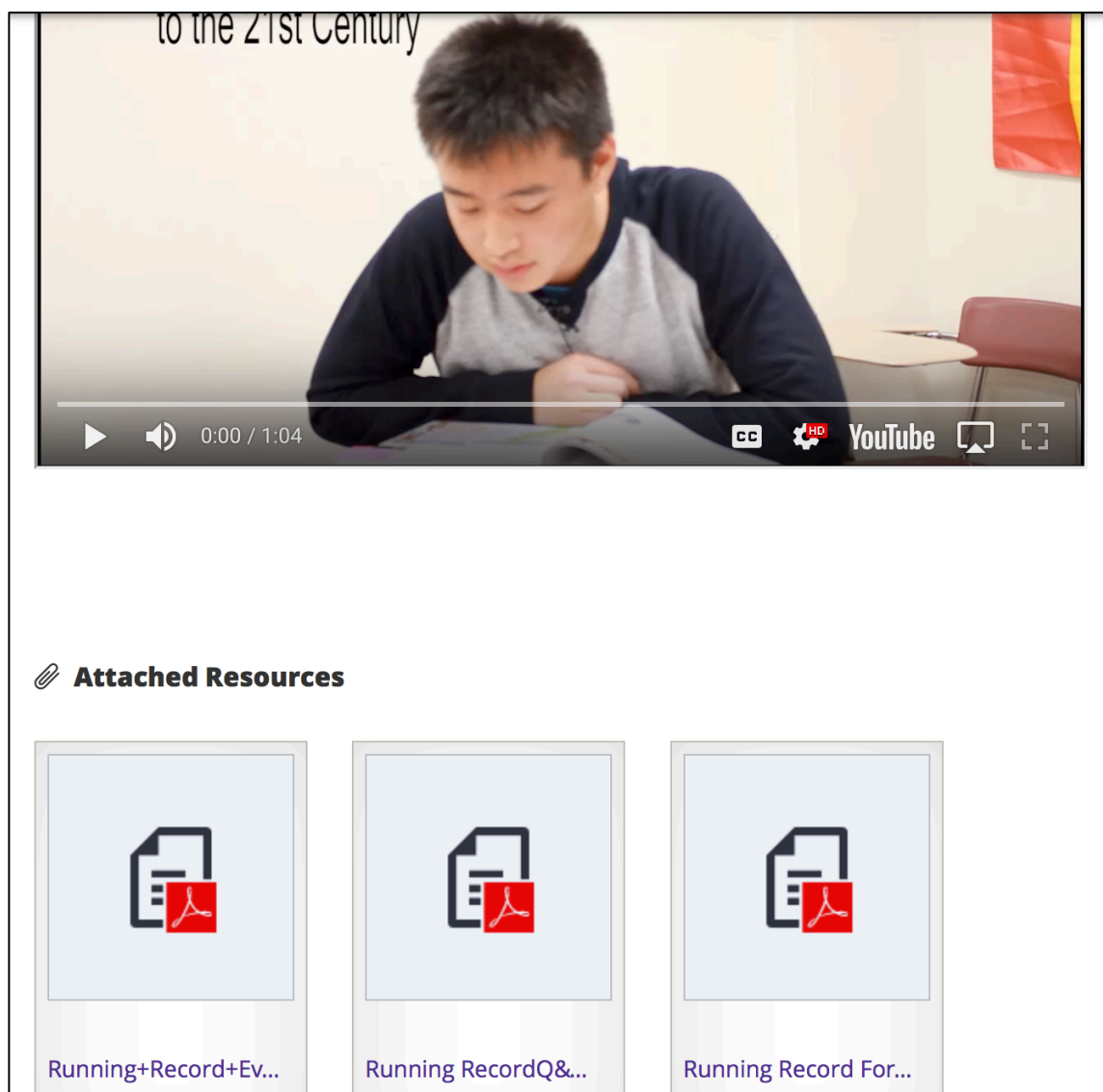
Figure 6. Screen Shot of Running Record Challenge 4

To obtain the running record badge, participants needed to complete all four challenges by completing the running record form for each challenge and writing a reflection in the corresponding text box. The final challenge also included questions that asked participants to reflect on the entire process of completing the running record badge and how they could potentially use running records to differentiate instruction in their classroom. Updates to the running record badge were completed in January 2017. After updates were completed, a graduate student in

education reviewed it to ensure there were no technical issues with completing each of the challenges.

Figure 7. Screen Shot of Updated Running Record Badge

CHAPTER 4. METHODOLOGY

This study utilized an interpretive qualitative approach to determine if a digital badge system could be used to deliver training to in-service ELL teachers. The viability of the digital badge system was explored to identify both advantages and disadvantages of digital badges to deliver in-service teacher PD. With the aim of this study being to investigate the outcomes of completing a digital badge for ELL teacher PD, the study focused on collecting data to answer the following research questions:

1. Is a digital badge system a viable tool for delivering professional development to in-service teachers of English language learners?
2. What types of training do ELL teachers think could be converted to digital badges?
3. What are ELL teachers' perceptions of digital badges and their role in professional development?

4.1 Participants

To gather participants for this study, criterion sampling was used to select teachers that fit within certain parameters. For teachers to participate, they needed to hold an endorsement from their respective state education agency to teach ESL and/or bilingual education and currently be working with English language learners. To begin recruitment, teachers at several schools in the Midwest were contacted and invited to participate.

Due to my experience working for Chicago Public Schools, I had several contacts in the Chicago area. Therefore, I began recruitment by sending emails to a former principal and former colleague to inform them of the study, the parameters needed to participate and my contact information for teachers on their campus who may be interested. From the initial contact, two

teachers expressed their interest, and I sent them the pre-badge survey. The two teachers met the criteria and were then given access to Passport and instructions on logging into the badge system in the summer of 2017.

To gain more participants, I then contacted teachers in Tippecanoe County, Indiana. First, I contacted a middle school teacher from the Lafayette School Corporation and provided the study information. The teacher met the criteria and agreed to participate in August 2017. That summer I also contacted a high school teacher at the Tippecanoe School Corporation to gauge her interest in participation. The teacher was interested but was about to travel abroad for the summer. The teacher said she could participate once she returned and completed the pre-badge survey. The survey confirmed she met the criteria, and upon returning, the teacher began the study in September 2017.

In September 2017, I contacted several teachers in school districts across Texas. I sent emails to several principals at school districts in central and south Texas. None of the principals responded to my email, so I then contacted a bilingual reading specialist who worked for the Austin Independent School District. The bilingual reading specialist met the criteria and agreed to participate in the study. The bilingual reading specialist also put me in contact with several teachers at her school. From the contact initiated through the bilingual reading specialist, one teacher was interested in participating in the study. The teacher completed the pre-study survey but did not meet the criteria to continue the study. While the teacher was certified to teacher bilingual education from kindergarten through sixth grade, her teaching assignment at the time did not have her working directly with English language learners.

From a previous contact with a special education teacher in south Texas, I then contacted several middle school teachers. From that contact, two teachers responded, and one met the criteria and went on to participate in the study. The teacher who did not meet the criteria was not certified as a bilingual educator at their grade level.

In the fall of 2017, I also contacted a technology coordinator for Chicago Public Schools, and several teachers from her home campus expressed interest. From that contact, three teachers responded and were provided with the study information. Of the three teachers that responded, two met the criteria to participate and went on to complete the study. The teacher who did not meet the criteria was not working directly with ELL students at the time. In addition to the teachers at her home campus, the technology coordinator also forwarded the study information to several ELL teachers at other campuses in the area. From that communication, two teachers replied and agreed to participate in the study. However, while both teachers began the study, only one went on to complete the entire running record digital badge. After several attempts to communicate with the teacher who did not complete the digital badge, it was assumed that the teacher could no longer participate in the study and had dropped out. From the pool of teachers contacted, a total of nine met the criteria and went on to complete the study.

To maintain confidentiality, the participants were all provided pseudonyms. The pseudonyms were then used to report the results in this study. The participant's demographic information is also provided in the results section. To maintain anonymity, the participant interviews were also coded using only their first name and last name initials.

4.1 Research Design

Due to the limited prior research on the use of digital badges for ELL teacher PD this study used an interpretive research design. Since the aim was to investigate the in-service teachers ability to complete PD through the digital badge system this study sought to gather and interpret data on the participants' experiences. As previously stated, a basic interpretive approach is ordinarily used in qualitative research studies in education to examine how participants interpret their experience, construct their world and the meaning they attribute to those experiences (Merriam & Tisdell, 2016). Qualitative research is also conducted when the goal is to gain insight into a participants perspective, a setting or a specific technique (Kozleski, 2017). Therefore, to get a holistic view of the participant's experiences while using the digital badge system several forms of data were collected. The data collected included the pre and post surveys, digital badge challenge written reflections, and participant interviews. The figure below illustrates the design for the data collection and analysis.

Data Collection

| Pre and Post Surveys | Digital Badge Written Reflections | Participant Interviews |

Data Analysis

| RQ1: Surveys, Interview Transcripts, Digital Badge Reflections | RQ2:Post Badge Survey, Interview Transcripts | RQ3:Interview Transcripts, Surveys, Digital Badge Reflections |

Results

| RQ1: Determine if the Digital Badge System is a viable tool for PD delivery. | RQ2: Identify PD training topics for online delivery. | RQ3: Identify potential role for digital badges in |

Figure 8. Research Design

4.2 Data Sources and Collection

To answer each of the questions in this study, I collected information from a variety of sources. Surveys, interviews and badge reflections where used to get the participants perspective on using a digital badge system at their specific school. The table below outlines the type of data collected to answer each of the questions.

Table 2: Research Questions

R1: Is a digital badge system a viable tool for delivering professional development to in-service teachers of English language learners?	1. Pre- and Post-Digital Badge Surveys 2. Interviews 3. Digital Badge System Reflections
R2: What types of training would ELL teachers prefer to complete online through Digital Badges?	1. Post Digital Badge Survey 2. Interviews
R3: What are ELL teachers' perceptions of digital badges and their role in professional development?	1. Interviews 2. Pre- and-Post Digital Badge Survey 3. Digital Badge System Reflections

4.3.1 Pre-Badge Survey

Data collection began with the pre-badge survey. The pre-badge survey included questions referencing the participant's prior experience with professional development, their experience with online learning and any prior experience with a digital badge system. The pre-badge survey was also used to determine if the teacher qualified to participate in the study by asking their current teaching assignment and how long they have held a bilingual teaching credential. The complete survey can be found in appendix A.

4.3.2 Digital Badge System Reflections

Data were also collected from the digital badge system by having the participants write a brief reflection on each of the digital badge challenges. The badge challenges each included a text box where participants could write a reflection for the student video they viewed. The written reflections included the participant's thoughts on the student's reading ability and possible solutions to help the student.

4.3.3 Post-Badge Survey

Once participants had completed the running record digital badge, they were sent the post-badge survey. The post-badge survey was used to gather information on the participant's experience within the digital badge system and their thoughts on the viability of a digital badge system for professional development. Responses in the post-badge survey were compared to the responses in the pre-badge survey to determine if the participant's perspective had changed regarding digital badges through the course of the study. The complete post-badge survey can be found in appendix A.

4.3.4 Interviews

After participants had completed the post-badge survey, semi-structured interviews were scheduled. The interviews were used to gather additional information on the participants' experience using the digital badge system, their thoughts on prior professional development, the potential use of a digital badge system in their situation and professional development that they thought could be covered in a digital badge format. The interview ranged from 12–17 minutes in length, and the complete interview protocol can be found in appendix B.

4.4 Data Analysis

Due to the incremental collection of data throughout the study, analysis was conducted in stages beginning with the pre-badge survey. The pre-badge survey was analyzed to identify participants who met the study criteria and then used again at the end of the study to compare with the results of the post-badge survey. The pre-badge survey also served as a baseline to gauge the participants' prior experience with online learning and determine which participants may need additional technical support.

The text box reflections within the digital badge were analyzed during and after the completion of the entire running record badge. As each participant completed the running record badge challenges, the badge text box reflections were analyzed to identify the reading level they thought was appropriate for the student in the video. The reflections were then analyzed at the end of the study to identify any comments related to the effectiveness of the running record digital badge and recommendations for improvement. Written reflections were also reviewed to isolate any comments related to the teacher's perceptions of digital badges and how they thought a digital badge system could be implemented at their school.

The post-badge survey was then analyzed to understand the participant's perspective on their experience completing the running record badge. The post-badge survey was compared to the pre-badge survey to determine if the participant's attitudes toward online learning and digital badges had changed or remained the same. The data in the post-badge survey also helped in determining the amount that teachers are willing to pay to receive a digital badge and the challenges participants encountered while in the digital badge system.

Interviews were then transcribed, and an initial coding scheme was developed using Microsoft Word. The initial analysis included codes for comments related to benefits or disadvantages of the digital badge system (DB-Ben, DB-Dis) and professional development (PD-Effec, PD-Need, PD-Avail). After analysis of the first two interviews, the interview transcripts were imported into the Nvivo software for Mac computers, and additional codes were created to account for comments related to digital badge implementation (DB-Imp), the types of professional development needed and comments referencing previous experience with English language learner professional development (PD-Prior, PD-ELL). The complete coding scheme can be found in appendix C.

4.4.1 Research Question 1

Is a digital badge system a viable tool for delivering professional development to in-service teachers of English language learners?

To answer the first research question data from the digital badge system reflections, the pre- and post-badge surveys and the interviews were analyzed. Reviewing the comments within the running record badge challenges allowed the researcher to determine if the participants were struggling with completing any of the challenges and provide clarification if needed. The pre- and post-badge surveys were also analyzed to determine if the participant's opinions of digital badges had changed from the beginning of the study to the completion.

4.4.2 Research Question 2

What types of training would ELL teachers prefer to complete online through Digital Badges?

To answer the second research question, data from the post-badge survey and the interviews were analyzed. The post-badge survey included this question: "What types of trainings do you think could be conducted through a digital badge system for teachers at your school?" The interview protocol also included a question related to the types of trainings that teachers could see converted to a digital badge, which asked, "As a teacher who works with English language learners what types of trainings could you see converted to a digital badge and would be most beneficial to you?" The responses to both the survey and interview questions were individually analyzed and then compared to all the participant responses. The post-badge survey focused on the participant's overall experience within the badge system, and the complete survey instrument can be found in appendix B.

4.4.3 Research Question 3

What are ELL teachers' perceptions of digital badges and their role in professional development?

To answer the third research question, participants' responses to the interview questions, the pre- and post-badge survey and the digital badge reflections were analyzed. The interview protocol included this question: "Now that you have completed a badge, what are your thoughts on digital badge systems for PD?" The interview protocol also asked participants, "How do you think a digital badge system could be used in your school?" The survey instrument also included questions related to the participant's perceptions of digital badges for PD such as: "I would be interested in completing more PD through a digital badge system." The digital badge written reflections were also reviewed to identify any comments related to the participant's perception of digital badges. The complete post-survey instrument can be found in appendix A.

4.5 Reliability and Validity

Several procedures were used to ensure the data collected was valid to answer the questions posed by this study. The initial step taken involved having the running record badge tested by a group of graduate students to ensure the training materials were appropriate and eliminate technical issues participants could encounter completing the training online. The following section describes the steps taken.

4.5.1 Review of Interview Protocol

The interview protocol was provided to a former ELL teacher and an expert on English language learners. The initial interview protocol included 10 questions mostly related to the user's prior experience with PD and the use of the digital badge system. Feedback included the recommendation for questions related to PD needs of ELL teachers. With this in mind, an additional question was added to ask what PD teachers working with ELLs would benefit most from. The complete interview protocol is included in appendix B.

4.5.2 Review of the Survey Instruments

The pre- and post-badge surveys were also provided to an expert on English language learners and a former ELL teacher. Additionally, the surveys were reviewed during the proposal phase, and feedback from the committee was used to revise the surveys. Based on the reviewer recommendations, questions related to the sharing of digital badges on social media and the types of training participants would prefer to complete in a digital badge system were added. The complete pre- and post-badge survey can be seen in appendix A.

4.5.3 Data Triangulation

Data were collected from multiple sources to answer each of the research questions. To answer the first research question, the researcher used a survey, interview and data gathered from the digital badge reflections. To answer the second, the interviews and post-survey data were used. To answer the third research question, data from the interviews, post-survey and digital badge reflections were analyzed to determine how the participants perceived digital badges. Using data from multiple sources helped in answering the research questions in a more holistic manner and exploring the experience of the participants within the digital badge system.

4.5.4 Member Checks

Once interviews were transcribed, member checks were conducted with each of the interviewees to ensure they had a chance to review the content before it was included in the study. The participants were emailed the interview transcripts and asked if they accurately depicted the interview from their perspective. Member checks also helped in clarifying some of the details in the interview.

4.6 Limitations

Attempts were made to make the study as generalizable as possible for in-service teachers. However, due to the nature of the study there were several limitations that could not be overcome.

4.6.1 Sample Size

This study had a total of nine participants. The initial goal was to obtain 10 or more in-service teachers to participate in the study. There were several participants who began the study but for unknown reasons did not complete the badge portion. Furthermore, the participants who

dropped out did not agree to interviews, so gathering information on the reason they did not complete the badge was not possible. Due to the small sample size, the results cannot be generalized to a broader teacher audience.

4.6.2 Lack of PD Facilitation

Since the study was conducted mostly online through Purdue's Passport system, there was no face-to-face facilitation conducted for this training. Facilitating a face-to-face workshop with some of the participants would have allowed for gathering of additional data, such as time on task and observational data as they progressed through the digital badge. Additionally, a post-workshop debrief could have served as a focus group to gather participants' opinions on using a badge system in a PD workshop environment or as a follow-up to a face-to-face training.

4.6.3 Number of Digital Badges Available to Participants

This study focused on the use of a single digital badge, the running record badge, and participants did not have the option to explore the overall system or choose the skills they thought would be most beneficial to them. Thus, the results do not provide data on how in-service teachers might use a badge system to explore their own training needs. Future studies will need to be conducted to investigate what types of digital badges teachers would be most interested in completing, how many they could complete in a given time period and how having many badges available would affect their motivation toward professional development.

4.6.4 Technical Skills

Since the study took place mostly through the Passport system, the participants needed to have some technical skills to log into the online platform and complete the training. Therefore, generalizing the results may not be possible due to the prerequisite knowledge needed to access

the online digital badge platform. The participants in this study all had some prior experience with online professional development, and need for technical assistance was minimal.

4.7 Role of the Researcher

As a former teacher of English language learners, I, the researcher in this study had previous experience attending the type of training that ELL teachers are expected to complete. I was also a graduate student who routinely worked within Passport evaluating badges for the learning design and technology online program.

Furthermore, prior to conducting this study I had worked on a project developing training materials for teachers of English language learner with the ELL expert mentioned earlier. The project included recording videos with students who were English language learners in various schools across the state of Indiana. The materials developed as part of the larger ELL project included the three student videos used to develop the running record digital badge.

To mitigate the impact that the researcher's previous experience with some of the participants might have, Likert scale survey questions were crafted to give the participants a range of options. Additionally, prior to the interviews the researcher informed the participants of the need for gather their overall experience within the digital badge system, whether it was positive or negative. Participants with no prior connection were also recruited, and their impressions on the use of the digital badge system were compared to other participants to get an overall picture of the entire participant group experience.

CHAPTER 5. RESULTS

For this study, qualitative data from the digital badge reflections, surveys and interviews were analyzed to determine if the digital badge system would be a viable delivery system for ELL teacher PD. The data were analyzed for each individual participant, then analyzed as a whole at the end of the study. The entire participant set included nine in-service teachers who work with English language learners in K-12 schools. While the use of online professional development is not new, this study sought to fill the gap on the use of digital badges specifically for PD of ELL teachers. Digital badges provide an alternative to delivering training face-to-face, and this study was the first to investigate how ELL teachers think a digital badge system could be used for their professional development needs. A potential benefit of implementing a digital badge system to deliver PD would be to allow teachers to track and review their trainings. Furthermore, since traditional professional development is typically delivered in single-session workshops, the use of a digital badge system to conduct follow-up training was also investigated.

The participants in this study all directly worked with English language learners and held credentials from their respective state education agencies to teacher ELL students at their grade level. Of the nine total participants, six participated in the final interview, and the interviews were coded to find themes that emerged related to the use of digital badges for PD and the characteristics of effective PD. There were two major categories of codes that emerged from the interviews: the use of digital badges (DB) and the participant's experience with professional development (PD). The analysis and coding of the interview data was conducted using an inductive approach. The interview data were initially coded in Microsoft Word, then transferred to NVIVO for refinement.

After initial analysis of interview transcripts, additional codes were created, which brought the total code count to eight. The following section includes an overview of the participant demographics and the process used to analyze the data. The analysis section is organized by the research questions posed in this study.

5.1 Participant Demographics

The participants' experience working with English language learners varied greatly. The participants ranged from seven years to 19 years of experience working with ELL students. Of the nine participants, six had teaching assignments in kindergarten through fifth-grade elementary schools. Two of the participants had assignments in middle schools, and one worked at the high school level. All the participants indicated they were bilingual in English and Spanish. The participants also resided in various locations across the country. Two of the participants worked in school districts in Texas, two worked in Indiana and the remaining five worked in school districts in Illinois. Pseudonyms were provided to each of the participants and interview comments were quoted using the pseudonyms. The table below includes the participant profiles.

Table 3: Participant Pseudonyms & Profiles

Participant Pseudonyms	State of Teaching Licensure	Experience Teaching
Allen	Illinois	10 years
Veronica	Illinois	12 years
Dan	Texas	10 years
Cynthia	Illinois	18 years
Mel	Illinois	7 years
Alice	Indiana	10 years
Jamie	Indiana	9 years
Kyle	Illinois	14 years
Sara	Texas	19 years

5.2 Data Analysis

The analysis of data began with the review of the pre-badge survey data. In addition to demographic information, the pre-survey data obtained included the amount of professional development each participant had received and their prior experience with digital badges. The data was collected using the Qualtrics survey software and then exported as Microsoft Excel documents for analysis.

The analysis then continued with the review of the running record badge reflections. The reflections were initially reviewed within Passport, then copied and organized in Microsoft Word. The reflections were analyzed for comments related to the student video challenges and recommendations for improving the students' reading ability.

The post-badge surveys were then analyzed to understand the participants' experience completing the running record badge. The post-surveys were initially reviewed within Qualtrics, then exported to Microsoft Excel for further analysis. The post-badge surveys were then compared to the pre-badge survey to gauge if the participant's thoughts had stayed the same or changed throughout the course of the study.

Interviews were then transcribed verbatim, and an initial coding scheme was developed based on the research questions. Interview coding was initially conducted in Microsoft Word and, after 2 interviews had been coded, transferred to NVIVO to further analysis. After interviews were imported into NVIVO, a secondary round of coding was conducted, and additional codes were created for each category. The interviews were reviewed individually, then compared across participants to analyze for emerging themes related to the overall use of the digital badge system and the PD needs of ELL teachers.

5.3 Findings

5.3.1 RQ1: Is a digital badge system a viable tool for delivering professional development to in-service teachers of English language learners?

To answer the first research question posed in this study, the surveys, badge reflections and interviews were analyzed throughout the course of the study. For the digital badge system to be a viable option to deliver PD, participants would need to obtain and view the materials within each of the challenges, determine the student's reading level and type a reflection about the use of running records. The data collected within the digital badge system were analyzed to gauge the participants' overall experience while completing the running record badge. The running record badge reflections indicate that all the participants could review the videos in each of the challenges,

use the attached forms to follow as the students read, and write a reflection referencing the students' reading ability. The participants were all able to complete each of the challenges with no technical issues. Of the nine participants, two did need additional support to log in and find the text boxes to write the reflection. The two participants were both emailed step-by-step instructions, which included screen shots on finding the materials and text boxes within the badge challenges. As the participants completed the badge challenges, their responses were reviewed for comments about the student's reading ability and their overall experience completing the challenge. The figure below is an example of a participant response to the first challenge in the running record badge.

Open Text

I think running records are very important. They are good indicators of a students strength and what they may still need more help on or what still needs to be taught explicitly. Hopefully colleges of education are teaching future teachers, bilingual or not, how to properly use these running records. Each student is unique, so being able to focus on students needs for succcess is a must. Depending on the outcome of the running records, teachers can decide to pull students individually, in small groups, or do a mini lesson as a whole group for a focus lesson. Running records help set goals for students, so it is important to continue administering them throughout the year to see if there is improvement on what needed working on, to check for fluency and comprehension, and text level.These running records are great indicators or possible reading deficits when there is little to no improvement, so they really do help the teacher decide on a next step.

Attachments *

Figure 9. Screen Shot of Participant Reflection

This response indicates that the participant could review the video explanation on conducting a running record and believed that the content of the training video was relevant to their classroom practice. The response also indicates that the participant believed it was important

not just for teachers working with ELL's but all teachers to learn to conduct running records with this comment:

> Hopefully colleges of education are teaching future teachers, bilingual or not, how to properly use these running records. Each student is unique, so being able to focus on students' needs for success is a must. Depending on the outcome of the running records, teacher can decide to pull students individually, in small groups, or do a mini lesson as a whole group for a focus lesson. Running records help set goals for students, so it is important to continue administering them throughout the year to see if there is important on what needed working on, to check for fluency and comprehension, and text level.

The participant states how running records could be used throughout the school year to set goals and measure student progress. When examining if the digital badge system is a viable tool to deliver ELL teacher PD, it is important for the system itself not to become a hindrance to the teacher's ability to obtain the content. So, the ease the participants had in accessing the content within the digital badge system and their overall thoughts on the usefulness of running records indicates that Purdue's Passport system was an effective method to provide the running record training materials and content. Below is an example from a different participant in response to challenge 2 in the running record digital badge.

Josue´s running record revealed that he is reading 95 words correctly and is at 89% accuracy rate which is at the frustrational level. He has difficulty with sounding words that include short vowel sounds such as Puritans, he missed that word. He struggled with the word settlers, Salem, Pilgrims adn religious. Those words he mispronounced them substituting the vowel sounds of the sort a in Salam to a short e, he said Selem. As an English language learner this is common mistake made by students because in the Spanish language the long a can sound like the short e in English for English language learners. In the comprehension I graded him at a 60% correct. I marked question 4 which asked what was not allowed in the new colony? Correct answer was disagreement was not allowed, Josue answered They couldn´t go to other places, which to me told me he understood the question he just did not have in his vocabulary the words disagreement, but how he answered told me that he understood that question. Questions 2, and 3 I marked incorrect.

Figure 10. Screen Shot of Participant Reflection Challenge 2

In the participant response, we can see that the challenge 2 reflection focuses on the student's ability to read fluently. The participant indicates the number of words the student read correctly, then goes into detail about why they thought the text was at the student's frustration level. In the response, the participant also reflects on their prior experience when they comment, "As an English language learner this is common mistake made by students because in the Spanish language the long a can sound like the short e in English for English language learners."

This reflection indicates that the participant was familiar with some of the issues English language learners face when learning how to read in English. This reflection also indicates that the participant could view the video of the student reading, obtain the materials to follow along with

the text, and use the materials to determine the student's reading level. When determining if a digital badge system is a viable tool to deliver ELL teacher PD, having the participants complete each of the challenges and reflect on their own experience was a key step because it shows that the participants could independently navigate the materials presented to complete the challenge and reflect on how it applies to their own classroom experience. Below is a participant reflection to challenge 3 in the running record badge.

Open Text

I found this text to be at Mary's frustration level. From the start of the text I can tell that Mary is struggling to read every word. She uses what she knows from her language to read the words. She struggled reading simple words that end in -ed. If she is struggling reading and pronoucing simple words like helped, then this is an indicator that she needs to develop her English vocabualry especially when there is specialized vocabulary such as geologist, evolucion, mechanism of natural selection, etc.This text is way above her Independent level and therefore, struggled to answer the comprehension questions.

Figure 11. Screen Shot of Participant Reflection Challenge 3

The participant in this challenge finds the text to be at the student's frustration level and then goes on to provide recommendations for how the student in the video can improve their English vocabulary to help with reading fluency. The response is an example of another participant's ability to obtain the materials for the challenge, review the student video and identify the students reading level. Each participant's ability to independently review the materials and complete the challenge was essential in determining if the digital badge system was an effective

delivery method for ELL teacher PD. Due to the lack of a face-to-face facilitator, the goal was to have the digital badge system itself serve as a guide. Therefore, the participants needed to get through the entire badge and reflect on each challenge to demonstrate that the lack of in person facilitation could be overcome to deliver PD to ELL teachers through an online digital badge system. Since the running record digital badge allowed for the content to be embedded and questions to be asked through each of the challenges, the lack of face-to-face content did not seem to be a barrier to completing the overall training. Below is a response from a different participant to challenge 4 in the running record badge.

Open Text

1. Was the text at the student frustration or Instructional level?

This text was at instructional level.

2. How could you use a Running Record to help differentiate instruction for each ELL student?

Running Records are great because an instructor could listen to each student individually and determine their specific strengths and weaknesses and therefore differentiate instruction.

3. What other strategies have you used in the past to help ELL students with reading fluency and comprehension?

I have used modeling, phonics, practice reading aloud, and more practice reading aloud to help improve fluency. I have used papers similar to this for my ENL students before and they had to read a passage to me multiple times during the week and hopefully improve by the end of the week. I could then see what each student was struggling with and address it specifically and immediately.

Comprehension is more difficult to 'teach', but I would try to help the students find key words in the text to point them in the right direction.

Figure12. Screen Shot of Participant Reflection Challenge 4

In this response, the participant reflects on the use of running records to identify students "specific strengths and weaknesses" and then goes on to answer question 3 by providing other strategies they have used to help ELL students with fluency and comprehension. This response indicates that this participant also believed the content of the training was relevant to their classroom practice and demonstrates that the participants could complete all four challenges within the running record badge. Completing all four challenges was required for obtaining the running record badge and 9 total participants completed all the requirements to obtain the running record badge.

5.3.1.1 Participant Interviews

While the participants could complete all the requirements to obtain the digital badge on their own, the lack of facilitation was mentioned when the participants were interviewed. Several participants mentioned that they missed being able to get quick responses to questions like they would in a face-to-face PD. When asked about the impact of PD facilitating, a middle school teacher who participated in the study, Jamie, commented,

> I can get my questions answered right away. With the online PD, I can't. I can email or text. What I have do with the online PD is I have to write down my questions as I have them. So, it's not that I couldn't ask them. I still email or mentioned them in the comment areas which is nice but it wasn't that quick response.

Another participant, a high school ELL teacher, Alice, thought that digital badges would be better as follow-up to a face-to-face PD due to the lack of facilitation. That participant commented, "I think that it is great but you can't ask questions if you don't understand, because even I, I'm an ELL professional and I still had some questions. Even after what I would call a very thorough explanation." This response suggests that although there was a video explanation of

conducting running records, the participant would have still preferred a person who could answer follow-up questions. For that reason, the participant believed that digital badges could be used as a follow-up to PD instead of having digital badges as the primary method of delivery. While the lack of in-person facilitation did not hinder the participants' ability to complete the running record badge, the interview responses indicate that the lack of facilitation does impact the participants' experience completing PD. The lack of a real-time response to participants' questions as they go through the digital badge challenges is a major difference to having PD facilitated online. The digital badge system does not have a component that allows for real-time communication; therefore, this is a disadvantage that badges have when compared to traditional PD.

When asked for some of the challenges they anticipate in implementing a digital badge system, an elementary school teacher, Cynthia, commented, "I'm pretty comfortable with online classes so as a challenge I would say teachers who prefer a one-on-one type of professional development environment may have a little challenge with it." This comment suggests that the lack of facilitation may not only be a disadvantage in explaining the content of the professional development but may also be a disadvantage to ELL teachers who are not familiar with online learning. Traditional face-to-face PD gives facilitators the option to intervene if the participants are having technical difficulties with accessing the training materials. However, when using a digital badge system for PD delivery, there is an assumption that the participants has a certain level of technical skill and will be able to navigate the training with little or no support. Thus, the participant's comment reflects this position that while most teachers are technically savvy and can use a digital badge system, some teachers may need to have additional support provided to overcome the lack of experience with online PD.

5.3.1.2 Pre- and Post-Survey Results

The pre-survey results indicate that overall the participants had little to no experience with digital badge systems prior to this study. The pre-survey asked participants if they had previously obtained a digital badge from any organization and how familiar they were with digital badges overall. Of the nine participants who completed the entire study, six indicated they were not familiar at all with digital badges prior to this study. Two participants indicated they were slightly familiar with digital badges, and one indicated they were moderately familiar.
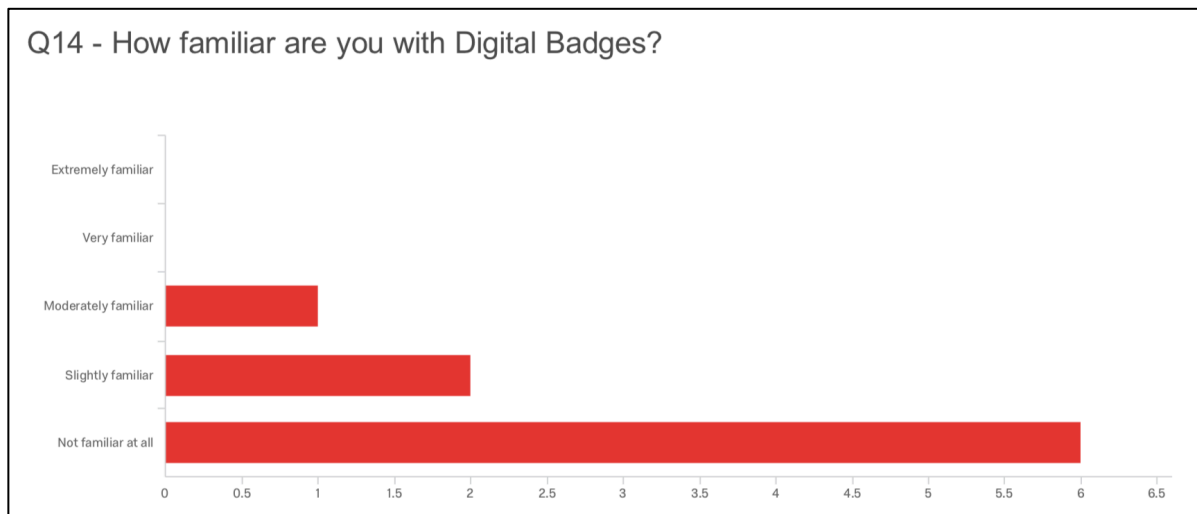
Figure 13. Screen Shot of Pre-Survey Q14 Response

The pre-survey results also reveal that most of the participants had never obtained a digital badge from any organization. Of the nine participants, only one indicated that they had obtained a digital badge prior to this study. These results suggest that the majority of participants in this study were not familiar with and had little to no experience with using a digital badge system to obtain professional development.
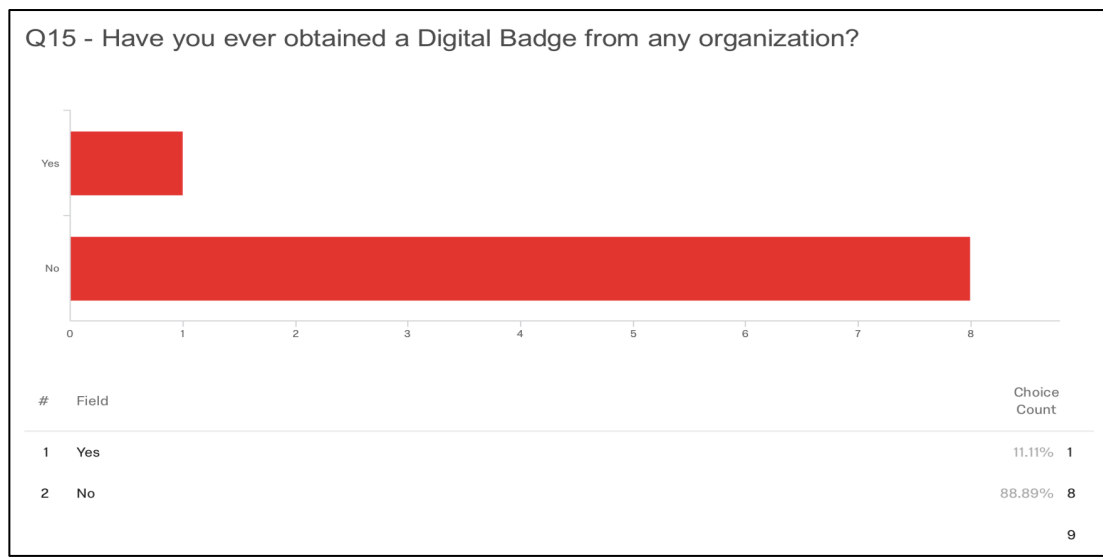
Figure 14. Screen Shot of Pre-Survey Q15 Response

However, the participants' ideas about digital badges being an option for PD varied greatly. When asked if they thought digital badges were currently an option for their school's professional development needs, of the nine participants, two indicated definitely yes, two probably yes, two might or might not, two probably not and one definitely not. Thus, the participants were divided, with four leaning toward digital badges being an option for PD at their school and three leaning toward digital badges not being an option for PD at their school prior to participating in the study.
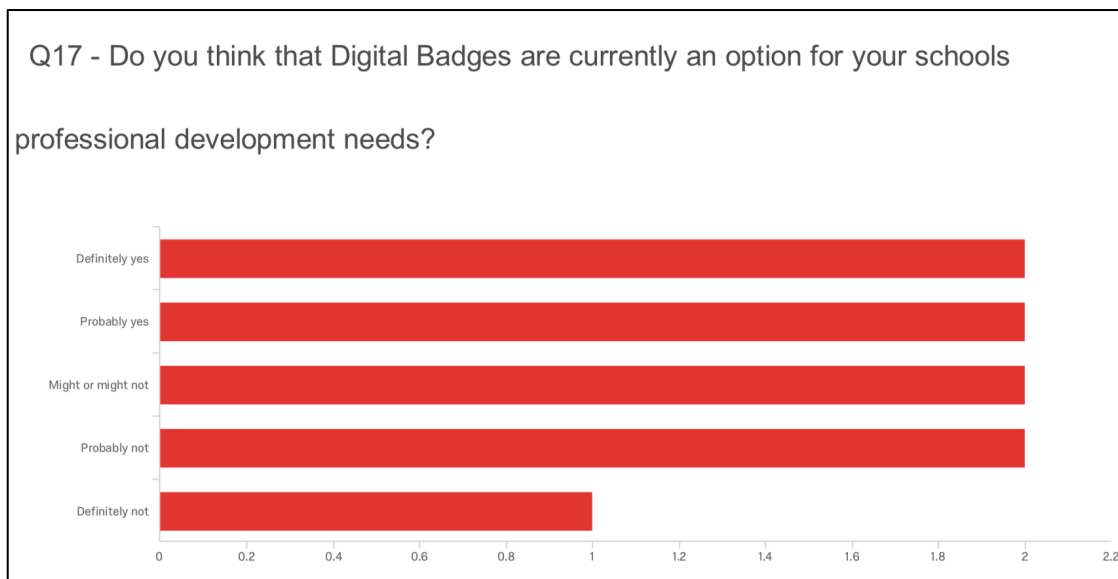
Figure15. Screen Shot of Pre-Survey Q17 Response

Participants also ranged in their experience with online PD. Of the nine participants, two had no experience attending PD online, three had completed PD online between one and five times, and four had completed PD online five to 10 times. These results suggest that most of the participants in this study had some experience using online systems to access and complete professional development online. This result may also help answer why about half the participants agreed that digital badges could be an option for their school's PD needs before ever obtaining a badge. Furthermore, the participants' prior experience with using online systems to attend PD also suggests that the teachers in this study had the prerequisite technical skills needed to complete the digital badge with little to no technical support.

Teachers with limited or no experience with online learning could have a more difficult time accessing the materials and may require more technical assistance to be successful in completing a digital badge online. This is important to note because throughout the study, the lack of training facilitation did not become a barrier to most of the participants, and only minimal

technical support was requested from the entire participant group. As noted in the interview responses, one participant did believe that lack of technical skills could be a barrier to teachers accepting digital badges as an option. Figure 16 shows the results of the pre-survey question asking participants about their experience with online PD.

Figure 16. Screen Shot of Pre-Survey Q13 Response

Participant responses on the likelihood of sharing their digital badges on social media were also mixed. Of the nine participants, two indicated they were moderately likely to share their digital badge on social media, and three indicated they were slightly likely. Two participants indicated they were neither likely nor unlikely to share their digital badge on social media, and two participants indicated they were extremely unlikely to share their badge on social media. Of the entire participant set, none of the participants indicated they were extremely likely to share their digital badge on social media. This result suggests that the participants did not see the ability to share earned digital badges on social media as an incentive prior to the study. Participant's

responses also suggest that the ability to download and share digital badges on personal websites did not impact their view of digital badges as an option of professional development. Figure 17 below shows participants' responses to the pre-survey question, which asked the likelihood of sharing digital badges on social media or their own websites.
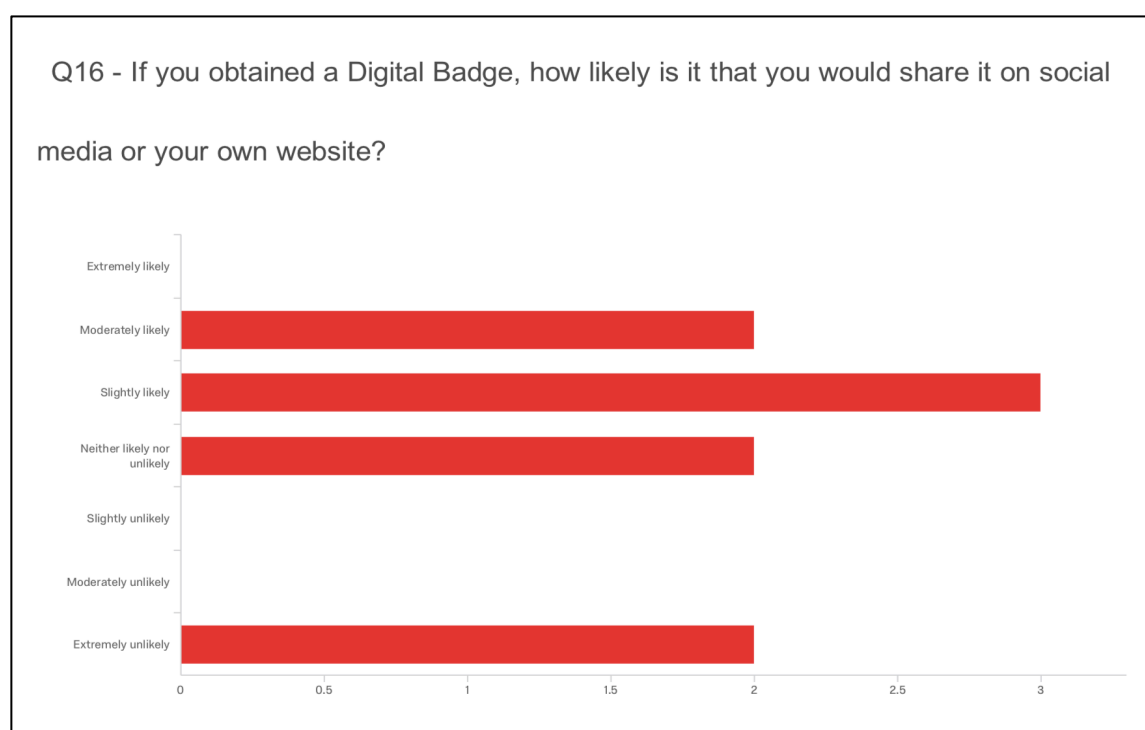
Figure 17. Screen Shot of Pre-Survey Q16 Response

The post-survey results suggest that the ability to share the earned digital badge on social media did not appeal to the participants after they had completed the running record badge. Of the nine participants, only three strongly agreed that they would share their badge on social media, and 1 somewhat agreed. The other five participants either somewhat disagreed or strongly disagreed that they would share their badge on social media. This also indicates a shift in the participants' view on sharing their badge from the pre-survey, since five participants indicated they were either slightly or moderately likely to share their badge.

The post-survey results also suggest that most of the participants believed that digital badges are a good option for ELL teacher PD. Of the nine participants who completed the entire running record digital badge, three indicated they somewhat agreed with digital badges being a good option, and three indicated they strongly agree. Two of the nine participants neither agreed or disagreed, and one participant somewhat disagreed with digital badges being a good option for ELL teacher PD. Figure 18 below shows the results of the post-survey question.
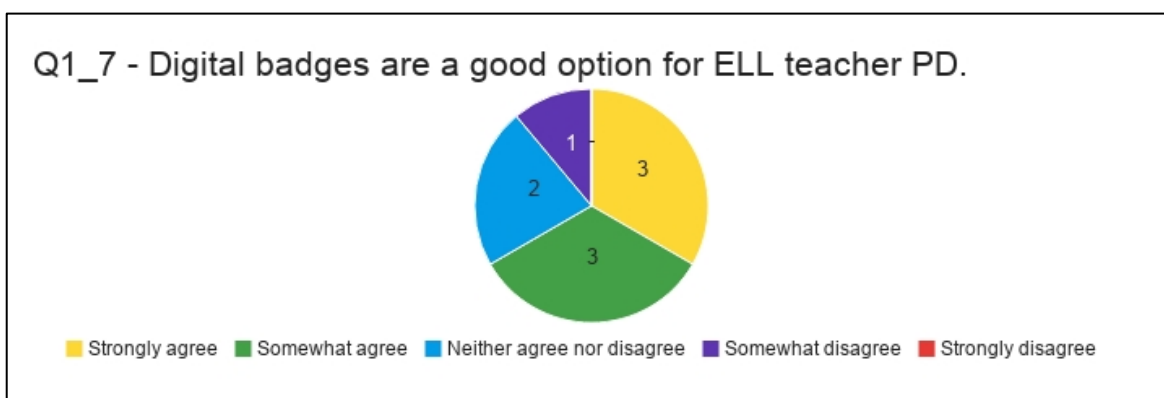
Figure 18. Screen Shot of Post-Survey Q1.7 Response

The participants also believed that navigating the digital badge system was simple. The results of question 1 in the post-survey indicate that the participants had no issues logging into Passport and were able to locate the running record digital badge required to complete the training. When asked if they thought if the digital badge system was easy to log into and navigate, four participants strongly agreed and five somewhat agreed. The results are illustrated in Figure 19.
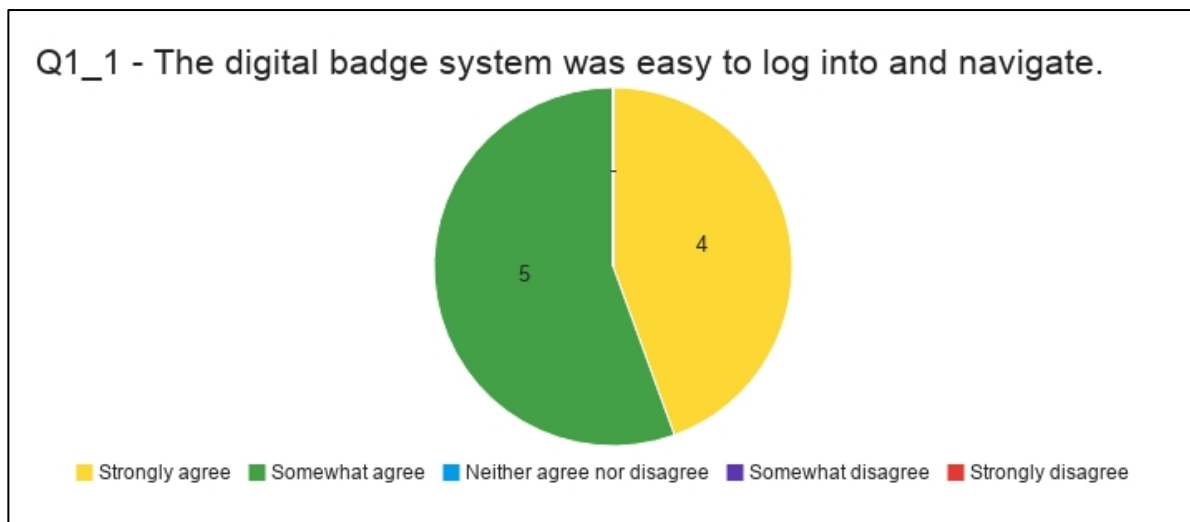
Figure 19. Screen Shot of Post-Survey Q1.1 Response

However, participants' responses were more divided when asked if having a digital badge to earn motivated them to complete the training. One participant disagreed, four neither agreed or disagreed, two somewhat agreed, and two strongly agreed. The results are illustrated below in Figure 20 and suggest that earning a digital badge only motivated half the participants in this study to complete the training.
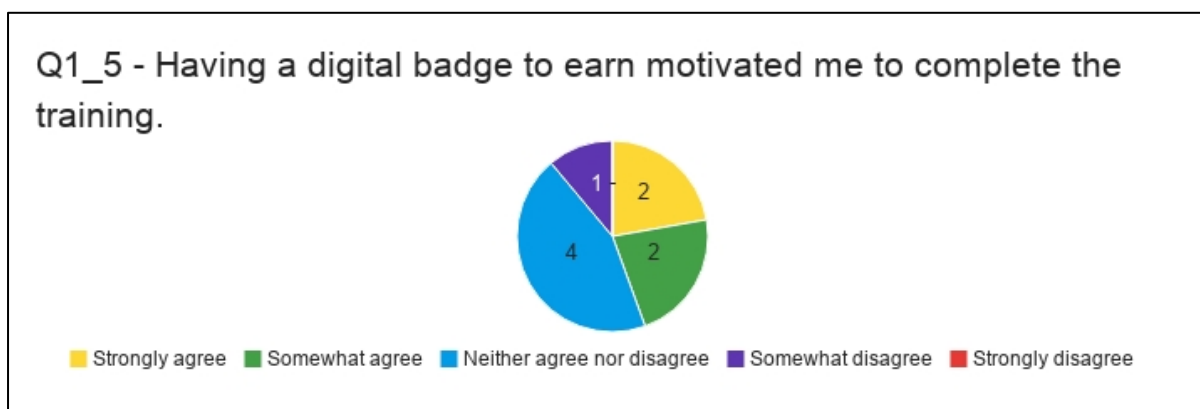
Figure 20. Screen Shot of Post-Survey Q1.5 Response

The participants were also asked if they believed a digital badge system could be a solution to deliver professional development at their grade level. Of the nine participants who completed

the study, two participants strongly agreed, three agreed, one somewhat agreed, two somewhat disagreed, and one disagreed. The results are illustrated below in Figure 21.
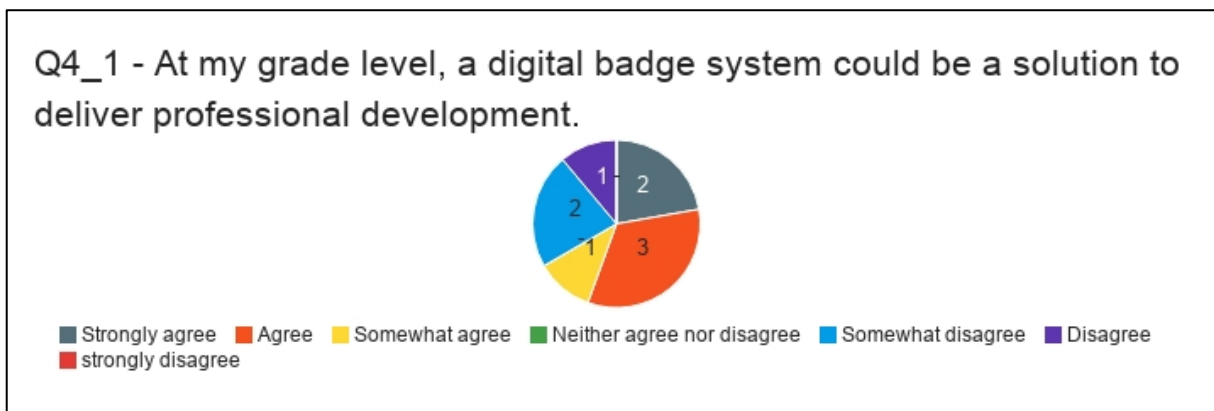
Figure 21. Screen Shot of Post-Survey Q4.1 Response

However, when asked if they believed teachers on their campus would buy into using a digital badge system to conduct PD, participants' responses ranged. Two participants strongly agreed, one agreed, three somewhat agreed, two neither agreed nor disagreed, and one disagreed that teachers on their campus would buy into conducting PD through a digital badge system.
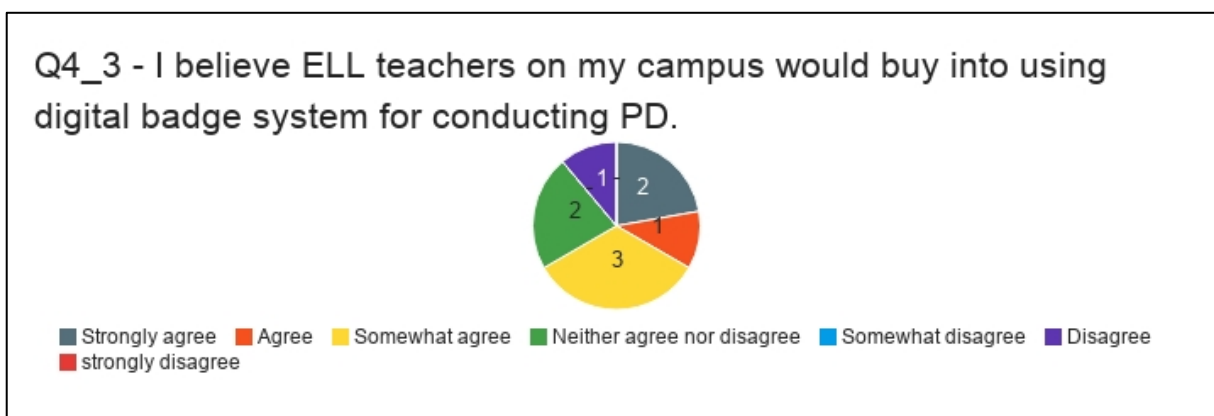
Figure 22. Screen Shot of Post-Survey Q4.3 Response

Participant responses were also divided when asked if they would be interested in completing more ELL training through an online digital badge system. Three participants strongly

agreed, two somewhat agreed, three neither agreed nor disagreed, and one participant strongly disagreed. Figure 23 below shows the participant responses to question 3 part 2 of the post-survey.
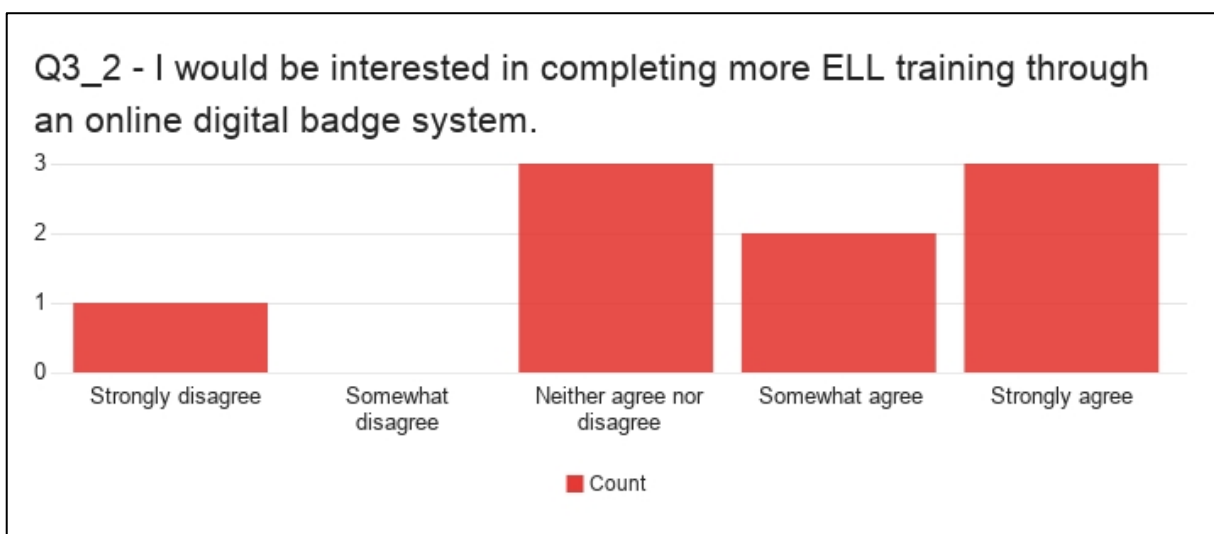
Figure 23. Screen Shot of Post-Survey Q3.2 Response

Post-survey results also suggest that the participants thought the content of the running record digital badge was relevant to their work with ELL students. Most of the participants agreed that completing a digital badge provided valuable experience in assessing ELLs' reading ability. Of the nine participants, three strongly agreed, four somewhat agreed, one neither agreed nor disagreed and one disagreed. The participant responses are shown in Figure 24.
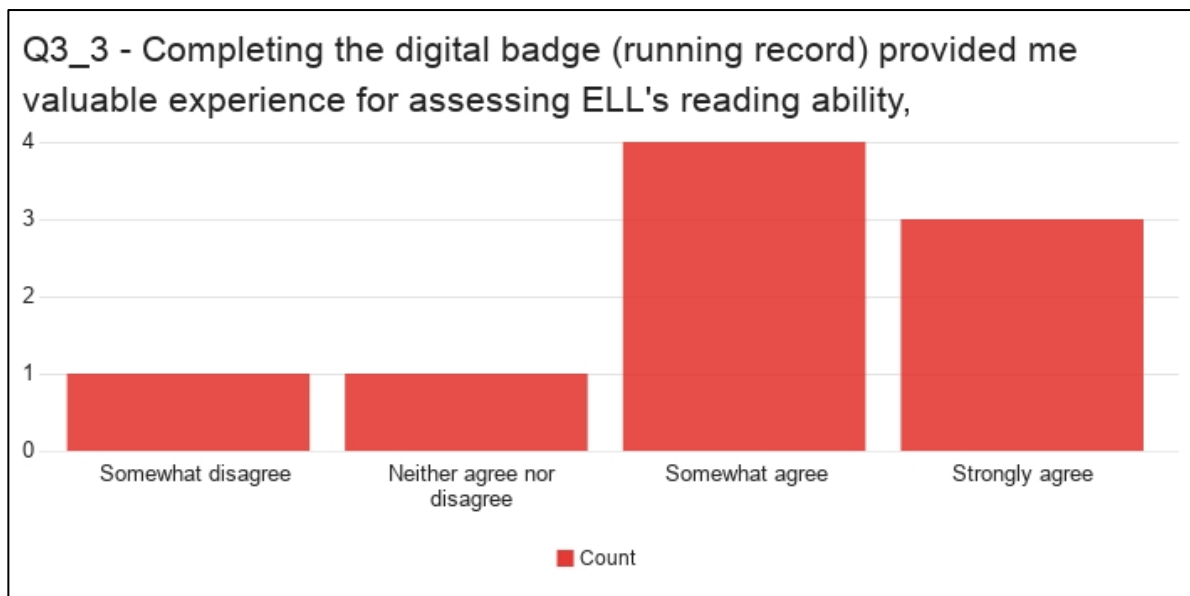
Figure 24. Screen Shot of Post-Survey Q3.3 Response

Participants were then asked how much they thought was reasonable to pay for a micro-credential like a digital badge. The participants ranged between $10 and $40 on what they considered a reasonable price to pay for a digital badge earned through a university. Four participants thought between $10 and $20 was a reasonable price. Three selected between $20 and $30, and two thought that between $30 and $40 was reasonable to pay a university for a digital badge. None of the participants selected the option between $5 and $10. Figure 25 below shows the breakdown of participant responses.
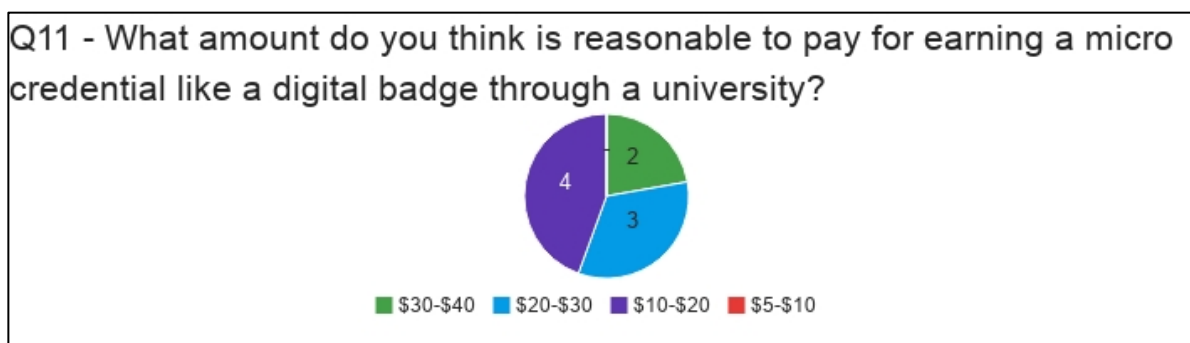
Figure 25. Screen Shot of Post-Survey Q11 Response

5.3.2 RQ2: What types of training would ELL teachers prefer to complete online through digital badges?

The post-survey also asked participants what types of training they thought could be conducted using a digital badge system. The participants' responses included how to differentiate effectively, EL teaching strategies, working with ELs from distressing environments, achieving a close read with ELs, vocabulary instruction and language instruction with ELs, assessing written work, and conferencing with ELs. Figure 26 below shows the participants' written responses to the post-survey question.

What types of trainings do you think could be conducted through a digital badge system for teachers at your school?

Almost any we get now. PD days should be spent doing Physical and Lesson Planning. Badges could be used as a "flexible" day that would be divided throughout the year

Anything with ESL and SEL. Training teachers on how to further reach students with SEL needs.

I think just about any kind of online training could be conducted through a digital badge system. As long as there are videos and either questions or some type of feedback, it could really work with anything.

How to engage students in productive discourse How to differentiate effectively

Well perhaps assistance with specific EL teaching strategies.

All kinds

N/A

If they are used to teach reading or strategies, or something like a running record where teachers can do at their own pace, then I think it might work.

Working with EL's from distressing environments; achieving a close read with EL's; Vocabulary instruction and Language instruction with EL's; assessing written work and conferencing with EL's

Figure 26. Screen Shot of Post-Survey Q10 Response

Participant responses also included comments that provided recommendations for how a digital badge system could be implemented for PD at their school. One participant commented, "Badges could be used as a flexible day that would be divided throughout the year." Another

participant commented, "I think just about any kind of online training could be conducted through a digital badge system. As long as there are videos and either questions or some type of feedback, it could really work with anything." These responses indicate that the participants in the study thought that digital badges could be used to conduct many different types of trainings.

Participants were also asked how they thought that digital badges could be applied at their specific school. Not all the participants had ideas for how the digital badges could be used at their school, but some provided detailed suggestions. For example, one participant responded, "It might help teachers see who has become an 'expert' in a given skill or area so teachers could easily seek out other teachers to gain perspective and suggestions for instruction. I would hope that it would be used as a tool to inform collaboration instead of instill competition." Another participant responded, "I would be assuming within grade levels. This would not be something where you would have all 75 staff members enter a computer lab and try. It would be beneficial to have small groups and coaches. So, some computer based and some PD can be with face-to- face coach."

One participant also commented that they would enjoy the ability to complete a variety of digital badges. The participant commented, "I think it could be fun to complete badges for different things. We have to do something similar at the beginning of the year for safety training and it is kind of cool to see the badges light up as you complete each section of training."

And another participant commented on the ability to review the badges. The participant wrote, "I think that if it is to teach or review something specific then it would work." The participant responses are included below in Figure 27.

Figure 27. Screen Shot of Post-Survey Q9 Response

Participant responses also included, "Could be good. Flexible and schools could combine resources," and "Very good for Ell teachers." Two participants wrote N/A for not applicable, and one commented, "I do not know this answer as I am fairly new to this school." The participant survey responses provide insight into how teachers see a digital badge system in their specific teaching situation. To allow participants to elaborate on their survey responses, a follow-up question was asked during the interview.

5.3.2.1 Interview results

The participants interviewed were asked what types of training they thought could be converted to digital badges. Alice commented, "I think, for example in Indiana we use WIDA and the can do descriptors. I think teachers usually respond really well with those. If I were going to

make a PD with badges I think that would be really useful." The participant went on to describe

how they saw the use of a WIDA digital badge being implemented. They commented,

> Maybe have someone give a kind of breakdown of a student and you could use the profiles
> to say how would you accommodate for this student. How would you use their score and
> their can do descriptors to create an alternate or accommodated lesson in their classroom?

Cynthia also mentioned the WIDA standards during the interview process. Cynthia commented,

> What are language objectives? I think that for new teachers that confuses them. Especially
> in the development of them, I find that a lot of teachers do not. Even if they went through
> school to get their ESL or bilingual endorsement, and now their asked to align to the content
> objective. They struggle with it that has been my experience. So that is something that if
> you transferred it to a badge system you can make those differentiations, what is a content
> objective, what is a language objective.

Cynthia continued, stating,

> First I need to understand what the WIDA standards are and the correlation with the
> common core, because these language objectives were developed according to WIDA and
> now the common core is part of the ELA strand. So, let's look at them and see what the
> correlation is, so that when you are planning for your unit or your ELL students that are in
> front of you, you can understand that this is going to help their English language
> development.

A third participant also mentioned the WIDA standards. Veronica commented,

> Well definitely like a badge per WIDA standard. Per different levels, like at level one here's
> what students should be doing here, you know what you can expect. Here's what they
> should be able to produce. Lesson planning, how to integrate language objectives separate
> from the learning objectives. Definitely, just everything tied to WIDA.

The participants mentioning the WIDA standards indicate a belief that there are specific

standards that ELL teachers need to be familiar with. The introduction of WIDA standards may be

a place where digital badges could be developed to train teachers on specific language standards related to ELL instruction. As Veronica stated, there could be a "badge per WIDA standard," and since digital badges are organized as a series of challenges, this recommendation could be implemented in the design of a new language standards digital badge.

Another participant mentioned the need for training to teach ELL students how to break down math word problems. Mel commented, "different strategies to teach word problems for ELL's because that's a big struggle for them. I mean just in general for all students' word problems. How to retain the math vocabulary, I guess a different way to teach math vocabulary." Training on ELL vocabulary strategies was also mentioned in the post-study survey as a participant wrote "vocabulary and language instruction with EL's." Skills such as training teachers on how to deliver vocabulary instruction for both reading and math seems to be another need of teachers working with ELL students. A digital badge therefore could be developed to either be the primary source or a follow-up to a face-to-face session on language strategies for ELLs.

This type of language instruction digital badge could also be helpful for teachers who may not always work with ELL students or only have a few ELL students in their classroom. As Veronica mentioned in the post-interview, "I think there should be some focus on teachers who maybe don't have a large population of ELL's but that still have some." Veronica went on to comment that while many teachers have their certification to teach ELL students, "there are tons of teachers who have ELL's in their classroom and don't have any kind of idea what to do with them."

Therefore, digital badges could be used not only with teachers who are certified to have ELL students in their classroom but all teachers at a school who may communicate with ELL students.

To answer the question of what types of professional development sessions could be converted to a digital badge it was also important to understand the types of challenges that current ELL teachers encounter with traditional PD. Understanding the challenges that ELL teachers face in obtaining adequate PD could inform the development of digital badges that address those issues. The participants in this study were thus asked how effective they thought the ELL PD they currently receive is, and the results are below in Figure 28.
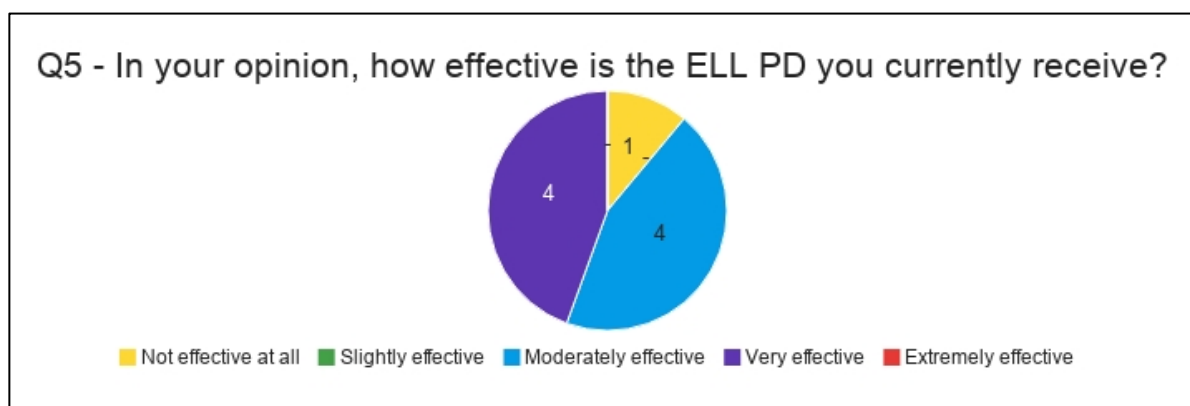
Figure 28. Screen Shot of Post-Survey Q5 Response

Of the nine participants, four indicated the ELL PD they currently received was very effective. Four participants indicated the ELL PD they currently received was moderately effective, and one indicated it was not effective at all. None of the participants indicated that the ELL PD they currently receive is extremely effective. The participants were then asked what types

of challenges they encounter with professional development. Figure 29 below shows the participants' written responses.

Figure 29. Screen Shot of Post-Survey Q7 Response

The participants' written comments ranged in length from short comments like "very random and no funding" to more detailed comments such as "Teachers are not motivated to complete these session because they usually see it as busy work. Also, most teachers have

poor/negative attitudes about PD." One participant commented on the lack of training for ELL teachers. The participant commented,

> Well, so far this school year, I have received one PD session for ELL teachers and that PD included what I already knew. So, one of the advantages of that PD would be that I get to assist new ELL teachers and/or monolingual teachers who teach ELL students. A disadvantage that I see in this is that I, as an experienced teacher who I myself have in the past has developed and delivered PD for EL teachers, this was redundant and I did not get any new learning from it.

Another participant wrote about getting PD on relevant topics. The participant's comment suggests that the ability to select the type of training does impact teacher satisfaction with PD. They wrote,

> The exchange of ideas is essential to learning and it's nice to do this in an environment where I can relax and not feel rushed to pick up my next class between PD's or on my own time after school especially as a busy mom and wife who already does so much school stuff at home. I guess some good things about the badges PD is the fact that I don't need to leave sub plans and I could potentially get more PD and perhaps in the topics that matter most to me in a shorter amount of time…possibly.

Time to complete PD was also mentioned by several participants. Another participant wrote, "It takes time to complete," as a challenge to current PD. Yet another wrote, "advantage is always having or keeping up to date with best practices, challenge is time." These participant comments suggest that the time needed to complete PD is currently a major challenge for in-service teachers.

Since participants mentioned time as a challenge to current PD, it is important to note that time was also mentioned as a benefit of conducting PD through a digital badge system. During the interview process, Cynthia commented, "You have that accommodation to take this PD at your

own time, at your own home. I felt at ease going through the steps to carry out what I was supposed to do in the professional development." When asked if they thought teachers would buy into using a digital badge system at their school, another participant mentioned time as a benefit. Alice stated, "I think they would. One of the reasons is because if it's online they could do it on their own time." Time was also mentioned when the participants were asked, "If you could change how PD is administered, what changes would you make?" The participants' written comments included, "Being able to complete on your own time is good" and "Keep session short."

Another participant wrote,

> I would have teachers take an interest/level of knowledge survey to offer appropriate PD options. I think that online training with face-to-face collaboration would be beneficial to maximize time spent at PD. I personally enjoy going to conferences and stepping out of my classroom to take time for myself as an educator, but I would be willing to try a mixed PD.

Other changes to current PD that teachers commented about included, "PD should be very practical for teachers because they are busy. They want something they can apply to their classrooms and something that can either help them or help students." And another participant mentioned the need for relevant PD topics: "Have it tailor to the teachers needs in the school and community. I would also suggest having PD where teachers are involved and are engaged. Not just a speaker." The participants' written comments are included below in Figure 30.

If you could change how PD is administered, what changes would you make?

Make sure it is done by outside agency or group. Internal PD is more like propaganda!

Have it tailor to the teachers needs in the school and community. I would also suggest is having the PD where teachers are involved and are engaged. Not just a speaker.

PD should be very practical for teachers because they are busy. They want something they can apply to their classrooms and something that can either help them or help students.

They them more engaging thus allowing teachers to plan for their students using innovative strategies

Thank you for asking. If it was up to me I would love to differentiate the learning, just as we do for our students, we differentiate, I would love to have options to my own learning as I myself is a reflective professional who knows what I need or would like to learn new as it pertains to my EL students. I would also like to see changes in PD styles some can be on technology and others hands on on combination.

Keep the sessions short

N/A

Being able to complete on your own time is good.

I would have teachers take an interest/level of knowledge survey to offer appropriate PD options. I think an online training with face-to-face collaboration would be beneficial to maximize time spent at PD. I personally enjoy going to conferences and stepping out of my classroom to take time for myself as an educator, but I would be willing to try a mixed PD

Figure 30. Screen Shot of Post-Survey Q9 Response

The participants' comments suggest there is a need to make professional development more efficient and include topics that are currently relevant to teachers working with ELLs. As previously noted, only four of the participants thought that the PD they currently receive is very effective. Therefore, creating trainings that are more relevant to teachers could also impact their overall satisfaction with PD and possibly increase the volume of trainings ELL teachers could attend each school year.

5.3.3 RQ3: What are ELL teachers' perceptions of digital badges and their role in professional development?

To understand teachers' perceptions of digital badges and their role in PD, the interviews, digital badge reflections, and pre- and post-survey data were reviewed to determine the participants' overall experience of using a digital badge system. At the beginning of the study, participants were asked if they believed digital badges are currently an option for their school's professional development needs. The results were mixed, with two indicating definitely yes, two indicating probably yes, two indicating might or might not, two probably not, and one definitely not. The results of Question 17 of the pre-survey are illustrated below in Figure 31.
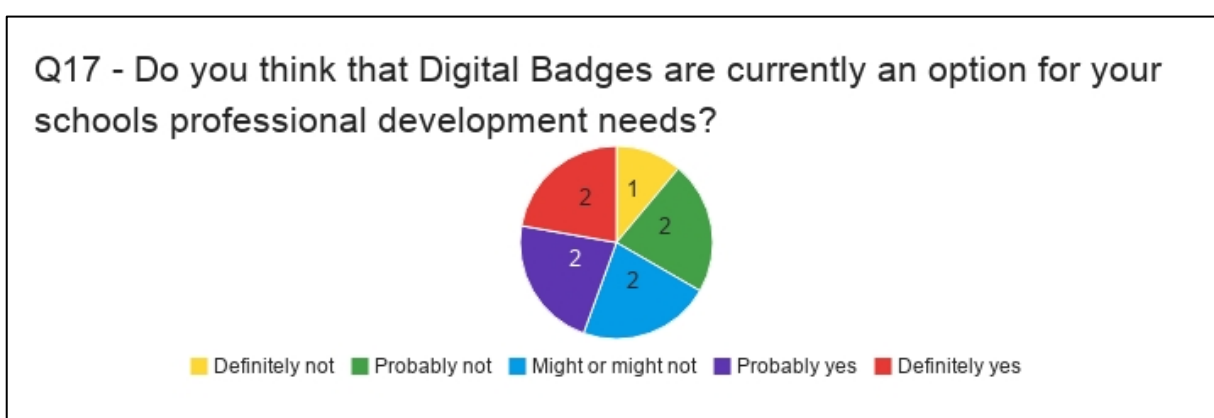
Figure 31. Screen Shot of Pre-Survey Q17 Response

These results suggest that prior to the study, the participants were not sure if a digital badge system could be an option for PD at their school. As indicated in the first research question, most of the participants had not completed a digital badge prior to this study. Their lack of familiarity with digital badges could be a factor in their initial perception of digital badge systems. These results indicate there may be a need for digital badge providers to better communicate how digital badges are currently being used and the types of skills training that are currently available as digital badges.

To determine the participants' perceptions of digital badges as an option for professional development, the post-survey then asked participants if they agreed or disagreed that digital badges are a good option for ELL teacher PD. Of the nine participants, three strongly agreed, three somewhat agreed, two neither agreed or disagreed and one somewhat disagreed. None of the participants strongly disagreed with the statement that digital badges are a good option for ELL teacher PD. Therefore, six of the participants believed that digital badges are a good option for ELL teacher PD. This suggests that there was a change in the perceived ability of digital badges to deliver PD in at least two of the participants. This result also suggests that the participant who had the most reservation about the usefulness of digital badges for PD perception may have changed, as the post-survey does not indicate that any participants strongly disagreed with digital badges being a good option for ELL teacher PD. Also interesting is that the number of participants who were unsure about using digital badges for PD remained the same. The results of the post-survey question are illustrated below in Figure 32.
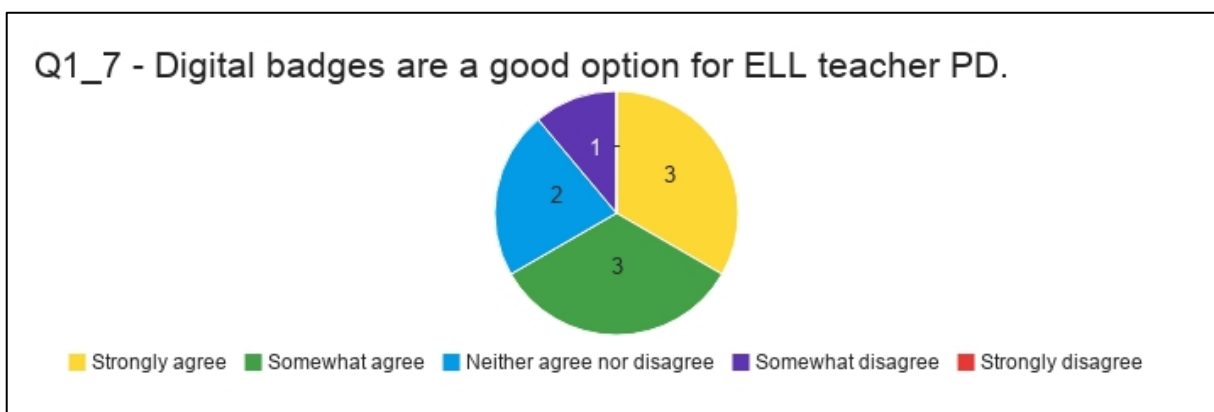
Figure 32. Screen Shot of Post-Survey Q1.7 Response

The participants were also asked about their specific grade level and if they thought digital badges could be a solution for delivering PD. The participants mostly agreed, with two strongly agreeing, three agreeing, and one somewhat agreeing. Two of the participants somewhat disagreed,

and one disagreed. None of the participants strongly disagreed. The results of the post-survey question are illustrated in Figure 33.
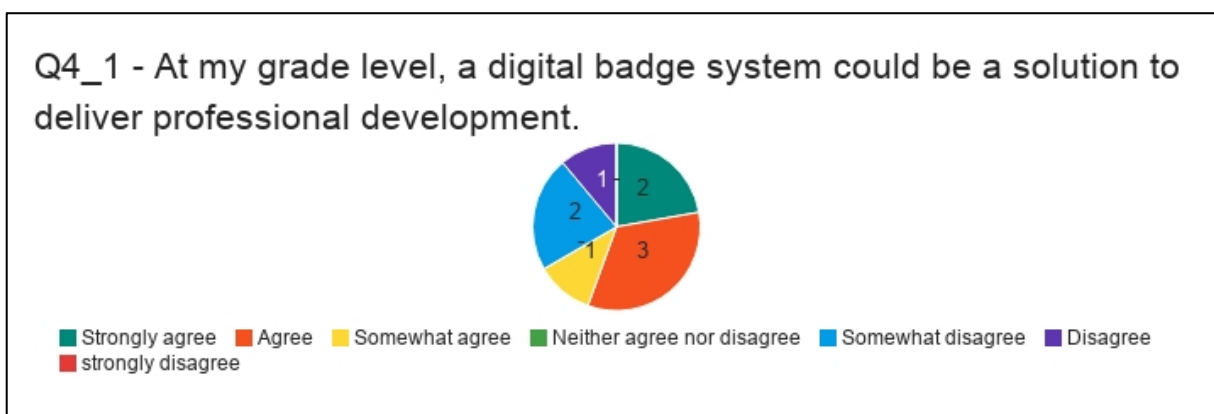
Figure 33. Screen Shot of Post-Survey Q4.1 Response

The ability to adequately train teachers on the skills needed to work with English language learners was also important in evaluating the digital badge system's perceived effectiveness. Therefore, the participants were asked if they believed the digital badge system adequately training them to conduct a running record. Of the nine participants, five strongly agreed, three somewhat agreed, and one neither agreed or disagreed. None of the participants either strongly or somewhat disagreed that the digital badge for running records adequately trained them on conducting a running record. The results of the post-survey question are shown below and suggest that most of the participants believed the digital badge system was effective at training them to conduct a running record.
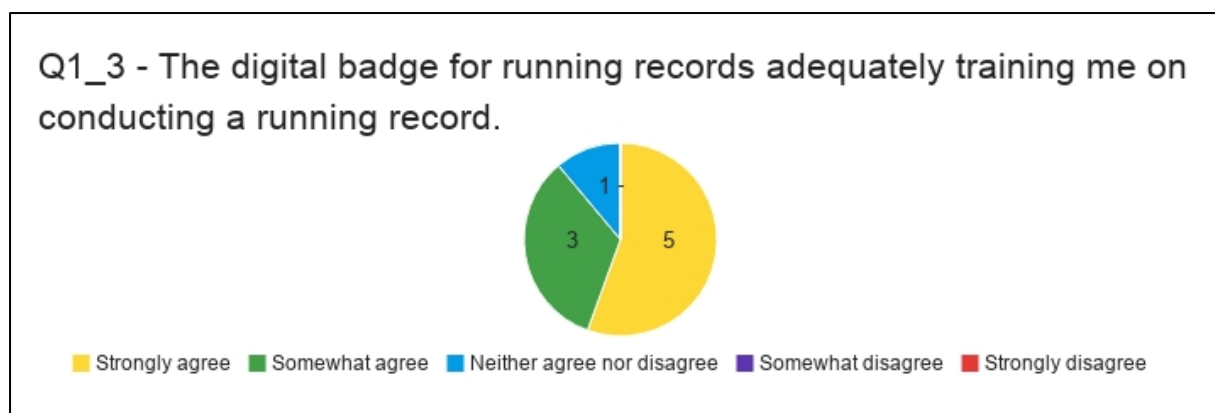
Figure 34. Screen Shot of Post-Survey Q1.3 Response

The participants were also asked if they enjoyed completing professional development online through the digital badge system. The participants mostly agreed with 4 participants indicating they strongly agreed, 3 somewhat agreed, and 2 neither agreed nor disagreed. None of the participants either somewhat or strongly disagreed. The results of the post-survey question are illustrated in Figure 35.
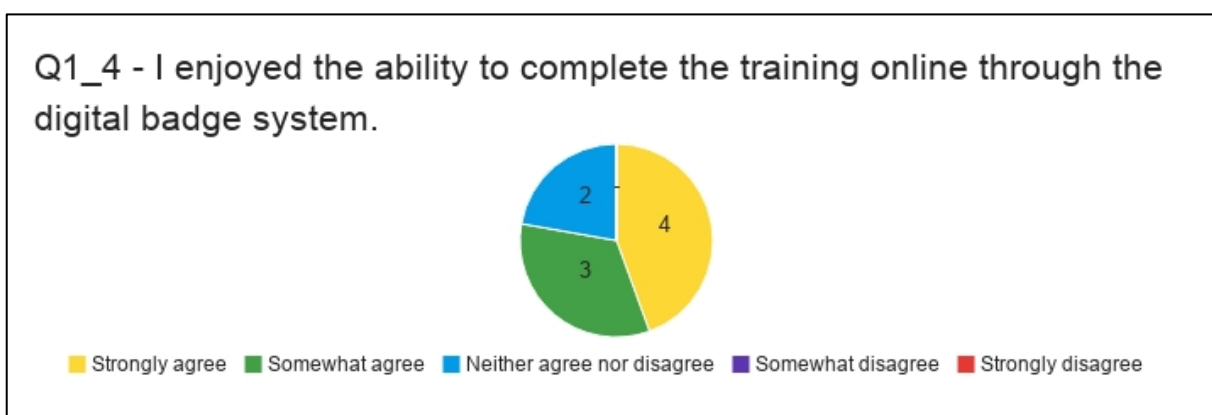
Figure 35. Screen Shot of Post-Survey Q1.4 Response

The participants were also asked if they believed the running record badge provided them with valuable experience for assessing ELL students' reading ability. Of the nine participants, three strongly agreed and four somewhat agreed. One participant neither agreed or disagreed, and

one participant somewhat disagreed. The results of the post-survey question are listed in Figure 36 below.
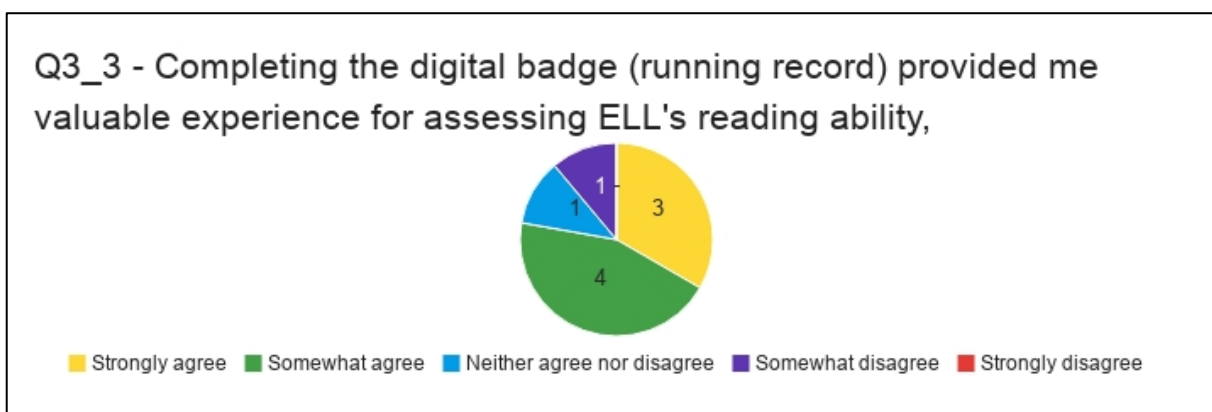
Figure 36. Screen Shot of Post-Survey Q3.3 Response

Combined, these results indicate that the participants believed that the digital badge system was effective at training them to conduct a running record and they enjoyed the ability to complete professional development online.

However, when asked if they would recommend digital badges to other teachers, the participants' responses were split. As Figure 36 below indicates, three participants strongly agreed, two somewhat agreed, and four participants neither agreed or disagreed. These results suggest that while the participants enjoyed completing the digital badge and believed it was an effective training method, they were hesitant to recommend digital badges to their colleagues. Although four of the participants were unsure if they would recommend digital badges to other teachers, it is important to note that none of the participants either somewhat or strongly disagreed.
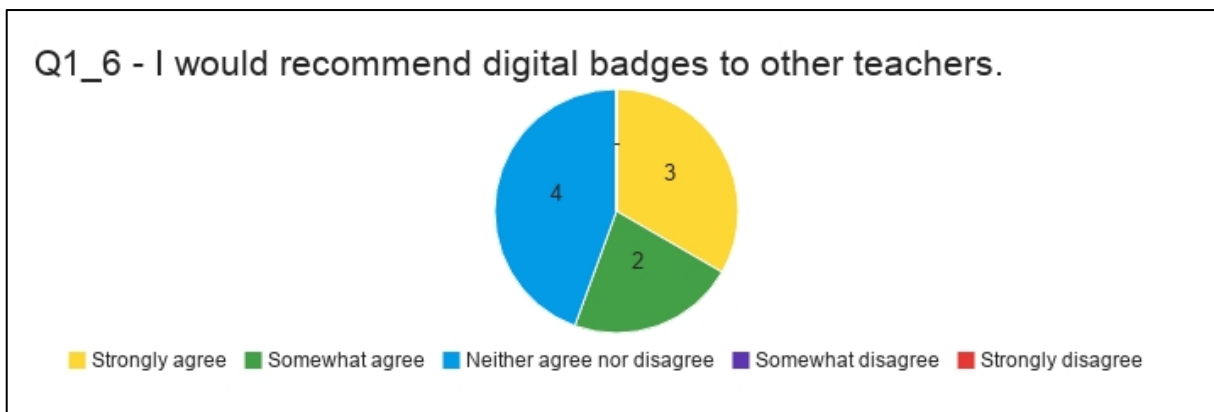
Figure 37. Screen Shot of Post-Survey Q1.6 Response

The participants were also asked if they would be interested in completing more ELL training through an online digital badge system. The participants were also divided in their responses. Figure 38 below demonstrates the results.
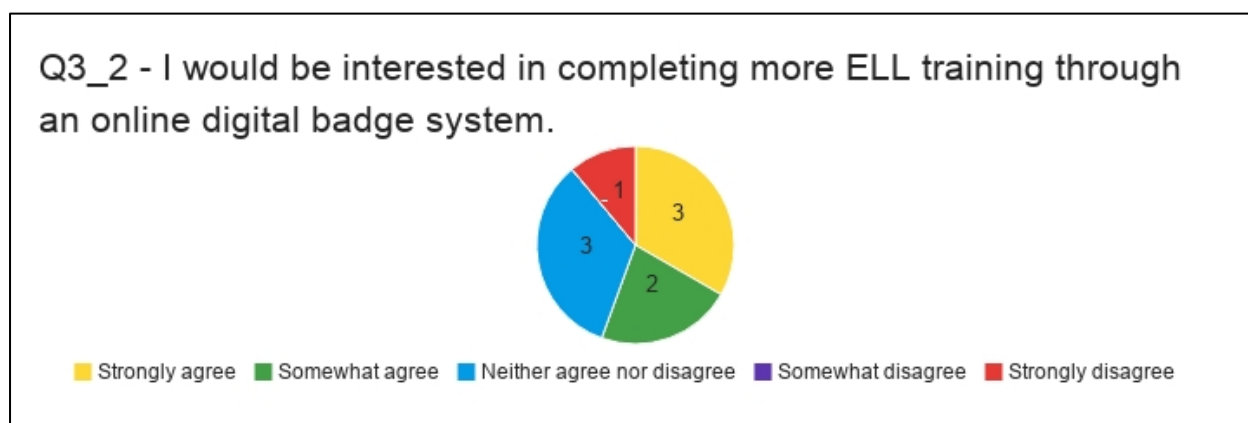
Figure 38. Screen Shot of Post-Survey Q3.2 Response

Three of the participants strongly agreed, and two somewhat agreed. Three participants neither disagreed or agreed, and two strongly agreed. The results of this survey question indicate that five of the nine participants would be interested in completing more ELL training online through a digital badge system. Three were indifferent, and one participant strongly opposed completing more training through an online digital badge system.

The participants also responded positively when asked if they believed teachers could benefit from PD using a digital badge system. Two of the participants strongly agreed, three participants agreed, two somewhat agreed, and one neither agreed or disagreed. None of the participants disagreed with the question. The results are illustrated below in Figure 39 and suggest that the majority of participants believe their colleagues would benefit from completing PD through a digital badge system.
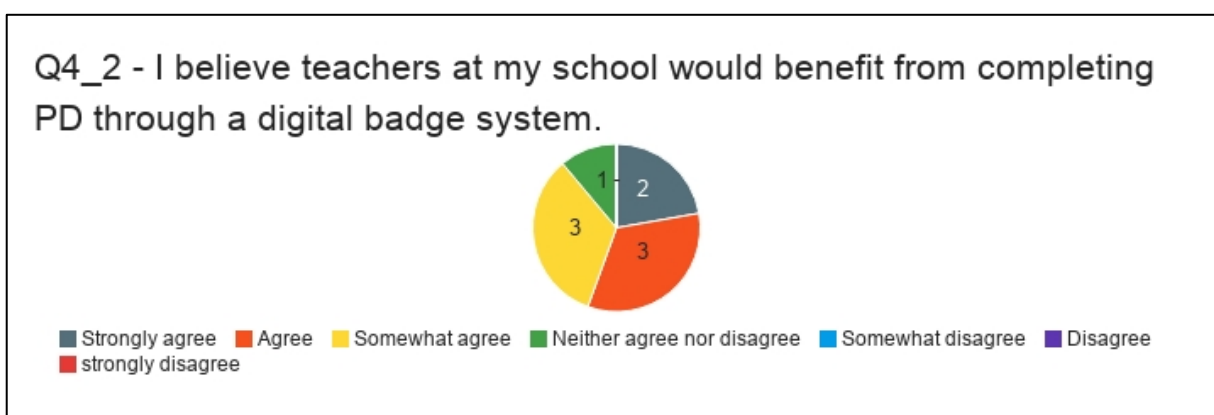
Figure 39. Screen Shot of Post-Survey Q4.2 Response

5.3.3.1 Interview Results

The interviews with participants also helped in understanding their experience using the digital badge system and how they thought it could be implemented as a PD delivery system. During the interview process, the participants were asked several questions to get their opinions on how they thought digital badges could be used for professional development. The questions are included below, and the complete interview protocol can be found in Appendix B:

1. Now that you have completed a badge, what are your thoughts on digital badge system for PD?
2. What did you like or not like about using a digital badge system for PD?
3. How do you think a digital badge system could be used in your school?
4. What are some of the challenges you see to using a digital badge system for PD?

During the interview process, Alice commented on the game-like aspect of the digital badge and how they believed it helps with engagement. The participant said,

> I mean I think, it's kind of like it's fun. Any kind of game that you play, you get, like a game on your iPhone or a game on your computer, you always have these little things that you get. You have to collect them all, and I know this might sound kind of stupid but people like that. They like collecting the different badges and ok I'm done with this, I get my little sticker filled in, and that's really cool.

Cynthia commented on the convenience of using a digital badge system. The participant stated,

> I see it integration being effective because teachers can use it at their own leisure time. So, you have that accommodation to take this PD at your own time, at your own home. I felt at ease going through the steps to carry out what I was supposed to do in the professional development.

Cynthia also commented on the ability to review the training. She stated, "I think so because you have access to go back and review it. And because it was video and the professor was walking you through it, I even had to do that." Another participant commented on the ability to review the training material. The Alice said,

> I do like the idea that they could revisit it. For example, if we were doing PD on ENL and let's say everyone had to complete it beginning of the year by, within the first month of school you had to get all your little badges. That's great but what happens when October rolls around and you have kind of forgotten what you did and you have a brand-new student

move here from Puerto Rico and doesn't speak any English. You might want to revisit that so I think it would be nice to, even though they have completed the badges.

A third participant mentioned the ability to review content as a benefit and how a leveled badging system could be implemented to incentivize reviewing previously obtained badges. Jessica stated, "Some kind of incentive, something like a mastery badge or something that shows that you have gone back and revisited the skill that you have already done but you're able to show that you progressed."

However, the lack of collaboration with coworkers during the training session was mentioned by several of the participants as a disadvantage to conducting PD through an online digital badge system. One of the participants specifically mentioned the inability to have a conversation as a drawback. Mel stated,

It's hard because you're not really interacting with anyone. When you go to a PD, you can have a conversation with a colleague or you know, you make connections to other people. I guess that's the only drawback: you're not really interacting with anyone.

Another participant commented on the lack of in-person guidance through the digital badge system. When asked about challenges to using the badge system for PD, Cynthia stated, "that they are on their own. For some people that are not technology wise, that is pretty much it."

Another participant also mentioned the lack of in-person facilitation. They commented on the need to have questions answered during PD. Alice said, "I think it's great but you can't ask questions if you don't understand." In-person facilitation is a common trait in most professional development sessions and the participant responses in this study suggest that in-service ELL

teachers typically prefer a trainer to provide answers in real time and enjoy the aspect of collaboration that traditional face-to-face PD includes.

These may be challenges that are difficult to overcome in an online digital badge system, but the participants in this study also seem to enjoy the ability to complete training at a distance. Several of the participants stated the convenience of being able to complete training at a distance and on their own time as a benefit to online digital badges.

In summary, survey results suggest that the participants in this study enjoyed using the digital badge system; they believed they benefited from completing the training, and most participants would recommend digital badges to other teachers. Interview data revealed that while the participants missed the face-to-face interaction of traditional PD, they also saw the benefit of being able to complete PD on their own schedule at a distance. These results suggest that the participants' experience using the digital badge system was mostly positive and they saw the potential benefits of conducting PD using such a system. The results also indicate the participants in this study perceived the digital badge system as a valid delivery system for professional development for ELL teachers.

CHAPTER 6. DISCUSSION AND CONCLUSION

The aim of this study was to test the ability of a digital badge system to deliver professional development to in-service teachers working with English language learners. The qualitative data collected, including the written reflections, surveys and interviews, were used to analyze how the participants navigated the online digital badge system and completed the running records digital badge training. The participants in this study included nine in-service teachers with experience working with students learning English as a second language. To determine if the digital badge system was an effective delivery method for professional development, the study evaluated the participants' ability to access the system, review the training videos, assess the students' reading level using the running record forms and submit the written reflections. This section will summarize the results for each research question and the implications for professional development.

6.1 Summary of Findings

6.1.1 RQ1

1. Is a digital badge system a viable tool for delivering professional development to in-service teachers of English language learners?
    a. Do ELL teachers think it is comparable to previous professional development they have received face-to-face?
    b. What are the advantages and disadvantages of PD administered face-to-face, online or in hybrid formats?

The data collected to answer this question included the digital badge written reflections, pre- and post-surveys, and interviews. The digital badge reflections showed that all the participants could access Purdue's Passport system, viewed the required training materials and completed the

running records digital badge. The participants required minimal to no technical assistance in accessing Passport or the materials required to complete the training. The participants all completed the written reflections within the digital badge and assessed the student's ability to read in English. While the participants could obtain the training materials and completed the running record digital badge, during the interview process participants mentioned the inability to get a quick response to questions as a disadvantage of the digital badge system.

The pre-survey revealed that the participants lacked familiarity with digital badges and only one participant had obtained a digital badge prior to this study. However, the post-survey indicated that six of the nine participants believed that digital badges were an option for delivering PD at their grade level. All the participants agreed that Passport was easy to log into and could complete the training independently.

Moreover, results revealed that six of nine participants also agreed that teachers on their campus would buy into conducting PD through a digital badge system. Seven of the nine participants also agreed that completing the running record digital badge provided them valuable experience for assessing ELL's reading ability. Five of the nine participants also agreed they would be interested in completing more ELL training through an online digital badge system.

However, the results also indicate that half the participants didn't see the ability to share the digital badge on social media as an incentive to complete the training. Of the nine participants, two indicated they were moderately likely and three indicated they were slightly likely to share their digital badge on social media. Most participants also did not see the ability to earn a digital

badge as an incentive. Only four of the nine participants agreed that having a digital badge to earn motivated them to complete the training. The participants were also asked what they thought was reasonable to pay for a digital badge earned through a university, and the majority believed between $10 and $30 was a reasonable price.

The combined results indicate that the participants did not see sharing a digital badge as an incentive to complete the training but thought the ability to complete PD trainings online on their own time was an advantage when compared to traditional PD. The results also revealed that completing the PD online through a digital badge system was not a challenge for the participants and they could all view the required content to earn the running record badge. Thus, the system proved to be a viable tool to deliver PD to the nine in-service ELL teachers in this study.

However, the digital badge system does have its limitations and consequently is not comparable to attending a facilitated face-to-face PD session. Several participants in this study commented on the lack of social interaction as a disadvantage. The ability to collaborate with colleagues and do hands-on activities during a face-to-face PD session were also mentioned by the participants as lacking in the digital badge system training.

Furthermore, the inability to answer questions in real time was also revealed as a drawback of completing training through a digital badge system. Due to the inability to answer questions in real time, the interview data also indicate that the participants thought a digital badge system would be better as a PD option if it were a follow-up to a face-to-face training.

6.1.2 RQ2

2. What types of training do ELL teachers think could be converted to digital badges?
    a. What types of training would ELL teachers prefer to complete online through Digital Badges?

The study also sought to determine what types of training could be converted to digital badges and delivered online. This question was asked to identify topics that the participants believed could be better served as online trainings rather than face-to-face PD sessions. The participants provided a variety of topics and commented on how digital badges could be used in their situation. Topics such as differentiating instruction, EL teaching strategies, assessing written work, working with ELLs from distressing environments, vocabulary and language instruction were mentioned by the participants.

The results also suggest the need to develop a WIDA standards digital badge. Several of the participants mentioned the need for teachers working with ELLs to understand the WIDA standards. The need for teachers to understand the difference between content and language objectives was also mentioned during the interview process. The interview data collected also suggest that teachers need support understanding how WIDA standards can be implemented to accommodate ELL students at various levels of English development. One of the participants recommended developing a digital badge per WIDA standard. Therefore, digital badges could be developed to supplement the PD that teachers working with ELLs are currently receiving, and the topics mentioned by the participants training could be converted to be delivered online through a digital badge system.

6.1.3 RQ3

3. What are ELL teachers' perceptions of digital badges and their role in professional development?

    a. How much time would they be willing to spend completing PD on a digital badge system?

    b. What barriers might hinder teacher use of a digital badge system for PD? What are the perceived advantages if any?

To determine ELL teachers' perceptions of digital badges and their role in PD, the participants were asked a number of questions in the pre- and post-surveys and during the interview process. In the pre-study survey, the participants were asked if they believed digital badges were currently an option for their school's professional development. Prior to completing the running records digital badge, the participants were mostly mixed, with two indicating definitely yes, two indicating probably yes, two suggesting they may or may not be, two suggesting probably not, and one definitely not. The post-survey then asked the participants if they believed digital badges were a good option for ELL teacher PD. Six of the nine participants either strongly or somewhat agreed that digital badges are a good option for ELL teacher PD. Two participants neither agreed nor disagreed, and one somewhat disagreed.

The post-survey also asked participants if the digital badge for running records adequately trained them on conducting a running record. The participants almost all agreed: five participants strongly agreed, three somewhat agreed, and one neither agreed or disagreed. This result suggests that the participants perceived the digital badge for running records as a viable option for delivering the running records training.

The post-survey results also indicate that the participants mostly had a positive perception completing digital badges online. Of the nine participants, four strongly agreed and three somewhat agreed that they enjoyed the ability to complete the training online through the digital badge system. Most of the participants also indicated that they believed completing the running records digital badge provided them valuable experience in assessing ELL's reading ability. Five of the nine participants also indicated they would recommend digital badges to other teachers and they would be interested in completing more ELL training through an online digital badge system. The participants also believed teachers at their schools would benefit from completing PD through a digital badge system. Two participants strongly agreed, three agreed, three somewhat agreed and one participant neither agreed nor disagreed.

During the interview process, the participants' comments revealed that they enjoyed the ability to complete digital badges online on their spare time. Several participants commented on the convenience of the digital badge system and thought that teachers would enjoy being able to access PD from home. The comments also revealed that the ability to review completed digital badges was perceived as a benefit of digital badges. One participant commented on the need to review training materials months after the training has been completed and how digital badges would be helpful in reviewing previously completed PD trainings. Furthermore, the ability to view what types of trainings were completed by other teachers on their campus was also mentioned as a potential benefit of using a digital badge system for PD. However, the several participants also believed the lack of facilitation would be a challenge for some teachers. The lack of face-to-face facilitation was also a reason why the digital badge system was perceived to better serve as a follow-up to a traditional PD session. These results suggest that the participants in this study saw

some disadvantages to using a digital badge system to deliver PD, but they were mostly positive in their overall believed perception of delivering PD through such a system.

6.2 Implications for ELL Teachers

While the use of digital badges to certify employee skills is gaining acceptance (Raish & Rimland, 2015), to date there are no studies to determine if digital badges can be used to deliver PD to K-12 in-service teachers working with English language learners. The findings in this study have helped identify topics in professional development that can be converted to online digital badges and how a digital badge system could be implemented at various grade levels. Participants' survey results suggest that they were satisfied with training materials and believed other teachers would buy into using a digital badge system to complete professional development sessions. Study participants also indicated they enjoyed the convenience of completing digital badges on their own time. This finding supports prior research, which proposes that one of the advantages of digital badges is the flexibility they offer to adult learners to complete training on their own schedule and pick up where they left off if interruptions in training occur (Finkelstein, Knight, & Manning, 2013).

However, the study results suggest that the lack of facilitation, while not a hindrance to participants completing the running record digital badge, may be a drawback of completing PD online. Due to the lack of face-to-face facilitation, the participants thought that the digital badge system could be implemented as a follow-up to a traditional PD session. Interestingly, the need for follow-up, which is often lacking in traditional PD training sessions (Smith, 2014), was also seen as a potential benefit of implementing a digital badge system. The results suggest that the ability to review previously completed training materials was viewed as a significant advantage of digital

badges. For teachers working with English language learners, the ability to review training materials is important because the students' ability to read and write in English can vastly range.

Results also suggest that the unexpected arrival of an ELL student into a classroom might require the teacher to review prior trainings to identify strategies that can be used to help the incoming student. Traditional PD sessions often lack any follow-up, and it is typically up to the teacher to keep records of the sessions they attend. Digital badges therefore could be implemented as a type of PD tracking system to help teachers review content and identify gaps in training.

For teachers working with ELLs, another key benefit of implementing a digital badge system is the ability to select the types of skills they want to focus on. The results indicate that there are specific standards that teachers need to be familiar with to help ELL students succeed. Prior research also suggests that teachers working with ELL students feel unprepared and would like more training specifically to help language learners (Franco-Fuenmayor et al., 2015). However, not every teacher who has an ELL student in their classroom has been certified to work with language learners, and some may need additional training to support ELL students' language acquisition in addition to their learning of academic content. Thus, by implementing a digital badge system to deliver PD, both teachers who are certified to teach ELLs and those who are not would have access to obtain the training when they feel the need for additional support.

For delivering professional development, digital badges also have the added benefit for teachers of being able to deliver a sustained training over the course of the school year. The results of this study suggest that teachers would be interested in obtaining more digital badges and enjoy

the ability to select the types of training they want to focus on. Thus, implementing a digital badge system would help fulfill a requirement of the English learners and Title III of the Elementary and Secondary Education Act (ESEA) guidelines for language educator PD that requires the ability to delivery ongoing training in any school district plan for PD. Additionally, the ESEA act also requires that the PD delivered to teachers of language learners allow for personalization and be designed to provide the skills needed to deliver appropriate language support (U.S. Department of Education, 2016). Therefore, a digital badge system could provide a solution, since badges could be developed for various language support skills and teachers would be able to select the PD that is most relevant to them.

The participants in this study also agreed that teachers at their school would benefit from completing PD through a digital badge system. Prior research also suggests that instruction in literacy vastly improves when teachers working with ELL students receive training (Buysse et al., 2010). With implementation of a digital badge system to deliver specially tailored PD for ELL literacy instruction, teachers would not only have access to the training but be able to review the training when needed. For ELL teachers who are currently struggling to receive the training to deliver language instruction, digital badges could provide a solution to school districts that may find it difficult to meet the training needs of teachers with in-person PD sessions.

6.3 Implications for School Districts and PD Facilitators

As the use of online training becomes more common in both K-12 and higher education, digital badges provide an additional option to deliver training. This study sought to investigate the viability of an online digital badge system to deliver professional development but also asked what the participants believed made PD most effective. Based on the results, teachers need to be engaged

in training that is relevant to their current students. This finding is supported by prior research, which indicates that most teachers need training that is relevant for them for interacting with students (Downer et al., 2009). Thus, a practice that school districts could implement to have their teachers take more ownership in their PD is to survey their teachers every school year to identify areas of perceived training need.

For facilitators of professional development, digital badges also provide the ability to monitor teacher progress and identify teachers that have mastered certain skills. The findings in this study also suggest that teachers are interested in connecting with colleagues who are experts in skills they may need training on. The study results also imply that collaboration is essential for teachers to view PD sessions as effective. For novice teachers, collaboration is also key for their growth and is most impactful when it is ongoing and teachers can establish professional networks (Lee, 2010). Hence, by implementing a digital badge system, facilitators of PD could connect teachers on their campus with peers who are training in similar skills and foster more collaboration among teachers. Employing a digital badge system would also meet another requirement of the ESEA guidelines, which call for PD that is intensive and collaborative (U.S. Department of Education, 2016).

The results in the study also indicate that teachers working with English language learners are dissatisfied with not only the limited number of PD being offered to them but also the redundancy of much of the training they attend. Prior research also suggests that scaffolded PD is also more effective than PD that is not scaffolded (Kleickmann, Tröbst, Jonen, Vehmeyer, & Möller, 2016). Therefore, since one of the benefits of digital badges is the ability to scaffold

learning (Finkelstein et al., 2013), school districts looking for solutions to meet their teachers' training needs should consider how digital badges could be developed for scaffolding skills training and acknowledging teachers who have mastered requisite skills.

6.4 Implications for Instructional Designers

The design of the running record badge also helped in identifying strategies for developing effective teacher training. Instructional designers in higher education should note that the ability to receive feedback in real time or shortly after a participant asked a question was a shortcoming of the running record digital badge. Participants' comments suggest they missed the ability to ask questions and quickly receive an answer. Consequently, it is important for other instructional designers working on web-based training and digital badges to find tools that allow for quick responses to participant questions.

The study results also indicate that the participants enjoyed the videos and ability to review the completed running record badge. Therefore, developers of digital badges should also try to integrate videos when possible that provide a walkthrough of the expected outcomes of the training. Videos allowed the participants to review content when they need further clarification and pause at specific moments in the training.

Furthermore, for instructional designers looking to implement digital badges as part of faculty training it may also be helpful to provide a screencast of the entire process of logging into the digital badge system, reviewing content and submitting assignments. The participants in this study needed little technical support however several of them did reach out during the log in process and needed guidance to find the submission textbox. A screencast walkthrough would help clarify the entire process for people taking training through the digital badge system and would be a simple addition to the training.

6.5 Limitations of Study

While this study's goal was to determine the viability of a digital badge system for delivering PD to ELL teachers, the study had various limitations and cannot be generalized. One major limitation of this study is the sample size. The study had a small sample size, and only nine in-service ELL teachers completed the entire running record digital badge and the pre- and post-surveys. While there were more in-service teachers who expressed interest in participation, several potential participants only completed the pre-survey and did not go into the digital badge system to review the training content, and consequently their data were not included in this study. Those teachers were contacted on numerous occasions to offer assistance, but responses from those participants were not received. Ideally, this study would have a larger sample size and include teachers that are unfamiliar with online learning. However, participants in this study mostly had experience with online trainings and did not require additional technical support.

An additional limitation of this study was the lack of facilitation offered during the training. The participants were expected to navigate the training individually and did not receive any additional instructions aside from those included in the running record digital badge. The researcher only provided feedback to the running record form written reflections and approved digital badge challenges as the participants completed them. Several participants also mentioned lack of facilitation as a disadvantage of digital badges, and thus it is difficult to determine if teachers would be more satisfied completing a facilitated digital badge session.

Another limitation of the study is the number of digital badges available to the participants. Several participants indicated they would be interested in completing more digital badges.

However, only the running record digital badge was available for participants during this study. Therefore, this study was unable to investigate which types of skills in-service ELL teachers would select if given options and how having multiple digital badges to choose from would impact motivation to complete PD. Additionally, having only one digital badge available to participants in this study also prevented this study from investigating how participants selecting their own training path impacts satisfaction with PD.

6.6 Suggestions for Future Research

Based on the findings in this study, further research needs to be conducted to determine if in-service teachers in general would benefit from conducting PD through a digital badge system. This study focused only on teachers working with ELL students, but future studies could look at larger groups of teachers and evaluate if teacher PD could be delivered to an entire school district through a digital badge system. Furthermore, since a limitation of this study was the small sample size, a future study with more participants across a large school district could help resolve potential technology obstacles teachers may encounter when attempting to complete a digital badge.

This study also only allowed participants to select one digital badge to complete. Consequently, more research is also needed to investigate how having multiple digital badges to select from would impact teacher motivation and individual learning paths. A future study could be conducted with in-service teachers who are given the option to choose the digital badges they want to focus on to investigate individual teacher PD preferences. Such a study would also help in determining if having multiple digital badges to earn would have an impact on teacher motivation to obtain multiple badges.

Additionally, since this study did not have a facilitator and participants were not offered guidance throughout the training, future studies could be conducted to investigate how a facilitator providing guidance throughout the completion of a digital badge would impact in-service teacher satisfaction. While the participants in this study indicated they did not find it difficult to complete the running record digital badge, they did indicate that they would have preferred more facilitation throughout the process. Such a study could also help determine if a digital badge system would serve well as a primary or secondary method to delivering PD.

6.7 Conclusion

The findings in this study suggest that a digital badge system is a viable delivery system for administering professional development to in-service teachers working with English language learners. The participants in this study could log into Purdue's Passport system and were able to view the content in the running record badge with no issues. The participants also indicated they enjoyed the ability to complete training on their own schedule and believed that their colleagues would buy into receiving PD through a digital badge system. As school districts continue to contemplate how to meet the training needs of novice ELL teachers, digital badge systems should be an option for K-12 educators and be part of school administrators' long-term goals for improving professional development. Prior research suggests that ELL teachers need more training to meet the needs of their students (Teemant, 2014). However, the demands on teachers are numerous, and attending professional development sessions face-to-face can be a challenge for both the teachers and the school administrator facilitating the PD sessions. Therefore, this study sought to investigate an additional tool that could be implemented to deliver in-service PD for ELL teachers online.

As the population of English language learners continues to grow across U.S. public schools, the need for training teachers to work with language learners will be a continuous challenge (Beal & Rudolph, 2015). Consequently, online learning options need to be discussed and this viability studied to identify how to best train the next generation of teachers to work with an increasingly diverse student population. In evaluating online training options, such as digital badges, it is also critical that PD is developed to share the characteristics of PD that are effective in a face-to-face environment. Therefore, experts in facilitating teacher training and those developing the online training should be collaborating to ensure that PD delivered through online systems is as relevant and engaging for the ELL teachers.

In conclusion, while the results of this study cannot be generalized due to the specific audience and sample size, digital badge systems do offer promise as a tool for delivering PD for in-service teachers. The need for teachers to continually engage in training and the lack of follow-up in current PD make digital badges a unique tool for teachers to receive training on their own schedule and track the skills they master throughout their career. It is this researcher's hope that this study will serve as an initial step toward the creation of more digital badges for teachers of English language learners and ultimately the implementation of digital badge systems in K-12 professional development.

APPENDIX A. SURVEYS

Pre-Badge Survey

1. Demographic Information
   a. Name
   b. State of residence
   c. Current position as an educator
   d. Number of years working in education
   e. How long have you been certified or endorsed to teach English language learners?
   f. Languages spoken

2. Professional development
   a. Have you attended any PD sessions in the past 2 school years? Approximately how many PD sessions have you attended in the past 2 school years?
   b. Were any PD sessions you attended focused on topics related to English language learners (ELLs)? Approximately how many PD sessions focused on topics related to ELLs?
   c. How were PD sessions administered? Face to Face? Online? Hybrid?
   d. Have you ever completed a running record or training for running records assessments before this badge?
   e. Have you completed teacher training online prior to this badge?

3. Digital Badges
   a. How familiar are you with digital badges?
   b. Have you ever obtained a digital badge from any organization?
   c. If you obtained a digital badge, how likely is it that you would share it on social media or your own website?
   d. Do you think digital badges are an option for your school PD needs?

Post-Badge Survey

1. Digital Badges

   Now that you have completed a digital badge, please indicate your level of agreement to each of the following: (5pt Likert Scale)

   a. The digital badge system was easy to log into and navigate.

   b. The instructions for earning the digital badge were clearly outlined.

   c. The digital badge (running record) adequately trained me on conducting a running record.

   d. I enjoyed the ability to complete training online through the digital badge system.

   e. I would be interested in completing more PD through a digital badge system.

   f. Having a digital badge to earn motivated me to complete the training.

   g. I would recommend digital badges to other teachers.

   h. I would prefer to complete PD through a digital badge system, face-to-face, or a combination of online and face-to-face.

   i. Digital badges are a good option for ELL teacher PD.

   j. Once obtained, I would like to share my badge on: Social Media(eg Facebook), Personal Website, School Website, other (Please describe if other).

2. English Language Learners: (5pt Likert Scale)

   a. As an ELL teacher, the amount of training I currently receive is?

   b. I would be interested in completing more ELL training through the use of an online digital badge system.

   c. Completing the digital badge (running record) provided me valuable experience for assessing ELLs' reading ability.

   d. At my grade level, a digital badge system could be a solution to deliver professional development.

   e. I believe the ELL teachers on my campus would buy into using a digital badge system for conducting PD.

3. ELL Continue (Short answer)

   a. In your opinion, how effective is the ELL PD you currently receive?

b. If you could change how PD is administered, what changes would you make?

c. How often do you attend PD on site?

d. What are some of the advantages and/or challenges you see with current ELL PD sessions?

e. Do you think a digital badge system could be used in your specific school?

f. What types of trainings do you think could be conducted through a digital badge system?

g. How much do you think is reasonable to pay for earning a micro-credential like a digital badge?

APPENDIX B. INTERVIEW PROTOCOL

1. What grade do you currently teach?

2. How many English learners do you work with on a regular basis?

3. How much PD have you received on strategies for assisting ELLs?

4. What are your thoughts on how effective or ineffective the PD you currently receive is?

5. In your opinion, what are some characteristics of effective PD?

6. How much does the PD you receive impact your daily instruction?

7. Now that you have completed a badge, what are your thoughts on digital badges systems for PD?

8. What did you like or not like about using a digital badge system for PD?

9. How do you think a digital badge system could be used in your school?

10. What are some of the challenges you see to using a digital badge system for PD?

11. As a teacher who works with English learners, what types of training would be most beneficial to you?

APPENDIX C. CODING SCHEME

Category		
Digital Badge	DB-Ben	Benefit or Positive statement about badge experience
	DB-Dis	Disadvantage or Negative statement about badge experience
	DB-Imp	Comment about implementation of digital badges for PD
Teacher PD	PD-Prior	Comment about prior experience with PD
	PD-Effec	Comment stating characteristics of effective PD
	PD-ELL	Comment related to ELL PD
	PD-Avail	Comment related to availability of PD
	PD-Need	Comment related to types of PD needed by ELL teachers

REFERENCES

Beal, H. K. O., & Rudolph, A. M. (2015). Preparing Teachers To Meet the Needs of Latino and Ell Students: a Case Study of a Federal Grant. *Planning & Changing*, *46*(1/2), 42–55.

Bissonnette, J. D., & Caprino, K. (2014). A call to action research: Action research as an effective professional development model. *Mid-Atlantic Education Review*, *2*(1).

Bowen, K., & Thomas, A. (2014). Badges: A common currency for learning. *Change: The Magazine of Higher Learning*, *46*(March 2015), 21–25.

Buckingham, J. (2014). Open Digital Badges for the Uninitiated. *Tesl-Ej*, *18*(1), 1–11.

Buteau, Gerard & True. (2009). Differentiating instructional strategies to support English language learners. *The NERA Journal*, *44*(2), 23–26.

Buysse, V., Castro, D. C., & Peisner-Feinberg, E. (2010). Effects of a professional development program on classroom practices and outcomes for Latino dual language learners. *Early Childhood Research Quarterly*, *25*(2), 194–206.

Casilli, C., & Hickey, D. (2016). Transcending conventional credentialing and assessment paradigms with information-rich digital badges. *The Information Society*, *32*(2), 117–129.

Castillo, J. M., March, A. L., Tan, S. Y., Stockslager, K. M., & Brundage, A. (2016). Relationships Between Ongoing Professional Development and Educators' Beliefs Relative to Response to Intervention. *Journal of Applied School Psychology*, *32*(4), 287–312.

Coronado, J. M., & Lewis, K. D. (2017). The Disproportinal Representation of English Language Learners in Gifted and Talented Programs in Texas. *Education*, (October).

Cucchiara, S., Giglio, A., Persico, D., & Juliana, E. R. (2014). New Horizons in Web Based Learning. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *7697*(February 2016), 181–190.

Dash, S., Magidin De Kramer, R., O'Dwyer, L., Masters, J., & Russell, M. (2012). Impact of Online Professional Development on Teacher Quality and Student Achievement in Fifth Grade Mathematics. *Journal of Research on Technology in Education*, *45*(1), 1–26.

DeCapua, A., & Marshall, H. W. (2011). Reaching ELLs at Risk: Instruction for Students With Limited or Interrupted Formal Education. *Preventing School Failure: Alternative Education for Children and Youth*, *55*(1), 35–41. http://doi.org/10.1080/10459880903291680

Diamond, J., & Gonzalez, P. C. (2014). Digital badges for teacher mastery : an exploratory study of a competency-based professional development badge system, (November), 1–64.

Downer, J. T., Kraft-Sayre, M. E., & Pianta, R. C. (2009). Ongoing, Web-Mediated Professional Development Focused on Teacher-Child Interactions: Early Childhood Educators' Usage Rates and Self-Reported Satisfaction. *Early Education and Development*, *20*(2), 321–345.

Erickson, A. S. G., Noonan, P. M., & McCall, Z. (2012). Effectiveness of Online Professional Development for Rural Special Educators. *Rural Special Education Quarterly*, *31*(1), 22–32.

Estapa, A., Pinnow, R. J., & Chval, K. B. (2016). Video as a Professional Development Tool to Support Novice Teachers as They Learn to Teach English Language Learners. *The New Educator*, *12*(1), 85–104. http://doi.org/10.1080/1547688X.2015.1113350

Figueiredo, E. H. D. D. E., Hammill, M. J., & Fredricks, D. E. (2011). Marginalizing TESOL: Preservice Teacher Training in Arizona, 11–18.

Finkelstein, J., Knight, E., & Manning, S. (2013). The potential and value of using digital badges for adult learners. *American Institutes for Research*.

Ford, K. L., Cabell, S. Q., Konold, T. R., Invernizzi, M., & Gartland, L. B. (2013). Diversity among Spanish-speaking English language learners: Profiles of early literacy skills in kindergarten. *Reading and Writing*, *26*(6), 889–912.

Franco-Fuenmayor, S. E., Padrón, Y. N., & Waxman, H. C. (2015). Investigating Bilingual/ESL Teachers' Knowledge and Professional Development Opportunities in a Large Suburban School District in Texas. *Bilingual Research Journal*, *38*(3), 336–352.

Friend, J., Most, R., & McCrary, K. (2009). The Impact of a Professional Development Program to Improve Urban Middle-Level English Language Learner Achievement. *Mgrj*, *4*(1), 53–75.

Gamrat, C., Zimmerman, H. T., Dudek, J., & Peck, K. (2014). Personalized workplace learning: An exploratory study on digital badging within a teacher professional development program. *British Journal of Educational Technology*, *45*(6), 1136–1149.

Gibson, D., Ostashewski, N., Flintoff, K., Grant, S., & Knight, E. (2013). Digital badges in education. *Education and Information Technologies*, 1–8. http://doi.org/10.1007/s10639-013-9291-7

Gillett, E., & Ellingson, S. P. (2017). How Will I Know What My Students Need? Preparing Preservice Teachers to Use Running Records to Make Instructional Decisions. *Reading Teacher*, *71*(2), 135–143.

Grant, S. (2014). Badges: Show What You Know. *Young Adult Library Services*, *12*(2), 28–32.

Green, M., & Cifuentes, L. (2011). The Effects of Follow-up and Peer Interaction on Quality of Performance and Completion of Online Professional Development. *Journal of Interactive Learning Research*, *22*(1), 85–109.

Hansen-Thomas, H., Grosso Richins, L., Kakkar, K., & Okeyo, C. (2014). I do not feel I am properly trained to help them! Rural teachers' perceptions of challenges and needs with English-language learners. *Professional Development in Education*, *5257*(February), 1–17.

Hernandez, A., Herter, R., & Wanat, S. (2008). Perceived challenges in working with English learners: Meeting the professional development needs of teacher candidates and classroom teachers. *The International Journal of Learning*, *15*(10), 107–114.

Ian O'Byrne, W., Schenke, K., Willisiii, J. E., & Hickey, D. T. (2015). Digital badges: Recognizing, assessing, and motivating learners in and out of school contexts. *Journal of Adolescent and Adult Literacy*, *58*(6), 451–454.

Jiménez, R. T., David, S., Pacheco, M., Risko, V. J., Pray, L., Fagan, K., & Gonzales, M. (2015). Supporting teachers of English learners by leveraging students' linguistic strengths. *Reading Teacher*, *68*(6), 406–412.

Kleickmann, T., Tröbst, S., Jonen, A., Vehmeyer, J., & Möller, K. (2016). The effects of expert scaffolding in elementary science professional development on teachers' beliefs and motivations, instructional practices, and student achievement. *Journal of Educational Psychology*, *108*(1), 21–42.

Knight, .Stephanie L, & Wiseman, D. L. (2005). English language learners in U.S. schools : An overview of research findings. *Journal of Education for Students Placed at Risk*, *10*(4), 363–385.

Kolano, L. A. N. Q., Lachance, J., & Coffey, H. (2014). Multicultural Teacher Education: Why Teachers Say It Matters in Preparing Them for English Language Learners, 41–65.

Kozleski, E. B. (2017). The Uses of Qualitative Research: Powerful Methods to Inform Evidence-Based Practice in Education. *Research and Practice for Persons with Severe Disabilities*, *42*(1), 19–32.

Lee, B. M. H. (2010). Collaborative PD. *Science and Children*, *47*(9), 28–32.

Lucas, T., & Villegas, A. M. (2013). Preparing linguistically responsive teachers: Laying the foundation in Preservice Teacher Education. *Theory Into Practice*, *52*(2), 98–109.

Luneta, K. (2012). Designing continuous professional development programmes for teachers: a literature review. *Africa Education Review*, *9*(2), 360–379.

Masters, J., De Kramer, R. M., O'Dwyer, L. M., Dash, S., & Russell, M. (2012). The effects of online teacher professional development on fourth grade students' knowledge and practices in English language arts. *Journal of Technology and Teacher Education*, *20*(1), 21–46.

Mims, P. J., & Baker, J. (2016). Professional Development for In-service Teachers of Students with Significant Disability, *35*(3), 30–40.

Molle, D. (2013). Facilitating professional development for teachers of English language learners. *Teaching and Teacher Education*, *29*(1), 197–207.

Newby T., Wright C., Besser E., Beese E. (2016) Passport to Designing, Developing and Issuing Digital Instructional Badges. In: Ifenthaler D., Bellin-Mularski N., Mah DK. (eds) Foundation of Digital Badges and Micro-Credentials. Springer, Cham

Parsons, A. W., Ankrum, J. W., & Morewood, A. (2016). Professional development to promote teacher adaptability. *Theory Into Practice*, *55*(3), 250–258.

Quick, H. E., Holtzman, D. J., & Chaney, K. R. (2009). Professional Development and Instructional Practice: Conceptions and Evidence of Effectiveness. *Journal of Education for Students Placed at Risk (JESPAR)*, *14*(1), 45–71.

Raish, V., & Rimland, E. (2015). Employer Perceptions of Critical Information Literacy Skills and Digital Badges. *College & Research Libraries*, *76*(4), 87–113.

Randall, D. L., Harrison, J. B., & West, R. E. (2013). Giving Credit Where Credit Is Due: Designing Open Badges for a Technology Integration Course. *TechTrends*, *57*(6), 88–95.

Rivera, P. A., & Miller, C. M. (2019). *CCSSO Framework on Supporting Educators to Prepare and Successfully Exit English Learners with Disabilities from EL Status*.

Ross, J. (2004). Effects of Running Records.pdf. *Journal Of Educational Research*, *97*(4), 186–194.

Ross, K. E. L. (2014). Professional development for practicing mathematics teachers: A critical connection to English language learner students in mainstream USA classrooms. *Journal of Mathematics Teacher Education*, *17*(1), 85–100.

Shaw, J. M., Lyon, E. G., Stoddart, T., Mosqueda, E., & Menon, P. (2014). Improving Science and Literacy Learning for English Language Learners: Evidence from a Pre-service Teacher Preparation Intervention. *Journal of Science Teacher Education*, *25*(5), 621–643.

Shim, J. M. (2013). Involving the Parents of English Language Learners in a Rural Area: Focus on the Dynamics of Teacher-Parent Interactions. *Rural Educator*, *34*(3), 18–26.

Smith, S. U. (2014). Frameworks Shaping an Online Professional Development Program for K – 12 Teachers of ELLs : Toward Supporting the Sharing of Ideas for Empowering Classroom Teachers Online, (September), 444–464.

Snyder, E., Witmer, S. E., & Schmitt, H. (2017). English language learners and reading instruction: A review of the literature. *Preventing School Failure*, *61*(2), 136–145.

Soine, K. M., & Lumpe, A. (2014). Measuring characteristics of teacher professional development. *Teacher Development*, *18*(3), 303–333.

Sprague, D., & Editor, J. (2006). Research Agenda for Online Teacher Professional Development. *Jl. of Technology and Teacher Education*, *14*(4), 657–661.

Teemant, A. (2014). A mixed-methods investigation of instructional coaching for teachers of diverse learners. *Urban Education*, *49*(5), 574–604.

Trickett, E. J., Rukhotskiy, E., Jeong, A., Genkova, A., Oberoi, A., Weinstein, T., & Delgado, Y. (2012). " The kids are terrific: It's the job that's tough": The ELL teacher role in an urban context. *Teaching and Teacher Education*, *28*(2), 283–292.

U.S. Department of Education. (2016). Non-regulatory guidance: English learners and Title III of the Elementary and Secondary Education Act (ESEA), as amended by the Every Student Succeeds Act (ESSA).

Ullman, E. (n.d.). The newest badge of honor. *Tech & Learning*, 38–40.

Wallace, T. (2014). A Comparison of Professional Development Practices in Rural and Urban High Schools. *Rural Educator* , *35*(2), 11–16.

Zhang, Y., Gan, Y., Cham, H., Wang, M.-T., Willett, J. B., Eccles, J. S., … Appleton, J. J. (2012). School Engagement Trajectories and Their Differential Predictive Relations to Dropout. *Journal of Adolescence*, *74*(4), 274–283.