Teachers' continuous improvement & learning: A professional development program grounded on the principles of adult learning, contextualized in professional learning communities (PLCs), and bolstered by the literature of biography-driven instruction (BDI)

by

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B.S., Universidad de Guayaquil, 2014
M.S., Kansas State University, 2015

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

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Department of Curriculum & Instruction
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Abstract

Teachers' continuous improvement and its impact on student academic achievement has been the focus of initiatives and efforts toward reform and research throughout the history of education, particularly in the late twentieth and early twenty-first century. The purpose of this study was to examine whether a professional development program grounded on the principles of adult learning, contextualized in professional learning communities (PLCs), and bolstered by the literature of biography-driven instruction (BDI), yields a statistically significant change in teachers' self-efficacy, as measured by the Teachers' Self-Efficacy Scale (TSES), associated with the three factors of effective teaching: student engagement, instructional strategies, and classroom management. An extensive review of relevant literature detailed in chapter two offered a more robust composite theoretical framework for the challenge addressed within this study and a best explanatory model for teachers' continuous improvement and learning.

This study was framed by a quasi-experimental control-experiment group design. An Ecuadorian context was purposively chosen as the setting for this study, including a sample of 30 tenured teachers from the College of Education of an educational institution. The data was collected using Qualtrics with an online version of the TSES. The data analysis was conducted through a one-way Multivariate Analysis of Variance (MANOVA) using the SPSS software, with an alpha score of .05. The results obtained from the quantitative data collection and analysis supported the researcher in rejecting the null hypothesis.

The results of this study contribute to the literature of adult learning, PLCs, and BDI and also suggest areas for future research, including quantitative and qualitative research designs. The findings of this study are related and consist with relevant literature, confirming that a program contextualized in PLCs exhibits a positive change in teachers' self-efficacy as measured

by TSES. Learning during adulthood requires a collaborative learning environment that guides people to explore, activate, share, and critically reflect on their experiences through inquiry-dialogue. Finally, bolstered by the literature of BDI, the finding of this study permitted to advocate for humanizing teacher education based on a collaborative adult-centered learning environment. Professional development is not only about the instructional process, strategy, or content; it should be a vehicle that wakes up the curiosity of learning and the desire to be more effective when guiding students to personal and academic success, impacting teachers at professional and personal levels.

Keywords: Teachers' continuous improvement, Professional Development, Adult Learning, Professional Learning Communities, Biography-Driven Instruction, self-efficacy

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Approved by:

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Dedication

I dedicate this achievement to my parents, Luis and Narcisa, you are the main pillars in my life. I would not be where I am today without you. Madre, tu paciencia, amor, comprensión, consentimiento y ejemplo de valores y fortaleza para guiar nuestra familia, como mujer y madre, han sido vital para llevarme al escalón en el que estoy parado el día de hoy. Padre, tu compromiso, esfuerzo, carácter y todas las malas noches que pasaste para sostener mis necesidades y caprichos han sido fundamentales durante todo mi proceso de formación académica. Es hora de cosechar sus frutos. Este logro no es mío, es nuestro. ¡Gracias!

Chapter 1 - Introduction

Professional development programs emphasizing teachers' continuous improvement have been a focus of initiative and efforts toward reform since the late twentieth century. Scholars and educational organization have advocated for these reforms associated with the enhancement of teacher's education and continuous learning (Darling-Hammond, 1996; Darling-Hammond & McLaughlin, 2011; Lieberman, 1995; National Commission on Teaching and America's Future, 1996; The Nation at Risk Report, 1983). According to Hord (1997) and Darling-Hammond (2017), school enhancement and student academic achievement are directly influenced by teachers' continuous improvement considering their instructional competences and practices. Teacher professional development programs, emphasizing experiential learning instead of content and decontextualized direct instruction, were introduced as an impacting alternative to support teachers' preparation in the late twentieth century (Webster-Wright, 2009).

Traditionally, professional development programs for teachers have been practiced through short-term courses, workshops, or conferences, emphasizing lecturing and minimal dialogue among participants. Sykes (1996) stated the expression "one-shot-workshop" appeared to be associated with training that was "superficial" and "faddish," being delivered with no connection to the realities in schools and classrooms (p. 465). However, research in adult learning has continuously demonstrated experience, inquiry-dialogue, and critical reflection are salient components to achieve learning during adulthood (Kelly, 2017; Knowles, 1978; Mezirow, 1991). Adults have already well-established mindsets and solid knowledge and perspectives created through their previous experiences and formal learning, so teaching adults requires a process that allows them to uncover, analyze, share, check assumptions, and validate their knowledge instead of only presenting new information. Some scholars have argued reflective

practice and inquiry-dialogue impact teachers' professional competences through an ongoing continuous improvement process (DuFour, 2007; Hord, 2009; Kelly, 2017; Mezirow, 1991).

The need for professional development programs centralizing teachers' continuous improvement and instructional practice enhancement is an issue of concern in many educational institutions in Ecuador. The Ecuadorian Constitution art. CCCXLIX, § 7 and (b) the Organic Law for Institutions of Higher Education art. VI, § 2. established the Ecuadorian government must guarantee teachers receive continuous professional training throughout their professional careers. Ecuadorian educational institutions must facilitate and support teachers' continuous improvement through financial support or well-structured professional development programs within their budget. Thus, educational institutions in Ecuador provide their teachers with seminars, workshops, and short-term courses mostly emphasizing lecturing and minimal reflection or dialogue. An Ecuadorian context was purposively chosen as the most appropriate setting for this study considering the proximity to the researcher associated to access to teachers, researcher experience with limited opportunities for high-quality professional development training for teachers, and the dearth of research within this context as detailed in chapter two.

Statement of the Problem

Throughout the years, several scholars have agreed experience, inquiry dialogue, and critical thinking are key factors for effective learning during adulthood (Kelly, 2017; Knowles, 1978; Lindeman, 1926; Merriam, 2017; Mezirow, 1990). However, most of the teachers' professional development programs are still based on the rhetorical traditional and one-way communication models of one session seminar, workshop, or short-term courses, avoiding interaction and reflection. Most recent research has also reinforced the notion teachers' continuous improvement should happen in spaces that are honest, caring, trustable, collaborative,

and open which honor and maximize experience (Cuenca et al., 2011; Gutierrez, 2008; Hallqvist, 2014; Herrera, 2016; Kelly, 2017; Mezirow, 1990). Those spaces support open dialogue, risk-taking, critical reflection, and sharing of counter stories about assets that contribute to all teachers' continuous improvement and learning. Based upon an extensive review of relevant literature detailed in chapter two, the principles of adult learning, as situated in the supportive and communicative context of Professional Learning Communities (PLCs) and bolstered by the literature of Biography-Driven Instruction (BDI) offers a composite theoretical framework for a best explanatory model to deliver teachers' professional development training that emphasizes continuous improvement and learning, impacting on teachers' self-efficacy

Research Purpose

The purpose of this study was to investigate whether a professional development program grounded in principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yielded a statistically significant change in Ecuadorian teachers' self-efficacy associated with their instructional competences to manage online education. This study aimed to answer the following Research Question (RQ):

- RQ1: Does a professional development program grounded in principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yield a statistically significant change in teachers' self-efficacy scores, as measured by the Teacher Self Efficacy Scale (TSES)?

Theoretical Framework

This research was framed by the tenets of the adult learning theory. Learning during adulthood requires collaboration and inquiry-dialogue in a non-authoritarian environment (Lindeman, 1926). As detailed in chapter two, the three key elements of adult learning (experience, inquiry-dialogue, and critical reflection) became the appropriate theoretical

framework for this study (Knowles, 1978; Lindeman, 1926; Merriam, 2017; Mezirow, 1990). Experience is the richest source of adult learning, supporting them in advocacy and transforming their current perspectives, assumptions, and practice via dialogue with others (Kelly, 2017; Merriam, 2017; Mezirow, 1991). Inquiry-dialogue emphasizing teachers' continuous improvement often centralizing an in-depth and collaborative exploration and analysis of educational issues with a focus on student academic achievement (Horn & Little, 2010). Finally, critical reflection emphasizing assumption checking and testing guides teachers to transform their practices when their current perspectives are not applicable to a new context or activity (Brookfield, 2010; Kelly, 2017; Merriam, 2017; Mezirow, 1991; Schön, 1982).

Methodology

This quasi-experimental quantitative study was guided by a control-experimental group design. Self-efficacy, as measured by the 24-items Teachers' Self-Efficacy Scale (TSES), was the indicator factor to determine whether the intervention yielded a statistically significant change. The statistical significance was measured considering an alpha score of .05, a 95% level of confidence. The research design was structured considering a pre- and post-intervention application of TSES to the two research groups, obtaining the scores which were tabulated using Qualtrics software and SPSS to conduct a one-way MANOVA analysis. The study included 30 tenured teachers from the College of Education of an Ecuadorian educational institution whom were randomly and equally distributed into the control and experimental groups, 15 subjects in each group.

Significance of the Study

This study aimed to provide an alternative and composite framework to conduct teachers' professional development training in an Ecuadorian context considering the professional

development is a legal requirement for all educational institutions in Ecuador. This research provides school leaders with data that promotes a more contextualized program for teachers' continuous improvement, emphasizing literature of adult learning tenets, PLCs, and BDI. Based on the findings of this study and pertinent literature reviewed, it has been determined collaboration and participation in inquiry dialogue centralizing experience and critical reflection increase trust and collaborative work among teachers which leads to student academic achievement. The intervention also provided subjects participating in the study with knowledge and competences to improve their instructional practices delivering online education.

Limitations of the Study

The main limitations of this study were the time, research site, and delivery method. The intervention lasted three weeks and the literature in PLCs indicates that it is not a three-week activity but a life-long culture. The bounded of the research site was also a limitation considering that it only included tenured teachers with specific characteristics from a specific college in a specific educational institution. The final limitation was the intervention had to be delivered virtually because of the COVID-19 pandemic which affected the interaction and participation during the study. The internet stability contributed that some of the participants missed or arrived late to some of the sessions, and some dropped-out the study completely.

Delimitations of the Study

The delimitations of this study included:

1. This research only included tenured teachers from the College of Education with 3-5 years of professional experience teaching, held a master's degree in education, and had received professional development training sponsored by their current employer in the last two years.
2. Participation in this research study was voluntary.
3. Leaving the study and denying consensus to use the information obtained was an option.

4. Participants were required to engage in extra activities that are not associated with their working hours.

Summary

This chapter informed the need and importance of professional development programs that emphasize teachers' continuous improvement and student academic achievement. Recent arguments in adult learning have emphasized the importance of experience, inquiry-dialogue, and reflection as the richest source in learning during adulthood. Extensive review and relevant literature in adult learning, PLCs, and BDI offer an explanatory and composite model for current teachers' professional development training, which will be explained in detail in chapter two. This study, guided by a quasi-experimental quantitative control-experimental group design, aimed to provide an alternative means to deliver professional development programs that attend to fulfill the training and continuous improvement needs of teachers within Ecuadorian contexts.

Chapter 2 - Literature Review

The history of American education, particularly in the late twentieth and early twenty-first century, notably emphasized initiatives and efforts toward reform. The Nation at Risk (1983) report and the National Commission on Teaching and American Future NCTAF (1996) advocated for educational reforms that enhanced teachers' professional competences, focusing on increasing student achievement on national and international scales. Boyd and Hord (1994), Darling-Hammond (1996), Lieberman (1995), Louis et al. (1996), Newman and Wehlage (1995), and Darling-Hammond and McLaughlin (2011) also advocated for reforms that promoted an enhancement of teaching practices and student outcomes through a change in the organizational structure of schools. Programs that supported teachers' professional improvement to meet students' demands were seen as one of the most influential components to increase student academic achievement (Darling-Hammond, 1996; Dufour & Eaker, 1998).

In this sense, teacher professional development programs, based on experiential learning, critical reflection, and inquiry-dialogue instead of content and decontextualized direct instruction, were introduced as an impacting alternative to support teacher education and training in the late twentieth century (Webster-Wright, 2009). Based on adult learning theory principles, learning communities for professional development emerged as the organizational ingredient contributing to improving teacher competences and student learning (Louis et al., 1996). Throughout the years, the merits of Professional Learning Communities (PLCs) have been documented and often detail positive and sustained effects on teachers' sense of self-efficacy and collaborative skills (Affandi et al., 2019; Dufour et al., 2006; Gouthro, 2014; Herrington, 2011; Jenkins, 2016; Johnson, 2016; Kelly, 2017; Nelson et al., 2010; Priest, 2015; Salleh, 2016; Stoll et al., 2006; Zonoubi et al., 2017). PLCs emphasized an impact on students' and teachers'

continuous learning and improvement through collegial dialogue and critical reflection to educational problem resolution in a collaborative culture (Dufour & Eaker, 1998; Hord, 1997; Priest, 2015; Salleh, 2016).

This literature review will begin by discussing how adult education's primary tenets, contextualized by PLCs, create the conditions to support teachers' learning and continuous professional improvement. The second section of the literature will centralize individuals' experience as the richest resource to support learning (Gouthro, 2014; Hallqvist, 2014; Herrera, 2016; Kelly, 2017; Knowles, 1978; Merriam, 2017; Mezirow, 1991). This section will discuss how Biography-Driven Instruction (BDI) creates a supportive and collaborative learning environment that explores, values, activates, and affirms individuals' experiences and supports them to effectively connect previous and new experiences and knowledge, emphasizing academic improvement in diverse classrooms (Herrera, 2016; Perez et al., 2012).

Further, the literature review will discuss how inquiry-dialogue creates conditions for collaborative and collective inquiry to solve educational problems, targeting positive results for students, teachers, and schools (Brodie, 2013; Dufour et al., 2006; Duling, 2012; Jenkins, 2016; Lujan & Day, 2010). This section will determine how the main characteristics of PLCs create a learning space that provides students with access to more worthwhile and inclusive dialogue (Cuenca et al., 2011). The main characteristics epitomized for effective and sustainable PLCs create a collaborative-reflective environment that leads to teachers' transformative learning through collegial dialogues based on experience and results (Dufour et al., 2006; Hord, 2009; Kelly, 2017; Salleh, 2016; Stoll et al., 2006). Lastly, this literature review will discuss the idea that critical reflection based on assumption checking, testing, and socialization supports adults'

continuous learning and improvement (Brookfield, 2010; Kelly, 2017; Merriam, 2017; Mezirow, 1991; Schön, 1982).

Theoretical Framework

Adult learning theory is the theoretical framework that guides this study. Adult education consists of a process that involves collaboration and inquiry-dialogue among participants in an informal/non-authoritarian environment (Lindeman, 1926). A non-authoritarian collaborative and social environment, based on individuals' experience, allows adults to reflectively explore and identify the roots and preconceptions of the behavior and thoughts that drive their learning and actions (Kelly, 2017; Knowles, 1975; Lindeman, 1926; Merriam, 2017; Mezirow, 1991). Mezirow (1991) asserted adult learning happens by transforming adult learners' perceptions and beliefs, beginning with a disorientation dilemma that drives individuals to change their beliefs and actions. According to Merriam (2017), an adult learner is a person who (a) has independent self-concept and -direction, can control his/her learning, (b) has a vast reservoir of life experiences, (c) has an interest in changing, (d) is problem-centered, applying knowledge to solve current issues, and (e) is intrinsically motivated. Adults' motivation to learn is driven by the necessity to reconstruct an experience or a belief when it is not able to provide an appropriate solution to a current problem or issue (Kelly, 2017; Meijer et al., 2017; Mezirow, 1991, 2003; Nolan & Guo, 2019; Zhu et al., 2020). Thus, considering PLCs emphasize teachers' professional improvement, adult learning theory becomes the appropriate theoretical framework to guide this inquiry and the associated literature review based on three key elements: experience, inquiry-dialogue, and critical reflection (Knowles, 1978; Lindeman, 1926; Merriam, 2017; Mezirow, 1990).

Experience is the richest resource to support individuals' learning and continuous improvement (Gouthro, 2014; Hallqvist, 2014; Herrera, 2016; Kelly, 2017; Knowles, 1978; Merriam, 2017; Mezirow, 1991). Experience is the adults' frame of reference that supports them in exploring and analyzing new perspectives that lead to change and advocacy via dialogue with others (Kelly, 2017; Merriam, 2017; Mezirow, 1991). According to Herrera (2016) and Perez et al. (2012), activating and connecting individuals' experiences to new knowledge accelerates learning and academic development, especially in diverse settings. In more recent arguments, scholars have agreed learning during adulthood is more effectively acquired when individuals revisit and reflect on their past experiences (Merriam, 2017; Mezirow, 1991; Michelson, 2011; Wlodarsky, 2018).

Furthermore, within adult education, inquiry-dialogue provides adult learners with opportunities for continuous professional improvement targeting positive results for students, teachers, and school (Brodie, 2013; Dufour et al., 2006; Duling, 2012; Jenkins, 2016; Lujan & Day, 2010). Inquiry-dialogue among teachers is often focused on an in-depth and collaborative examination of educational problems and practices that lead to professional growth and teaching innovation (Horn & Little, 2010). Inquiry-dialogue in a reflective, collaborative, and trustable environment supports individuals in analyzing, changing, and affirming their learning and teaching competences through exposure and interaction with diverse and alternative discourses. (Cuenca et al., 2011; Gutiérrez et al., 1999; Gutierrez, 2008; Herrera, 2016; Martin et al., 2011). Creating a collaborative culture based on problem-solving, positive results, and teachers' professional growth through dialogue is one of the significant merits reported of effective and sustainable PLCs (Bolam et al., 2005; Dufour et al., 2006; Hord, 2009; Lujan & Day, 2010; Olsson, 2019; Stoll et al., 2006). From a BDI perspective, inquiry dialogue creates a

collaborative space for activating, connecting, maximizing, and affirming experiences (Herrera, 2016).

Lastly, critical reflection, based on assumption checking and testing, supports adults' continuous learning and improvement (Brookfield, 2010; Kelly, 2017; Merriam, 2017; Mezirow, 1991; Schön, 1982). Critical reflection on previous experiences and background knowledge is fundamental to validity, accountability, and continuous improvement (Herrera, 2016). Teachers' successes rely on transforming their expectations, values, and frames of reference through critical reflection on their real-life pedagogical issues and their experiences (Kelly, 2017; Mezirow, 1997). With a focus on professional improvement, PLCs involve teachers in an ongoing collaborative, reflective process, intending to solve real-life school problems that affect student academic achievement (Dufour et al., 2006; Hord, 2009; Stoll & Louis, 2007).

Experience

Experience is the first key element that guides the literature review of this study. Experience differentiates adults from children and is the richest source of information influencing learning during adulthood (Knowles, 1978). Linderman (1926) asserted "experience is the adult learner's living textbook" (p.30). Learning during adulthood is grounded in the re-interpretation of an experience when the evidence is not functional to reach individuals' expectations anymore, so it enters into a validation process to determine new applicability considering new contextual and situational settings (Merriam, 2017; Mezirow, 1991). According to Richmond and Manokore (2011), learning during adulthood results from the collaborative act of sharing the experiences that each individual has accumulated throughout their life. Mezirow (1991) asserted adult learning is effectively achieved when individuals transform an experience or concept to become applicable in a new setting.

Teachers' successes rely on transforming their expectations, values, and frames of reference through critical reflection on their real-life pedagogical issues and their experiences (Kelly, 2017; Mezirow, 1997). The frames of reference are the reservoir of experiences that supports people to interpret and understand the roots of their interpretations, perspectives, and beliefs (Mezirow, 1991). A change in individuals' frames of references is influenced by their making schemes, which determine the horizon of our expectations and are the cluster of concepts, beliefs, feelings, emotions, and judgment that provide the criteria to critically judge an experience, interpretation, or assumption (Mezirow, 1991, 1994, 1996). According to Stoll et al. (2006) and Kelly (2017), teachers' professional learning, based on adult learning theories, provides participants with opportunities to deconstruct and reconstruct their experiences through collective and reflective dialogue that leads to the resolution of educational problems. In more recent arguments, Herrera (2016) asserted experiences are relevant assets to be surfaced, affirmed, maximized, challenged, polished, and used in agency and advocacy across the entire learning process. For this reason, experience is one of the three elements that encompasses this theoretical framework.

Biography-Driven Instruction (BDI)

BDI is a teaching method that centralizes individuals' experiences as fundamental sources to enrich learning "providing educators with the guidance they need to tailor their pedagogy in ways that promote the success of all students in their classroom" (Herrera, 2016, p. 9). Herrera (2016) and Perez et al. (2012) asserted activating individuals' experiences and effectively connecting them to new knowledge supports academic learning and continuous improvement. BDI creates conditions for activating, maximizing, using, and affirming experiences across its three instructional phases: activation, connection, and affirmation

(Herrera, 2016). Activation stimulates individuals' background knowledge and experiences through opportunities for public sharing and documentation. The connection phase provides individuals with opportunities to create links between their previous experiences, new experiences, and knowledge. Lastly, the affirmation phase allows learners to demonstrate what they have learned through review and rehearsal. The three elements of BDI create the conditions for teachers' effective learning and continuous improvement bearing in mind, according to Mezirow (1991), learning during adulthood requires constant exploration, stimulation, and analysis of adult learners' experiences, validating their applicability in current problematic issues.

Experience is what differentiates adults from children (Knowles, 1978). Throughout their lives, adults have experienced more critical and learning situations than children, accumulating more knowledge and capacities. From a prism model perspective, adults have a vast reservoir of lived-experienced associated with four dimensions: socio-cultural, linguistic, cognitive, and academic. The socio-cultural dimension encompasses the rich experiences, resources, and knowledge that adults accumulated throughout their life from the interaction within their home, families, and communities, known as the funds of knowledge (Moll et al., 2011). The linguistic dimension includes adults' abilities associated with their interpersonal and academic language proficiency and their communicative competences considering the ways they express, communicate, and comprehend (Herrera, 2016; Perez & Holmes, 2010). The cognitive dimension is related to adults' unique ways of thinking, considering that all people take different paths when organizing and applying new information, acquiring a skill, making decisions, solving a problem, and sharing a story based on their previous experiences. Finally, the academic dimension consists of adults' background knowledge and experiences associated with schooling

and formal education. Considering all human beings accumulate knowledge and experiences throughout their lives and adults have a richer reservoir of experience than children, teachers' experiences associated with the four interdependent layers of the prism model might become one of their most potent sources of information impacting their learning and continuous improvement. Activating, sharing, documenting, understanding, and critically analyzing their experiences and beliefs support teachers who collaborate in PLCs to recalibrate and adjust their teaching practices (Meijer et al., 2017).

Inquiry-Dialogue

Inquiry-dialogue is the second element that constructs this theoretical framework. Effective adult learning includes inquiry-dialogue among participants (Lindeman, 1926). Stoll et al. (2006) asserted the process of teachers' learning could be enhanced and understood through an analysis of teachers' talk when participating in a dialogue. Within adult education literature, a dialogue is defined as collaborative and reflective conversations among individuals focused on exploring, sharing, examining, and validating experiences to problem-solving (Merriam, 2017; Mezirow, 1994). Dialogue among teachers creates opportunities for an in-depth examination of educational problems and practices that supports professional growth and continuous improvement (Horn & Little, 2010). Dialogue with other individuals provides teachers with new perspectives with which to think about a problem that may support them in learning (Merriam, 2017; Mezirow, 1994).

Dialogue and collaboration, emphasizing individuals' experiences and knowledge, create a learning space that promotes stable relationships, accelerates student learning, and supports academic improvement (Beck, 2020; Gutierrez et al., 1995; Gutierrez, 2008; Moje et al., 2004). From a BDI perspective, collaborative dialogue supports individuals' continuous improvement,

enabling them to make connections from the known to the unknown throughout their opportunities for professional learning, collaboration, and agency (Herrera, 2016). According to Tam (2015), ongoing interaction and dialogue with colleagues create the conditions that motivate educators to challenge their teaching practices and beliefs within PLCs. Adult learning theories have argued openness to participation and learning during adulthood requires high necessity, motivation, and interest in learning (Knowles, 1978; Lindeman, 1926; Mezirow, 1990).

Inquiry-dialogue focusing on learning and driven by student results impact teachers' interest and commitment to participate in professional learning (Nelson et al., 2010; Salleh, 2016). Tam (2015) stated dialogue provides teachers with opportunities for brainstorming, questioning infective teaching, and determining alternative ways to attend problems in their practice. Horn and Little (2010) and Salleh (2016) asserted inquiry-dialogues are seen as conversations that include collaboration and critical reflection to normalize, specify, and generalize a problem. Student academic achievement and teachers' practices are positively impacted when teachers are engaged in reflective collegial dialogue that provides them with the opportunities to share their experiences and challenge the applicability of their ideas, knowledge, and professional competencies (Tam, 2015). In this sense, PLCs as a vehicle for professional learning create the conditions for effective, sustainable, and collegial inquiry-dialogue among teachers that are more likely to promote agency, continuous improvement, and the targeting of positive outcomes (Dufour et al., 2006).

Professional Learning Communities

PLCs create the conditions for ongoing collegial inquiry-dialogues among teachers, targeting problem-solving and positive outcomes. PLCs support teachers' continuous professional improvement through conversations that allow them to share, analyze, maximize,

validate, and affirm their experiences and current teaching competences (Dufour et al., 2006; Hord, 2009; Salleh, 2016). The notion of PLCs as a viable venue for adult education is also well-documented in pertinent literature (Affandi et al., 2019; Dufour et al., 2006; Hord, 2009; Johnson, 2016; Kelly, 2017; Priest, 2015; Stoll & Louis, 2007; Zonoubi et al., 2017). PLCs are an intentional perspective on and structure for professional development within school organizations that encourage teachers' ongoing professional development focused on the enhancement of student learning (Dufour & Eaker, 1998; Hord, 1997).

In schools with PLC organizational structures, reflection and dialogue become a day-to-day activity, creating a positive impact on student learning while also promoting teachers' continued professional growth (Dufour et al., 2006). According to Zhao (2013), the effects of PLCs and their central characteristics are evidenced in a school where teachers collaborate and critically exchange experiences and practices through ongoing reflective and learning-oriented dialogues. Gouthro (2014) asserted collegial dialogue with a focus on experience sharing with others, including policymakers, educators, and practitioners, supports teachers in developing collaborative skills and understanding their own social role. Teachers' experiences become a fundamental aspect of PLCs since they guide and inform decisions and commitment through collaborative and often inquiry-focused dialogue and reflection (Dufour et al., 2006).

The primary characteristics that distinguish effective and sustainable PLCs are the following: focus on learning, collaborative culture and collective responsibility, and results-orientation. A focus on learning ensures all students have access to education and that they effectively learn (Dufour et al., 2006; Hord, 2009; Stoll et al., 2006; Zhao, 2013). Participating in effective and collaborative communities provides teachers the opportunity to develop confidence in professional dialogues, inquire into their own practices, and validate their own reservoir of

experiences and knowledge applicable to problem-solving and agency in praxis (Kelly, 2017; Mezirow, 1994; Richmond & Manokore, 2011). Creating a collaborative culture, based on collective responsibilities and a shared vision, that supports teachers' continuous improvement is one of the significant merits reported from effective and sustained PLCs (Bolam et al., 2005; Dufour et al., 2006; Hord, 2009; Lujan & Day, 2010; Olsson, 2019; Stoll et al., 2006). Lastly, PLCs are guided by a results-orientation which centralize teachers' dialogic interactions, better inform instruction, and prompt teachers towards more responsive practices struggling as well as high-achievement students, who often need more targeted interventions (Dufour et al., 2006). PLCs with a focus on results encourage teachers to examine their experiences, strengths, and weaknesses in teaching through collegial dialogue, learning from one another in a continuous collective process of professional improvement.

The positive effects of PLCs in student academic achievement and teachers' professional improvement have been reported in a variety of settings and contexts (Affandi et al., 2019; Hardin, 2010; Harris & Jones, 2010; Johnson, 2016; Kapp-Heifner, 2018; Linder et al., 2012; Priest, 2015; Zhao, 2013; Zonoubi et al., 2017). Most of the literature which evinced the merits of PLCs has derived from Anglo-American settings (Cohrs, 2014; Dufour et al., 2006; Hardin, 2010; Johnson, 2016; Priest, 2015; Stoll & Louis, 2007); however, the positive effects of PLCs have also been documented in certain international school settings (Affandi et al., 2019; Hairon & Dimmock, 2012; Hardin, 2010; Owen, 2014; Zheng et al., 2019; Zonoubi et al., 2017). More recently, the merits of PLCs have also been reported in studies associated with Institutes of Higher Education (IHE) (Bullough & Baugh, 2008; Kapp-Heifner, 2018; Linder et al., 2012; Mooney, 2018; Zhao, 2013). PLCs create a collaborative and reflective space and culture for effective and sustainable inquiry-dialogue, emphasizing student academic achievement, and

teachers' continuous professional improvement. For this and other reasons, inquiry-dialogue is considered as the second essential element of this theoretical framework, creating a reflective collaborative environment that supports the implementation of effective and sustainable PLCs, targeting positive outcomes and teachers' continuous professional development.

Critical Reflection

Critical reflection is the third element of the theoretical framework since it is considered indispensable to learning, especially in adults (Dewey, 1933; Knowles, 1978; Kolb, 1984; Schön, 1982). Critical reflection is the central dynamic that guides the learner through the process of problem-solving, validity testing through dialogue, and transformation of their meaning schemes and perspectives (Mezirow, 1991). Mezirow (1991) asserted critical reflection involves a three-step process: assumption checking, assumption testing, and socialization. First, through assumption checking, potentially inaccurate assumptions in thinking are surfaced for reconsideration following critical incidents in practice or new learning/information that challenges prior knowledge. Second, these assumptions are tested for their validity against potentially countervailing (i.e., reflection against sources such as theory, research, professional consensus, more current evidence, et al.). Third, if assumptions are found to be invalid, their origin in one's prior socialization is critically examined to interrogate the influence of one's own cultural lens on patterns of perception, conclusion, and action. Adult education's primary goal is to encourage professionals to reflectively challenge their current assumptions and practices to validate their applicability in more diverse and changing contexts (Mezirow, 1991).

According to Schön (1982) and Syslová (2015), critical reflection is a crucial component of teachers' professional education. It supports teachers' learning through a process that requires them to question their current teaching, school structures, and student results to advocate for

more applicable practices that generate a positive impact on student learning (Affandi et al., 2019; Brookfield, 2010; Dufour et al., 2006; Stoll & Louis, 2007). Mezirow (1991) asserted critical reflection is a fundamental component in each stage of educational problem-solving, beginning with selecting the most appropriate strategies and procedures to validate assumptions and expectations until a solution is proposed and tested upon its application. Thus, in teacher education, critical reflection is often a fundamental aspect for professional improvement, emphasizing the resolution of educational challenges and problems based on teachers' experiences and previous practices (Dufour et al., 2006). Ongoing development of teachers' capacities for critical reflection supports teachers' professional improvement through the exploration, validation, and enhancement of their previous and current teaching experiences in responding to diverse and complex student assets and needs more effectively (Brookfield, 2010).

In the context of professional development situated in PLCs, critical reflection supports teachers to collaboratively explore, validate, and transform their experiences and practices through a more or less continuous process of professional improvement. PLCs involve participants in an ongoing collaborative-reflective process intended to solve real-life school problems that affect student academic achievement (Dufour et al., 2006; Hord, 2009; Stoll & Louis, 2007). According to Dufour et al. (2006), critical reflection, based on teachers' diverse perspectives and experiences, is the primary source that informs teaching decisions and commitment to continuous professional improvement and student academic achievement.

Critical reflection creates the conditions for effective collegial dialogue in PLCs to question the basis of successful practices that support all students to achieve at high levels (Dufour et al., 2006). Critical reflection supports teachers in exploring, analyzing, validating, and connecting their experiences and the conceptual factors of their consciousness through dialogue,

leading to transformative learning (Kelly, 2017). Critical reflection is the third element of this theoretical framework considering that it is an important competence to transform and impact adult learning and professional improvement.

Transformative Learning

Transformative learning theory is grounded in the construct that adults learn to change the structure of their expectations and assumptions rather than fill-in gaps in their knowledge (Mezirow, 1991). Kelly (2017) asserted "a transformation of assumptions involves a generalized thought or understanding being reframed to adapt the generalization" (p.5). Transformative learning helps individuals make a more informed sense of their learning as grounded in their prior experiences and practices. It does so by encouraging targeted dialogue and reflective interaction with others (Kelly & Cherkowski, 2015). From a transformative learning perspective, Mezirow (1991) claimed targeted interaction with others, best include reasoning, argumentation, inquiry, equity, and tolerance to negotiate the meaning and to derive a constructed consensus.

Adult education, as informed by transformative learning, happens through task-oriented dialogue and critical reflection on the structure of potential assumptions typically associated with challenges, critical incidents, and dilemmas of current practice in diverse settings of schooling and education (Alcoff, 2006; Mezirow, 1991; Murry et al., 2017). Kelly (2017) asserted transformational learning theories provide the appropriate conditions to impact teachers' self-efficacy.

Composite Theoretical Framework

Learning during adulthood is effectively acquired in an informal/non-authoritarian collaborative environment based on experience checking and validation, inquiry-dialogue, and critical reflection (Lindeman, 1926; Merriam, 2017; Mezirow, 1991; Michelson, 2011;

Wlodarsky, 2018). According to Kelly (2017), experience sharing and reflection allow teachers to explore and analyze new perspectives that lead to continuous professional learning and improvement. Adults' motivation to learn is driven by the necessity to reconstruct an experience or a belief when it is not able to provide an appropriate solution to a current problem or issue (Kelly, 2017; Meijer et al., 2017; Mezirow, 1991, 2003; Nolan & Guo, 2019; Zhu et al., 2020). Kelly (2017) asserted PLCs that also emphasize transformative learning support teachers to confirm or change their expectations, values, and frames of reference, in responding more effectively to student assets and needs. According to Salleh (2016), dialogues, emphasizing reflection, and the contributions of others who are more knowledgeable and experienced are some of the most critical elements that support teachers to effectively and sustainably maximize professional development through reinforcing spaces, such as PLCs.

This literature review has evinced the principle tenets of adult learning (experience, inquiry-dialogue, and critical reflection) epitomize effective teacher educational programs emphasizing professional improvement and learning. Together these principles form the core of the composite theoretical framework for this inquiry. As already detailed in prior sections of this chapter, table 2.1 synopsizes the additional literature that will bolster this core toward a more robust, and composite theoretical framework for the inquiry, including transformative learning and BDI. Based upon an extensive review of the relevant literature, it is asserted this framework, as situated in the supportive context of PLCs, offers the current best explanatory model for the challenge to be addressed by this inquiry.

Table 2.1 Composite Theoretical Framework for Teacher's Continuous Professional Learning

	Experience	Inquiry-Dialogue	Critical Reflection
Transformative Learning	Centralizing teachers' experience as the richest learning source informs teachers' improvement, transformation, and advocacy.	Inquiry-dialogue and collaboration are the vehicles that guide adults to validate and transform their experiences targeting professional improvement.	A critical reflective process based on assumption checking and testing leads teachers to problem-solving, advocacy, and agency.
BDI	Activate, connect, maximize, value, and affirm teachers' experience to promote learning emphasizing the four dimensions of the prism model.	Collaborative dialogue and interactions enable experience exploration, reflection, and connections between the know to the unknown for effective teachers' improvement.	Enable critical reflection on prior experiences as the vehicle for validity testing, problem-solving, accountability, advocacy, agency, and continuous improvement

As illustrated in Table 2.1, both historical and emergent literature on adult learning, such as that of Mezirow (1997) and Merriam (2017), as well as the literature on transformative learning (Kelly, 2017) reinforce and augment what is known about optimal professional development for teachers and other educators. Similarly, the emergent literature on BDI (Herrera, 2016; Murry et al., 2017) further explains key structures for professional learning that are consistent with best practices for limited access and diverse populations. BDI tenets such as the instructional process of activation, connection, and connection serve to promote open dialogue, risk-taking, honesty, meaningfulness, and the sharing of counter stories about the assets that are not maximized and needs of teachers and students' improvement that are under-attended in educational institutions or in the system in which it is contextualized.

Research Question

The research question that guides this study is the following: Does a professional development program grounded in principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yield a statistically significant change in teachers' self-efficacy scores, as measured by the Teacher Self Efficacy Scale (TSES)? Although this guiding question is somewhat multifaceted in structure, it does account for the complexity of the research problem and the robustness of the composite theoretical framework that has been developed to address that challenge, in the context of PLCs. As chapter three will detail, an Ecuadorian context was purposively chosen as the setting for this inquiry because of a variety of issues and rationales, including proximity to the researcher, access to teachers in the selected institutions, participants' limited opportunities for high-quality adult-centered professional development, and the dearth of research on professional development within this context. This guiding question based on the robustness composite theoretical framework will provide insights that support the adult-centered professional improvement for Ecuadorian teachers.

Summary

This chapter has shown the tenets of adult learning are the core components for high-quality adult-centered professional development programs, contextualized in PLCs. Experience is the richest source of learning during adulthood. Inquiry-dialogue and collaboration lead to solving problems and critical reflection based on assumption checking and testing is the vehicle that supports teachers' continuous improvement, advocacy, and agency. Experience, inquiry-dialogue, and critical reflection together with additional literature including transformational learning and BDI bolster a more robust composite theoretical framework and explanatory model for the inquiry in this study. Transformative learning can change the experience and perspective

of teachers via collaboration, dialogue, and critical reflection. BDI treats experience as an asset that needs to be activated, affirmed, maximized, and used into advocacy and agency through collaborative dialogue and critical reflection, enabling meaningful connections between the known and the unknown.

Chapter 3 - Methodology

The robust model for high-quality adult-centered professional programs will guide the research inquiry to determine whether a professional development program grounded on the principles of adult and learning, contextualized in PLCs, and bolstered by the literature of BDI yield a statistically significant change in teachers' self-efficacy, as measured by the TSES. This chapter will provide the research methodology and design used to examine whether a professional development program grounded on the principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yielded a statistically significant change in teachers' self-efficacy. The study was guided by a quasi-experimental control-experimental group design. The sample for this study included 30 tenured teachers from an Ecuadorian educational institution, randomly and equally distributed into the control and experimental group. Data was collected using the Teachers' Self-Efficacy Scale (TSES) at two different points throughout the study, pre- and post-intervention, which were tabulated using Quartics software and analyzed through one-way Multivariate Analysis of Variance (MANOVA) using SPSS.

Research Question and Hypothesis.

The purpose of this study was to investigate whether a professional development program grounded in principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yielded a statistically significant change in Ecuadorian teachers' self-efficacy associated with their instructional competences to manage online education. This study aimed to answer the following Research Question (RQ) and to test the following hypotheses.

- RQ1: Does a professional development program grounded in principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yield a statistically significant change in teachers' self-efficacy scores, as measured by the Teacher Self Efficacy Scale (TSES)?

- Null Hypothesis (H_0): Participation in a professional development program grounded in principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI does not yield a statistically significant change in teachers' self-efficacy scores, as measured by the TSES.
- Alternative Hypothesis (H_A): Participation in a professional development program grounded in principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yields a statistically significant change in teachers' self-efficacy scores, as measured by the TSES.

Methods

Professional development programs emphasizing teachers' continuous improvement has been a focus to impact student academic achievement. Traditionally, professional development programs for teachers have been practiced through short-term courses, workshops, or conferences, emphasizing lecturing and minimal dialogue or participation among participants. Although research in adult learning has continuously demonstrated that experience, inquiry-dialogue, and critical reflection are the key components to achieve learning during adulthood (Kelly, 2017; Knowles, 1978; Mezirow, 1991), current professional development programs for adults are still conducted through traditional means. Thus, teachers' continuous improvement and adult education require programs that centralize reflective practice, experience, and inquiry-dialogue as the richest sources of learning (DuFour, 2007; Hord, 2009; Kelly, 2017; Mezirow, 1991). The need for professional development programs that effectively reveal an impact on teachers' instructional practice is a current issue of concern in many educational institutions in Ecuador. A quantitative research design was appropriate to measure a statistically significant change in teachers' self-efficacy after participating in a professional development program that attended to fulfill this need.

Self-efficacy, as measured by TSES, was used as the indicator to analyze the impact of a professional development program guided by the tenets of Adult Education, contextualized in PLCs, and bolstered by the literature of BDI, considering that teachers' practices and actions are guided by their frame of beliefs. Teachers act based on their perceptions and expectations about the competences they have to effectively perform a specific activity (Bandura, 1997; Tschannen-Moran & McMaster, 2009). Self-efficacy is a mental representation of an individual's beliefs in his or her capacity to execute behaviors necessary to produce specific performance attainments (Bandura, 1997). Positive beliefs associated to instructional capacities lead to advocacy and agency into continuous improvement.

Teachers' sense of self-efficacy, effectively measured based on three principal factors of effective teaching practices (instructional strategies, student engagement, and classroom management competences) (Tschannen-Moran & Hoy, 2001) guided the data collection and analysis process of this research. For the intended purpose of this study, a one-way MANOVA was used to measure a statistically significant change in teachers' self-efficacy.

Research Design

This research was guided by a quasi-experimental control-experimental group design. Each group included 15 participants. The research design was structured considering a pre- and post-intervention TSES application to the two groups, obtaining the scores which were statistically analyzed through a one-way MANOVA. The significance was measured considering an alpha score of .05, a 95% level of confidence. According to Dimitrov and Rumrill (2003), this type of design has been widely used in behavioral research to compare measurement changes after being exposed to experimental treatments. Thus, all participants filled a demographic survey, were part of a professional development training, and completed the 24-items Teachers'

Sense of Efficacy Scale (TSES) at two different points throughout the study, at the beginning and at the end of the intervention. This provided two points of comparison, allowing the researcher to determine whether the intervention yielded a statistically significant change in teachers' self-efficacy scores, as measured by TSES. The experimental group was also part of some PLC sessions as additional activities of their professional training (see Figure 3.1.)

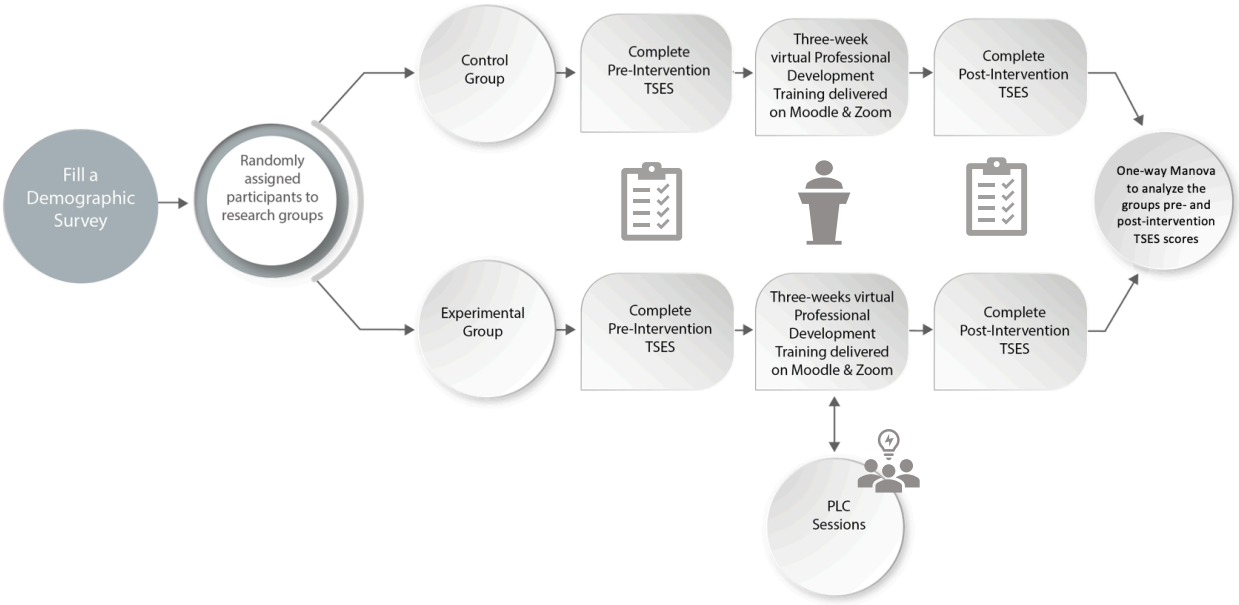

Figure 3.1 Research Design

Timeline for Research Design. The research design was submitted to the Kansas States University Institutional Review Board (IRB) for implementation approval, ensuring participants' well-being and research integrity. The committee on Research Involving Human Subjects/ Institutional Review Board for Kansas State University reviewed the proposal and determined that this is exempt from further IRB review. Upon IRB approval, the research implementation began. A letter was electronically sent to the president of the selected educational institution to request permission to conduct the study in the institution and to circulate the results obtained, emphasizing and ensuring results would be kept anonymous and the integrity of the institution would not be affected (Appendix A). Once the approval was granted through a formal signed

letter from the university president, the researcher informed the Dean of that institution's College of Education about the study and contacted all teachers in the college of Education through an email, inviting them to participate in the research. The email described the study's purpose, timeline, and requirements of participation (Appendix B). The letter emphasized participants were free to leave the study at any moment if it did not fill their expectations or beliefs or if they felt emotionally or physiologically affected. It also mentioned the results and information obtained would be kept anonymous and safely stored, being only used for the purpose of the study. Subjects completed and signed a consent letter as part of the approval procedures to participate in the study (Appendix C).

All participants completed a digital demographic survey (Appendix D) and a digital pre-intervention TSES (Appendix E) in their native Spanish language. The researcher translated these documents. The researcher distributed the participants into the control and experimental depending on the time they responded to the demographic survey. The first 15 subjects were assigned into the control and the rest into the experimental. Then, participants in both groups took part in a three-week professional development program delivered virtually via modules and zoom. Teachers in the experimental group were also part of some PLC sessions conducted within the same three weeks. At the end of the intervention, all participants completed a post-intervention TSES. Finally, the researcher used the scores obtained from the pre- and post-intervention TSES to conduct statistical analysis in SPSS using a one-way MANOVA. Table 3.1 portrays the timeline for the research design.

Table 3.1 Timeline for Research Design

February 2021	Late February & March 2021	March 2021
IRB Submission Contacting university president and faculty members Creation of professional development course on Moodle	Pre-Intervention TSES Conducting professional development program & PLCs (three weeks)	Post-Intervention TSES Analysis & Discussion

Site & Sample

This section will build the situated and focused description of the context and subjects who were selected as the sample for this study.

Site

The educational institution selected for the study is located in an agricultural city whose main economic activity is the farming industry including the cultivation of sugar and pineapples. It receives people from diverse surrounding cities and small towns who attend or work in one of its two Institutions of Higher Education (IHE), which have influenced the immigration flow, becoming the third most inhabited city in the province. The educational institution selected for this study was chosen considering the researcher's access to teachers and proximity. Teacher staff in the selected institution consists of 416 teachers, of which 230 are tenured and 186 are temporary contract (Table 3.2). The 416 faculty members are from different areas: there are 68 teachers from engineering science, 60 from social science, 94 from administrative science, 50 from law science, 60 from health, and 84 from education (Table 3.3).

Table 3.2 Composition of Teachers Employment Categories

Faculty Category	Number of Teachers	%
Tenured Faculty Teachers	230	55.29
Temporary-Contract faculty teachers	186	44.71
Total	416	100

Table 3.3 Composition of Teachers' Professional Areas

Faculty Professional Areas	Numbers of Teachers	%	Numbers of tenured teachers	%	Number of temporary-contract teachers	%
Engineering Science	68	16.34	48	20.87	20	10.75
Social Science	60	14.42	34	14.78	26	13.98
Administrative	94	22.60	62	26.96	32	17.20
Law	50	12.02	15	6.52	35	18.82
Health	60	14.42	26	11.30	34	18.28
Education	84	20.20	45	19.57	39	20.97
Total	416	100	230	100	186	100

Sample

Following Cohen et al.'s (2018) suggestions, the subjects selected as the sample for this study were alike and shared some characteristics, meeting the following criteria:

- Being tenured faculty members with a minimum of three-year teaching experience
- Having a master or Ph.D. degree in education
- Having received any type of professional development program in the last two years
- Having access to the Internet that was at least 4.0 Gb to guarantee a stable connection while the study was taking place

The sample for this study included 30 tenured teachers from the entire site population, who were randomly and equally distributed into the experimental and control group (15 subjects for each group). Tenured teachers were selected over temporary-contract teachers considering they work permanently in the institution and it would be easier to contact them after the intervention if it was required. All 30 subjects were selected from the teacher population in the College of Education due to the access and proximity the researcher has within this college. The researcher is a faculty member in the English Language Teaching (ELT) department in the College of Education of the selected institution so there is a good relationship between the researcher and teachers participating in the study, increasing the willingness, permanency, and commitment to participate. The subjects participating in the study included 25 females and 5 males.

Intervention

Professional Development Training. The intervention consisted of a five-session professional development program, which provided all participants with some knowledge and training associated with digital didactic and pedagogical competences to enhance their instruction within online education. Training in this area has become very necessary for Ecuadorian teachers considering due to the COVID-19 pandemic, all educational institutions in Ecuador were instructed to deliver their programs online (Decreto Estado de Emergencia, 2020), creating the need to innovate teachers' professional practices. The researcher acted as the facilitator during the professional development training. He is a Ph.D. Candidate in the doctoral program of Curriculum and Instruction at Kansas State University and has provided professional development to teachers at educational institutions in Ecuador for approximately 6 years. He provided the five-session professional development program for teachers participating in the

study and conducted the PLC session with the experimental group. All teachers participating in the study (control and experimental group) received a 20-hour professional development training that:

- Familiarized them with the Learning Management System *Moodle,* which was used as a virtual learning platform that facilitates the delivery of teaching material and the implementation of summative and formative assessments. Moodle was used by most of the Ecuadorian higher education institutions to deliver online classes due to the COVID-19 pandemic.
- Explored diverse digital tools that allowed video conferencing to more effectively deliver virtual synchronous classes
- Examined different tools and apps that created a virtual learning environment allowing student interaction, documentation of their experiences, making connections between the known and the unknown, and working collaboratively
- Let them experience and evaluate the effectiveness of the different digital tools introduced each session

The program was delivered using the Learning Management System Moodle to provide participants with the content material and Zoom video conferring for the synchronous lecturing sessions in which the facilitator explained the content. Moodle and Zoom are being used to create and host virtual classes in the selected and other educational institutions around Ecuador. The program included synchronous and asynchronous participation. Considering participants' schedules and availability, the program scheduled two two-hour training sessions per week for a total of three weeks, ensuring that all teachers have the time to participate. Table 3.4 portrays the content delivered throughout the professional development training.

Table 3.4 Professional Development Training: Content Organization

Week 1	Week 2	Week 3
Moodle: Characteristics, benefits, and main features	Google Features to promote collaborative learning	Designing interactive digital resources: Mindmeister, Smore, Adobe Spark
Zoom: Characteristics, benefits, and main features	Genially: Effective and interactive virtual presentations	Post-Assessment & Affirmation phase: Socrative, Kahoot, Educaplay, Mentimeter
Zoom to promote interaction and collaborative learning in virtual modality	Padlet, Stormboard & Twitter: pre-assessment and activation phase in virtual modality	

Control Group. Subjects in the control were required to review the material posted on Moodle platform and to attend two two-hour virtual synchronous sessions each week in which the facilitator explained the different contents through lecturing. Interaction, collaboration, previous knowledge exploration, or inquiry were not the focus during those virtual synchronous sessions. Within this group, the 20 hours were distributed into 10 hours for autonomous material revision and 10 hours to attend the virtual synchronous sessions with the facilitator.

Experimental Group. Subjects in the experimental group were required to also attend two two-hour virtual synchronous sessions each week in which the facilitator explained the different contents through lecturing. Interaction, collaboration, previous knowledge exploration, or inquiry were not the focus during the virtual synchronous sessions. Within this group, the 20 hours were distributed into 10 hours to attend the virtual synchronous sessions with the facilitator, 5 hours for autonomous material revision, and 5 hours to participate in five one-hour PLC sessions. The PLC sessions were set in a collaborative-reflective environment that provided teachers access to more worthwhile and inclusive dialogue based on their experience. During the

sessions, the PLC facilitator encouraged teachers to explore, value, activate, and affirm their previous individual experiences and perspectives, supporting the connection of previous and new experiences or knowledge through the instructional process of activation, connection, and affirmation based on BDI literature (Herrera, 2016; Perez et al., 2012).

Data Collection

The data for the study was collected through Qualtrics software at two different points using a digital version of the Teacher's Self-Efficacy Scale (TSES), which were translated into Spanish considering the context of the study. Qualtrics is a compiling digital tool that allows individuals to design, construct, and distribute surveys, and tabulate and analyze responses. All participants completed a pre- and post-intervention TSES, providing the researcher two points of comparison to measure whether the intervention yields a statistically significant change in teachers' self-efficacy scores.

Instrument: The Teacher's Self Efficacy Scale (TSES)

TSES, also known as Ohio State Teachers' Sense of Efficacy Scale (OSTES), was developed by Tschannen-Moran and Hoy (2001). The TSES scale is a 24-item survey based on a Likert-type scale. The possible scoring range is from 1 to 9, allowing participants to choose the item that mostly describes their perceptions. According to Tschannen-Moran and Hoy (2001), student engagement, instructional strategies, and classroom management are the most important aspects of educators' competences, supporting effective teaching. Those three aspects are included in different items in the scale (see table 3.5). The TSES was the appropriate instrument for this study because it has been recently used by scholars who have also examined how different teacher education programs influence teachers' self-efficacy (Carter, 2017; Chao et al., 2017; Cohrs, 2014; Gröschner et al., 2018; Moradkhani et al., 2017; Zheng et al., 2019; Zonoubi

et al., 2017) , and how a high sense of self-efficacy leads to changes in classroom practices and teachers' agency (Depaepe & König, 2018; Shoulders & Krei, 2015; Zee & Koomen, 2016).

Table 3.5 TSES Factors for Effective Instruction & Scale Items

Factors for Effective Instruction	Items in the Scale
(a) Efficacy in Student Engagement	1, 2, 4, 6, 9, 12, 14, 22
(b) Efficacy in Instructional Strategies	7, 10, 11, 17, 18, 20, 23, 24
(c) Efficacy in Classroom Management	3, 5, 8, 13, 15, 16, 19, 21

Data Management

The data was managed considering protocols and procedures to protect the integrity and well-being of the selected institution and teachers' participating in the study, ensuring confidentiality, anonymity, and appropriate use of the data obtained from the subjects. Although the researcher was the only person managing the data, all data obtained during the study was safely stored using pseudonyms to ensure and protect the anonymity of the subjects. The researcher communicated to the subjects participating that the data was safely stored and used only for the purpose of the study.

Although Kansas State University Institutional Review Board (IBR) stated the answering and returning of the instrument was an appropriate and sufficient expression of free consent if questionaries or surveys were the only sources of data in the study, this study also required participants to complete and sign a consent letter to obtain the approval to use the data collected. The institution and subjects' identities were not revealed at any point during the study, including the process of contextualizing the sample or reporting the results. It is also important to share that participants were informed that they were free to leave the study at any moment if it did not fill their expectations or beliefs or if they felt emotionally or physiologically affected. Any of the participant leaf the study.

Data Analysis

This quasi-experimental control-experimental group design used Qualtrics software to collect and tabulate demographic information of the participants and the scores obtained from the TSES application. First, participants' answers to the 24 items in the instrument were organized and clustered considering the three aspects of effective teaching: student engagement, instructional strategies, and classroom management (Tschannen-Moran & Hoy, 2001; Tschannen-Moran & McMaster, 2009). Descriptive statistics were utilized to obtain the means of each participant's scores in each one of the aspects. Descriptive statistics were also utilized to obtain the general mean of each group's TSES scores (control and experimental) in each one of the aspects. Finally, to determine whether the intervention yielded a statistically significant change in teachers' self-efficacy, as measured by TSES, the researcher conducted a one-way MANOVA using SPSS software to analyze participants' scores in each one of the factors for effective teaching. Considering that the researcher analyzed three different variables associated to self-efficacy and the research intervention, MANOVA was an appropriate statistic method for this study. MANOVA was used to reduce the chance for a Type I error, which is normally caused when running multiple mean comparisons. The one-way MANOVA analyzed control and experimental groups' scores obtained from the post-TSES implementation. The significance was measured considering an alpha score of .05, a 95% level of confidence.

Research Rigor

Reliability

The TSES (Tschannen-Moran & Hoy, 2000), has been successfully utilized to reliably measure teacher self-efficacy in the three major and clinical areas detailed under the *Instrument* subheading of this chapter, that is, efficacy in: (a) student engagement, (b) instructional

strategies, and (c) classroom engagement. In the course of instrument refinement, several principal factor analyses were conducted on scores from independent samples and yielded score reliabilities of .82. .81, and .72, corresponding to student engagement, instructional strategies, and classroom engagement parts a-c, above (Tschannen-Moran & Hoy 2001). Ultimately, the reliability score for the final, 18-item, instrument was established at an R-value of .95.

Validity

Construct validity for the TSES was examined by the authors by assessing the correlation of the measure with other existing measures, including: the Rand, the Gibson & Dembo (TES), and the General Teacher Efficacy (GTE) scale (see Tschannen-Moran & Hoy, 2001 for details regarding these comparable scales). According to the authors of the TSES scale who conducted the analyses of construct validity, "As expected, total scores on the OSTES were positively related to both the Rand items (r = 0:35 and 0:28; p<0:01) as well as to both the personal teaching efficacy (PTE) factor of the Gibson and Dembo measure (r = 0:48; p<0:01) and the general teacher efficacy (GTE) factor (r=.30, p<0:01)" (Tschannen-Moran & Hoy, 2001, p. 798). The results of this and other analyses of the reliability and validity of the TSES yielded favorable results for both 12 and 24-item versions of the TSES that were ultimately recommended by Tschannen-Moran & Hoy (2009) as robust measures of teacher self-efficacy.

Strengths and Limitations

One of the strengths of the research design was the administration of a valid and reliable scale which had been tested and continually implemented in other similar studies in different contexts. Another strength was the access and proximity the researcher had to the selected institution. Also, participants had similar educational backgrounds, years of experience, socio-economic status, areas of expertise, and needs to be trained in a specific relevant area

considering the virtual modality in which the classes were being delivered due to the COVID-19 pandemic. Another asset was the relationship between the research and the participants. This relationship was a strong asset of the study in terms of participants' commitment and permanency. To diminish bias, the researcher asked the participants to be sincere in their responses and to keep them anonymous.

The main limitation of the research design was the sample size. The research study was bounded by a specific and small part of the population in just a single college within a specific institution. This prevented the researcher to generalize the results obtained because it was not enough to establish power (Cohen et al., 2018). Time was also an emerged limitation. The researcher considered that despite those limitations the study contributed to support the potential that an adult-centered professional development program, contextualized in PLCs, and bolstered by the literature of BDI had to promote continuous learning and a statistically significant change in teachers' self-efficacy, as measured by TSES, which led them into agency.

Summary

This chapter has provided a detailed description of the research methodology that framed this study including the purpose, research design, site and sample, data collection, data analysis, and limitations. Based upon extensive review of the relevant literature, the purpose of this study was to examine whether a professional development program grounded in the principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yielded a statistically significant change in teachers' self-efficacy. This inquiry was answered through a quasi-experimental control-experiment group design. An Ecuadorian context was purposively chosen as the setting for this study, including a sample of 30 tenured teachers from the College of Education of an educational institution. The data was collected using the TSES at two different

points in the study, proving the researcher two points of comparison for the data analysis. The data analysis was conducted through a one-way MANOVA using the SPSS software, considering three factors of effective instructional competences: student engagement, instructional strategies, and classroom engagement. The limitations of the study included the sample size and the time.

Chapter 4 - Results

The purpose of this study was to examine whether a professional development program grounded in principles of Adult Education, contextualized in PLCs, and bolstered by the literature of BDI yields a statistically significant change in Ecuadorian teachers' self-efficacy associated with their teaching competences for effective instruction. The results conveyed within this chapter aimed to determine the statistical significance of the results which may justify the effectiveness of implementing a professional development program grounded in principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI on teachers' continuous improvement. Participants' TSES scores in the three areas of effective teaching (student engagement, instructional strategies, and classroom management) were the dependent variables whereas the professional development program was the independent variable in this quasi-experimental study.

Demographic Data

Demographic data was gathered to assist in the selection of the subjects who met the inclusion criteria and describe the selected subjects. The demographic data showed the subjects participating in the study were diverse in term of age, teaching experience, level of education and training areas. 43.34% of the participants were older than 46 years old. 66.67% of them had been teaching for more than 10 years. 40% of the participants had previously received professional development training within the technological area in education. Table 4.1 depicts an overview of the demographic information of subjects participating in the study.

Table 4.1 Demographic Information of Participants

Gender			Age			Teaching Experience			Level of Education			Training Areas Received		
Gender	#	%	Years	#	%	Years	#	%	Degree	#	%	Area	#	%
Male	25	83.33	25-30	1	3.33	1-3	2	6.66	Doctoral	6	20	Tech.	12	40
Female	5	16.67	31-35	5	16.67	4-6	5	16.67	Master	24	80	Other	18	60
			36-40	7	23.33	7-9	3	10						
			41-45	4	13.33	10+	20	66.67						
			46+	13	43.34									
	30	100%		30	100%		30	100%		30	100%		30	100%

Statistical Results

Descriptive Statistics

The researcher analyzed participants' TSES scores based on the three factors for instructional practice: student engagement, instructional strategies, and classroom management (Tschannen-Moran & Hoy, 2001; Tschannen-Moran & McMaster, 2009). The initial stage of statistics analyses was to organize and categorize participants' answers to the 24 items according to the three factors for effective instruction (Table 4.2). Then, descriptive statistics were utilized to compute means of each participants' score in the three outcomes factors. Table 4.3 portrays the means of each participant's score in each factor for effective teaching in the control and experimental group obtained from the pre-TSES application. Table 4.4 displays the means of each participant's score in the control and experimental group obtained from the post-TSES application.

Table 4.2 TSES Factors for Effective Instruction & Scale Items

Factors for Effective Instruction	Items in the Scale
(a) Efficacy in Student Engagement	1, 2, 4, 6, 9, 12, 14, 22
(b) Efficacy in Instructional Strategies	7, 10, 11, 17, 18, 20, 23, 24
(c) Efficacy in Classroom Management	3, 5, 8, 13, 15, 16, 19, 21

Table 4.3 Pre-Test Means in the Three Factors for Effective Instruction

	Control Group			Experimental Group		
#	Student Engagement	Instructional Strategies	Classroom Management	Student Engagement	Instructional Strategies	Classroom Management
1	6.50	7.63	6.88	4.13	4.63	3.88
2	7.75	7.88	8.25	4.50	5.13	3.75
3	8.00	6.88	6.63	3.88	4.25	4.00
4	5.75	4.50	5.00	4.00	4.25	4.00
5	4.88	6.00	4.75	4.38	4.63	4.50
6	7.13	6.88	7.13	3.38	4.13	4.38
7	4.88	4.63	4.75	8.00	8.00	8.00
8	4.75	4.63	6.13	4.25	4.75	4.63
9	6.38	5.50	4.13	4.25	4.25	3.63
10	4.63	4.88	4.50	3.75	4.38	3.63
11	6.38	6.75	7.13	4.25	4.25	4.50
12	4.63	5.13	4.38	4.25	4.25	3.88
13	5.00	5.00	5.50	5.00	5.00	5.00
14	5.00	4.88	5.13	4.13	4.75	3.50
15	5.38	5.38	5.25	5.00	4.38	4.63

Table 4.4 Post-Test Means in the Three Factors for Effective Instruction

	Control Group			Experimental Group		
#	Student Engagement	Instructional Strategies	Classroom Management	Student Engagement	Instructional Strategies	Classroom Management
1	6.63	5.50	6.13	8.00	7.25	7.63
2	7.88	7.88	8.38	8.13	9.13	8.38
3	7.75	7.75	8.50	8.50	8.88	9.25
4	6.75	7.13	6.88	7.13	7.63	7.50
5	5.38	5.88	5.50	8.25	8.75	8.00
6	4.88	5.13	5.38	7.38	8.50	8.38
7	7.38	6.50	6.50	7.75	8.13	8.50
8	5.13	6.13	3.75	8.63	8.50	8.50
9	6.13	4.75	4.00	8.50	8.88	8.63

10	5.38	5.38	5.25	8.25	8.25	8.00
11	5.88	5.88	6.13	8.38	8.75	8.75
12	5.38	5.75	6.13	7.88	8.00	7.25
13	6.13	5.63	5.75	7.00	8.00	7.50
14	6.75	7.00	7.38	8.88	9.38	9.13
15	5.63	6.75	5.75	9.75	9.25	8.63

Descriptive statistics were also utilized to determine a general overview of the means of the control and experimental groups in each of the factors used for analysis. The results obtained from descriptive statistics showed a higher mean score for perceived teachers' efficacy for the subjects in the experimental group compared to the subjects in the control group after participating in the professional development program. Most significant differences in the experimental group were illustrated in the classroom management factor (3.88), followed by instructional strategies (3.75), and student engagement (3.68). Table 4.5 portrays an overview of the means of the control group obtained from the pre- and post-TSES application considering the three factors for effective instruction, whereas Table 4.6 portrays results obtained from the experimental group's scores.

Table 4.5 Control Group Results in the Three Factors for Effective Instruction

	Pre- and Post-Scores	N	Mean	Sta. Deviation	Std. Error Mean
Student Engagement	Pre-TSES	15	5.80	1.15159	.29734
	Post-TSES	15	6.20	.95426	.24639
Instructional Strategies	Pre-TSES	15	5.77	1.14683	.29611
	Post-TSES	15	6.20	.93614	.24171
Classroom Management	Pre-TSES	15	5.70	1.24051	.32030
	Post-TSES	15	6.10	1.04016	.26857

Table 4.6 Experimental Group's Results in the Three Factors for Effective Instruction

	Pre- and Post-Scores	N	Mean	Sta. Deviation	Std. Error Mean
Student Engagement	Pre-TSES	15	4.48	1.06003	.27370
	Post-TSES	15	8.16	.69955	.18062
Instructional Strategies	Pre-TSES	15	4.74	.95256	.24595
	Post-TSES	15	8.49	.60729	.15680
Classroom Management	Pre-TSES	15	4.39	1.09299	.28221
	Post-TSES	15	8.27	.60363	.15586

Multivariate Analysis of Variance Results

A one-way Multivariate Analysis of Variance (MANOVA) using SPSS software was used to analyze the scores obtained from post-TSES application to determine whether a professional development program grounded in principles of Adult Education, contextualized in PLCs, and bolstered by the literature of BDI yielded a statistically significant change in teachers' self-efficacy, as measured by TSES. The statistical analysis used a general linear model considering the three factors of effective instruction. The significance was measured considering an alpha score of .05, a 95% level of confidence. Table 4.7 depicts the MANOVA descriptive statistics and table 4.8 displays the multivariable tests results obtained from post-TSES application.

Table 4.7 MANOVA Descriptive Statistics

	Groups	Mean	Sta. Deviation	N
Post-Student Engagement	Control	6.20	.95426	15
	Experimental	8.16	.69955	15
	Total	7.1823	1.29073	30
Post-Instructional Strategies	Control	6.20	.93614	15
	Experimental	8.49	.60729	15
	Total	7.3440	1.34020	30

Post-Classroom Management	Control	6.10	1.04016	15
	Experimental	8.27	.60363	15
	Total	7.1813	1.50534	30

Table 4.8 Multivariate Tests Results

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.991	922.030[b]	3.00	26.00	.000
	Wilks' Lambda	.009	922.030[b]	3.00	26.00	.000
	Hotelling's Trace	106.388	922.030[b]	3.00	26.00	.000
	Roy's Largest Root	106.388	922.030[b]	3.00	26.00	.000
Groups	Pillai's Trace	.703	20.563 [b]	3.00	26.00	.000
	Wilks' Lambda	.297	20.563 [b]	3.00	26.00	.000
	Hotelling's Trace	2.373	20.563 [b]	3.00	26.00	.000
	Roy's Largest Root	2.373	20.563 [b]	3.00	26.00	.000

The results from table 4.8 indicated that the one-way MONOVA effect related to the groups was statistically significant (Wilks' Lambda = .297, F (3,26) = 20.563, p<.000), concluding that the participants' TSES scores were significantly dependent on the research intervention. Table 4.9 displays the results of the test of between-factors effects.

Table 4.9 Test of Between-Factors Effects

Effect		Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Post-Students Engagement	28.714[a]	1	28.714	41.021	.000

	Post-Instructional Strategies	39.079[b]	1	39.079	62.770	.000
	Post-Classroom Management	35.469[c]	1	35.469	32.834	.000
Intercept	Post-Students Engagement	1547.577	1	1547.577	2210.864	.000
	Post-Instructional Strategies	1618.030	1	1618.030	2598.907	.000
	Post-Classroom Management	1547.146	1	1547.146	1432.215	.000
Groups	Post-Students Engagement	28.714	1	28.714	41.021	.000
	Post-Instructional Strategies	39.070	1	39.070	62.770	.000
	Post-Classroom Management	35.469	1	35.469	32.834	.000
Error	Post-Students Engagement	19.600	28	.700		
	Post-Instructional Strategies	17.432	28	.623		
	Post-Classroom Management	30.247	28	1.080		
Total	Post-Students Engagement	1595.891	30			
	Post-Instructional Strategies	1674.542	30			
	Post-Classroom Management	1612.862	30			

Corrected Total	Post-Students Engagement	48.314	29
	Post-Instructional Strategies	56.512	29
	Post-Classroom Management	65.716	29

a. R Squared = .594 (Adjusted R Squared = .580)
b. R Squared = .692 (Adjusted R Squared = .681)
c. R Squared = .540 (Adjusted R Squared = .523)

The results obtained from the one-way MANOVA enabled the researcher's rejection of the null hypothesis of the research. Further, the findings indicate that a professional development program grounded on the principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yields a statistically significant change in Ecuadorian teachers' self-efficacy associated with three factors for effective teaching: student engagement F (1,28) = 41,02, p<.000, instructional strategies F (1,28) = 62,77, p<.000, and classroom management F (1,28) = 32,83, p<.000

Summary

This chapter described the results of the study obtained from the quantitative analyses of comparable group data. The demographic data section provided an overview of participants' demographic, professional, and educational background information. The data organization, analysis and results presentation were guided by the three factors for instructional practice: student engagement, instructional strategies, and classroom management (Tschannen-Moran & Hoy, 2001; Tschannen-Moran & McMaster, 2009). Subjects' scores obtained from the pre- and post-TSES application were analyzed using descriptive statistics to determine the mean of group in the three factors for effective instruction, which showed an increase in TSES scores within the experimental group. A one-way MANOVA test supported the research to reject the null

hypothesis and to determine that a professional development program grounded on the principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yields a statistically significant change in Ecuadorian teachers' self-efficacy, as measured by TSES. The discussion of the findings of this study are presented in the chapter to follow.

Chapter 5 - Discussion & Conclusions

Teachers' continuous improvement and its impact on student academic achievement have been the focus of initiatives and efforts toward reform and research throughout the history of education, particularly in the late twentieth and early twenty-first century. Professional development programs centralizing teachers' continuous improvement are also, in many cases, an international focus**.** For example, in Ecuador, two pieces of current legislation apply: (a) Ecuadorian Constitution art. CCCXLIX, § 7 and (b) the Organic Law for Institutions of Higher Education art. VI, § 2. The extensive review of relevant literature detailed in chapter two offered a composite theoretical framework for the many and divergent challenges of enhancing professional development (and, by implication, continuous improvement) for educators, especially those who are higher education teachers. Of particular concern to the subsequent study was to examine whether a professional development program grounded in principles of adult education, contextualized in PLCs, and bolstered by the literature of BDI yielded a statistically significant change in Ecuadorian teachers' self-efficacy for professional and appropriate, pedagogical practices.

Quantitative collection and analysis of survey data supported not only the rejection of the null hypothesis but a range of compelling findings as well. Specifically, it was determined that a professional development program grounded on the principles of adult learning, contextualized in PLCs, and bolstered by the literature of BDI yielded a statistically significant change in teachers' self-efficacy, as measured by TSES. Further, it was concluded that of three most pivotal indicators of effective teaching, student engagement, instructional strategies, and classroom management, were each significantly changed at the level of statistical significance**.**

Introduction

All teachers participating in this study received a virtual 20-hour professional development program designed to enhance their instructional practices associated with delivering online education. For the control group, that program involved limited interaction among participants.

However, the experimental group also received five contextualized PLC sessions conducted in a collaborative/interactive learning environment that guided teachers to explore, activate, share, and critically reflect on their experiences through collegial dialogue. Some authors have argued that a non-authoritarian collaborative environment, based on experience and reflection, supports adults to identify, validate, and challenge their thoughts and actions in situ (Kelly, 2017; Knowles, 1975; Lindeman, 1926; Merriam, 2017; Mezirow, 1991).

The findings of this research intervention, contextualized by PLCs, evinced that a collaborative-reflective learning space that provides access to more worthwhile dialogue, bolstered by the literature of BDI, support teachers' continuous improvement (Dufour et al., 2006; Hord, 2009; Kelly, 2017; Salleh, 2016; Stoll et al., 2006). The statistical results supported by a composite synthesis of relevant literature confirmed that a program contextualized in PLCs exhibits a positive change in teachers' self-efficacy as measured by TSES. The results appear to substantiate that an instructional flow of activation, connection, and affirmation, centralizing individual experience and inquiry-dialogue enhances teachers' self-efficacy vis-à-vis professional/adult learning and continuous improvement and learning.

Ultimately, the findings suggest that teachers benefits from professional development that emphasizes a theory-driven focus of adult/transformative learning. Especially essential to such a framework are guided explorations, collaborative growth, interactive learning opportunities, and

critical reflection. Unlike more traditional notions of reflection or introspection, critical reflection locates assumptions in thinking/practice, tests their validity, and situates errant ones in the adult's prior socialization experiences – in the home, in schooling, and in professional practice.

Implications of the Research

Fundamentally, the findings on self-efficacy indicate that teachers perceived readiness for promising practices with their students was significantly impacted by a composite and differentially structured program of professional development. In like manner, this composite model reflected the literature on best practices in adult education, professional development, and culturally responsive pedagogy. This finding that a hybrid model of intervention was effective may suggest that the development of such models in response to students and teachers changing contexts and circumstances (e.g., those generated by the COVID-19 pandemic) are worthy of closer inspection. It also indicates that practicing educators are able to effectively comprehend and consider themselves ready to apply the disparate elements of a hybrid model in order to better differentiate their professional practices.

In particular, two elements of the composite model were intentionally included and effectively responded to changing contexts and circumstances among and across students and teachers: transformative learning (in Adult Ed.) and BDI (for differentiated pedagogical practices). As to the former, critical reflection is pivotal to transformative adult learning since it is a capacity that enables professionals to analyze critical assumptions about and incidents in practice irrespective of the changing dynamics of their placement and/or their students. Accordingly, it is a mostly adult capacity and one that is not typically developed quickly. Yet, the findings of this research indicate that the maximization of rubrics and heuristics, such as the

Reflection Wheel Journal (RWJ) (Herrera & Murry, 2016), may accelerate that aspect of adult learning.

Similarly, BDI enables professionals to effectively maximize the assets that their students may already bring to learning. These assets arise from the sociocultural, cognitive, linguistic, and academic domains of students' extant knowledge and prior experiences (including those in the school and in the home culture). Accordingly, BDI, like transformative learning, is responsive and constructive irrespective of teachers or students current and/or changing contexts or circumstances. This is so because it begins not with the content to the taught (the unknown) but what the student already knows (the known) in order to act as a bridge or connection between the two. The findings of this study further suggest the power of a composite model for professional and student learning that incorporates philosophically aligned and highly differentiated approaches to the complexities of both teachers' professional development, as well as the challenges of their complex and often highly diverse student populations.

Comparison of findings & the current state of knowledge

Based on the seminal and related literature of BDI, the facilitator of the intervention with the experimental group posed questions that guided teachers to explore, activate, value, maximize, and affirm their experiences, facilitating academic improvement and continuous learning in a diverse space (Herrera, 2016; Perez et al., 2012; Sanny, McEwen, Herrera, & Murry, 2019). The discussions during each PLC session grew around participants' experiences based on real situations in which they had used the different digital tools (e.g., for teaching online) being discussed. As a result, it could be argued that experience became the participants' living textbook (Lindeman, 1926). In fact, experience became the richest source of learning during the research intervention. Participants shared their experiences associated with applying

different digital tools, centralizing their discussion on: (a) the specific ways purpose they had targeted, (b) the ways that they had used the tools, and (c) how they had managed difficult situations and challenging limitations incurred when the application did not go as planned.

As detailed in chapter two, learning during adulthood results from the collaborative act of sharing, validating, and transforming experiences that have been accumulated throughout life (Kelly, 2017; Merriam, 2017; Mezirow, 1991). Most of the participants mentioned during the PLC sessions that they had found associated discussions valuable since the sessions provided them with opportunities to maximize, reinforce, and affirm their competences based on others' experiences. Reduced stress, increasing confidence, and more robust understandings associated with applicability were also factors that were anecdotally discussed during the PLC sessions. These discussions occurred, often as a result of experience sharing and/or centralizing the success or limitations of the tools in specific contexts.

As detailed in chapter two, research has continuously determined that inquiry-dialogue in a meaningful, challenging, and collaborative environment guides individuals to explore, critically reflect, maximize, and affirm their learning and competences through experience sharing and worthwhile interaction (Cuenca et al., 2011; Gutiérrez et al., 1999; Gutierrez, 2008; Herrera, 2016; Martin et al., 2011). Bolstered by the literature of BDI, the PLC sessions of the research intervention were conducted through an instructional process of activation, connection, and affirmation which supported the facilitator to engage participants into inquiry-dialogue, supporting teachers' continuous improvement through opportunities to make connections from the known to the unknown. Not surprisingly then, opportunities for inquiry-dialogue were frequently mentioned by experimental group teachers as essential to any benefits they reported from the research intervention.

At the beginning of each PLC session, the facilitator provided some initial questions that guided participants to explore and document their knowledge and experiences related to a topic individually. Then, the participants were divided into three-person groups and placed in a room using the breakout room options in zoom. During this time, participants were asked to share their knowledge of the tools being discussed and their experiences in applying the tools within their classroom activities.

The facilitator then posed some questions to guide participants to connect their own with future applications in practice. As one aspect of subsequent discussion, participants would regularly engage in collegial dialogues within their groups and return to the main session to summarize their discussions. Near the end of the session, the facilitator and participants then reflected on the experiences shared. Subsequently, each participant affirmed any knowledge gained in dialogue with their colleagues.

Similar to the results obtained by Perez et al. (2012) and Perez and Holmes (2010), this instructional flow of activation, connection, and affirmation definitively appeared to accelerate participants' learning during this research intervention. It often tended to centralize individuals' experiences through active and meaningful dialogues that were inquiry driven. The statistical results obtained in the extant research would seem to substantiate that the instructional flow of BDI and associated, centralizing experiences accelerate learning regardless age.

A shared vision was established at the beginning of the first research intervention session conducted with the teachers. It asserted that a focus on continuous improvement, learning, and students academic achievement were the factors that would drive the inquiry-dialogues in each one of the intervention sessions. As detailed in chapter two, several authors have argued that PLCs provide teachers the opportunity to explore, inquire, and validate their own reservoir of

experiences and knowledge applicable to problem-solving through collaborative and reflective collegial dialogue (Dufour et al., 2006; Hord, 2009; Kelly, 2017; Richmond & Manokore, 2011). Accordingly, just as BDI validates students biographies of knowledge and experience, PLCS validate teachers emergent funds of experience and knowledge that may drive continuous improvement. Teachers affinity for the inquiry-dialogues that enabled the sharing of and learning from their colleagues was, therefore, a not unexpected outcome of this research. Further, the related and statistically significant findings of this study are consistent with previous research findings reported by Cohrs (2014), Johnson (2016), and Priest (2015), confirming that a training program contextualized in PLCs has a positive effect on teacher's self-efficacies.

As was the case with the extant research, a safe, trustworthy, collaborative, dialogic, and reflective environment, contextualized by the characteristics of PLC and bolstered by the literature of BDI, can prove pivotal in appropriately supporting teachers continuous improvement and learning. Throughout their professional careers, teachers have experienced many recurrent academic and life events that have often guided them toward a mindset that tends to super-navigate their perspectives, actions, and reactions. Concomitantly, they are too often isolated and, as a result, experience little feedback on these narrowly defined mindsets. The results of this inquiry tend to confirm the findings of others in the literature that have advocated for collaborative, adult-oriented, dialogic, and reflective professional development (Cohrs, 2014; Johnson, 2016); Priest, 2015). An adult-centered program, contextualized in PLCs, guides teachers to share and analyze their experiences in a collaborative environment, breaking the barriers that keep teachers working in isolation. Teachers especially need to collaboratively encourage personal, critical reflections on perspectives, approaches, methods, and assessments

that may be detrimentally impacting the capacities of certain students or student groups to excel in their academic and language acquisition pursuits.

The final aspect that framed the composite theoretical framework of this research intervention was critical reflection. Pertinent research in the field has highlighted the notion of critical reflection as a venue for adult's continuous improvement and learning (Brookfield, 2010; Kelly, 2017; Merriam, 2017; Mezirow, 1991; Murry, Holmes, & Kavimandan, 2020; Schön, 1982). As aforementioned, experimental-group participants in the extant research were guided to critically reflect on their own experiences in applying the different digital tools being discussed in each session of the research intervention. Based on the BDI instructional model and the literature of transformative learning (e.g., Mezirow, 2003), teachers went through a process that includes experience exploration, connection, and validity testing through dialogue, problem-solving, affirmation, and transformation of their meaning schemes and perspectives. The findings of this study regarding the outcomes of these efforts in critical reflection tend to parallel those of Affandi et al. (2019) and Brookfield (2010), confirming critical reflection is an essential vehicle for teachers' continuous improvement in the differentiation of their practices in highly diverse and/or complex teaching venues.

Furthermore, the statistical results obtained in the extant research argue for more complex and composite frameworks for professional development, including ones that reflect the many intersections among adult education, learning communities, and culturally responsive pedagogies, such as BDI. Constructive models that begin with the learner also tend to advocate for the humanization of teacher education and development based on an adult-centered learning space (Bullough, & Baugh, 2008; Herrera, 2016). Humanization unreservedly acknowledges that teachers are biopsychosocial beings that tend to process and act, primarily from meaning

perspectives that reflect their socialization at the sociocultural, cognitive, academic, and linguistic levels. As a result, their dispositions, perspectives, practices, professionalism, and outcomes with students reflect their learning, opportunities, exposures, and horizons. As I have discussed, narrow inputs often yield restricted outputs, as well. Few opportunities for dialog and collaboration with more capable/experienced peers/models may yield-limiting, outdated, or ineffectual teaching practices. The best prepared/nurtured teachers are often those who are afforded the settings, opportunities, and interactions that build openness, trust, respect, and potentials for enriching collaboration. Human teachers need professional development that helps them comprehend their positionality, understand the intersectionality of their practices, and affords them the collegiality necessary to find demands opportunities to explore, validate, maximize, value, and affirm experience as a venue to wake a curiosity to learn and the desire to become a better teacher who guides students to academic and personal success.

Recommendations for Future Research

The results of this study contribute to the literature of adult education, PLCs, and BDI and also suggests areas for future research. The first area of further research consideration might include conducting a similar study with a larger and more diverse sample size for a more extended period. As stated earlier, two of the significant limitations found within this study were associated with time and sample. The results to be obtained from a design with a larger sample size and a more extended intervention period might be more generalizable. Thus, a longitudinal study that tracks the effectiveness of this composite theoretical framework on teachers' self-efficacy and continuous improvement for an entire school year, including more teachers, might yield valuable insights regarding appropriate professional development for educators.

Another area for future research might include a qualitative study of teachers' perceptions and experiences associated with participating in a professional development program grounded on the principles of adult education, contextualized in PLCs, and bolstered by the literature of BDI. This study did not provide teachers with any space to comment on the TSES items. Providing teachers with opportunities to explain and elaborate their answers through, for example, interviews or focus groups might offer a more robust picture of what aspects of the intervention were most valuable to teachers and why.

Finally, my most robust suggestion for future research would include conducting an experimental study to examine the relationship between teacher effectiveness resulting from participating in the proposed model and its impact on student academic achievement. The study might focus on measuring teacher effectiveness before and after participating in the professional development program. The results from this study may provide valuable data to understand and document the trajectory of teachers' professional growth and effectiveness as compared to their students' levels of achievement (or perhaps, language acquisition).

Conclusions

A focus on teachers' continuous improvement remains a substantive aspect of many schools and teaching reform initiatives. The findings of this quasi-experimental research on the effects of one composite model for continuous improvement on teachers' self-efficacies were consistent with the current literature in the areas of transformative adult education, professional development via PLCs, and the preparation of teachers to maximize the biographies of knowledge and experience that students already bring to learning and language acquisition. These findings further suggest that cross-disciplinary models for differentiated teacher education/development can operate to improve the self-efficacy of teachers in complex and

diverse educational settings. The first section of this chapter summarized the fundamental structures and findings of the research in situ. A subsequent section detailed distinct implications of the research for practitioners and academics. The third section of the chapter conducted a comparison of the research findings and the current state of knowledge in applicable subfields of teacher education/development. The section that followed explored pertinent directions for future research. The final section offered a chapter conclusion.

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Appendix A - Request Letter for Study Implementation

Dear University President

My name is Paolo Fabre Merchán, and I am a graduate student pursuing a Ph.D. in Curriculum & Instruction at Kansas State University. I am conducting doctoral dissertation research on *Biography-Driven Professional Learning Communities (PLCs) and Ecuadorian IHE faculty sense of teaching efficacy.* I am writing this letter is to request your permission to conduct this research in the Language Teaching Department at the College of Education at your university. The purpose of this phenomenological case study is a.) to unpack and examine Ecuadorian IHE faculty experiences and perspectives associated with participating in biography-driven PLCs and b.) to determine how this particular event impacts their sense of teaching efficacy.

The research will be conducted in eight weeks, including the implementation of biography-driven PLCs, two one-hour interviews with each one of the participants, in-site observations, and the development of some artifacts. Because of the worldwide health emergency due to COVID-19, all those activities will be conducted through virtual means. The biography-driven PLCs will include some inquiry collegial conversations among the participants guided by a discussion theme emphasizing students' learning and teachers' professional growth. The discussion theme will be associated with the area of expertise of the participants. The interviews will unpack and examine participants' descriptions and perspectives related to their participation in biography-driven PLCs. The participants will also be asked to write a reflection wheel journal to document and analyze their experiences, feelings, thoughts, and assumptions associated with the phenomenon introduced.

There are no known risks associated with completing and returning participants' interview transcripts and/or documents. All information will be kept confidential, and withdraw the study is an option for the participants at any time without further inquiries from the researcher.

I appreciate your time and receive my consideration in advance. I would ask you to send a formal approval letter to my email pgfabre@ksu.edu if you decide to approve my request.

Paolo Fabre Merchán
Doctoral Graduate Student
Department of Curriculum & Instruction, Kansas State University
1114 Mid-Campus Drive North
Manhattan, KS, 66506
(785) 532 – 5525

Appendix B - Invitation Letter for Participation in the Study

Dear Faculty Instructor

My name is Paolo Fabre Merchán, and I am a graduate student pursuing a Ph.D. in Curriculum & Instruction at Kansas State University. I am conducting doctoral dissertation research on *Biography-Driven Professional Learning Communities (PLCs) and Ecuadorian IHE faculty sense of teaching efficacy.* I am writing this letter to invite you to participate in this research study after I obtained approval from the university president. The purpose quasi-experimental research is to find out whether a professional development program, contextualized in PLCs, and bolstered by the literature of BDI produces a change in teachers' self-efficacy, being capable of enhancing their teaching competences to deliver instruction in virtual modality.

The research will be conducted in three weeks and the activities will include: the completion of one demographic online survey, two online scales, and participating in five professional development sessions. Because of the worldwide health emergency due to COVID-19, all the activities will be conducted through virtual means.

If you are interested in participating, you need to complete the online survey that is attached to this letter with your personal information. If you were selected, you will receive an email confirmation with the information about our professional development sessions. PLCs sessions are collaborative dialogues that will allow you to explore and share your professional experience and knowledge within a specific area with other IHE faculty. The purpose of these sessions is to explore and validate effective teaching strategies that support all students' academic achievement at high levels. We are going to have five sessions and I will be taking some notes during our sessions.

It is essential to mention that all information you provide during the study will be kept confidential. Your identity will be protected during and after the study and that it won't be shared or revealed at any moment without exception. This information will only be used for research purposes and managed by the researchers. It is also important to highlight that there are no known risks associated with completing and returning your scores. Lastly, you need to have in mind that decline this participation and withdraw the study at any time is an option without further inquiries or consequences from the researcher or the university.

I appreciate your time and receive my consideration in advance. If you are interested in participating, please send an email to pgfabre@ksu.edu expressing your desire to participate together with the biographical-demographic survey attached to this email.

Paolo Fabre Merchán,
Doctoral Student
Department of Curriculum & Instruction, Kansas State University
1114 Mid-Campus Drive North,
Manhattan, KS, 66506
(785) 532 - 5525

Appendix C - Consent Letter

CARTA DE CONSENTIMIENTO

TITULO DEL PROJECTO:

Aprendizaje e inovación continua para docentes: Programa de Desarrollo profesional basado en los principios del aprendizaje para adultos, contextualizado por comunidades de aprendizaje profesional, y mejorado por la literatura de instruction manejada por la biografia.

INVESTIGADOR PRINCIPAL: Dr. Socorro Herrera

CO-INVESTIGADOR Paolo Fabre-Merchán

INFORMACIÓN DE CONTACTO EN CASO DE PROBLEMAS: Email: pgfabre@ksu.edu ; sococo@ksu.edu

AUSPICIANTE: Kansas State University

PROPOSITO:

Evaluar un programa de Desarrollo profesional basado en la perspectiva de eficacia de los particpantes

PROCEDIMIENTO O MÉTODO:

Utilización de encuestas y escalas de satisfacción. El curso de desarrollo profesional se realizará mediante zoom por el lapso de tres semanas

RIESGOS:

No existe ningún riesgo asociado, toda la información será mantenida anónima y almacena utilizando seudónimos

BENEFICIOS:

Curso de 20 horas de capacitation y actualización docente

CONFIABILIDAD:

Pueden abandonar el estudio en cualquier momento si se sienten afectados, física, psicológica, o emocionalmente.

PARTICIPANT NAME: _____ _____

PARTICIPANT SIGNATURE:		**DATE:**	
WITNESS TO SIGNATURE: (PROJECT STAFF)		**DATE:**	

Appendix D - Initial Demographic Survey

SECTION 1. DEMOGRAPHIC INFORMATION					
Age:		**Place of birth:**		**Working preference:**	☐ Individual working ☐ Whole class ☐ Expert lectures ☐ Paired work ☐ Small group work
Race:	☐ Indian ☐ Montubio ☐ Afro-American ☐ White ☐ Mestizo ☐ Other: _____	**Gender:**	☐ Male ☐ Female ☐ Other: _____		

SECTION 2. SOCIO-CULTURAL INFORMATION	
What activities do you enjoy doing in your free time?	
Tell me about your family	
What activities do you usually do to reinforce the family connection?	

SECTION 3. PROFESSIONAL EXPERIENCE			
Years of teaching experiences:		**What levels of education have you taught?**	☐ Early childhood ☐ Elementary ☐ Middle School ☐ High school ☐ Instituto of Higher Education
Years of teaching experiences in institutes of high education (IHE):			
What has your most significant challenge faced in teaching been?			
What have your most significant assert achieved in teaching been?			

SECTION 4. ACADEMIC BACKGROUND	
Formal education degrees:	☐ **Bachelor's degree:** _____ ☐ **Master's degree:** _____ ☐ **Doctoral degree:** _____

During your learning journey, what have your most significant strength been?	
During your learning journey, what have your most significant limitation been?	
Have you received professional training sponsored by your current employer during the last two years? If yes, provide the area	☐ Yes ☐ No _____
What methodologies has guided the professional training that you have received? You can choose more than one option	☐ Direct Instruction Short-Term Courses ☐ Seminars ☐ Lecture or conference ☐ Focal Groups ☐ Discussion Groups ☐ Professional Learning Communities ☐ Others: _____.

What is your level of satisfaction associated to the professional training sponsored by your employer institution in terms of methodology and modality?	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
What is your level of satisfaction associated to the professional training sponsored by your employer institution in terms of content relevance?	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
What is your level of satisfaction associated to the professional training sponsored by your employer institution in terms of applicability of the content in your area or context?	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Appendix E - Teachers' Self-Efficacy Scale (TSES)

Teacher Beliefs - TSES

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

Directions: Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the combination of your *current* ability, resources, and opportunity to do each of the following in your present position.

	None at all		Very Little		Some Degree		Quite A Bit		A Great Deal
1. How much can you do to get through to the most difficult students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
2. How much can you do to help your students think critically?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
3. How much can you do to control disruptive behavior in the classroom?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
4. How much can you do to motivate students who show low interest in school work?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
5. To what extent can you make your expectations clear about student behavior?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
6. How much can you do to get students to believe they can do well in school work?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
7. How well can you respond to difficult questions from your students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
8. How well can you establish routines to keep activities running smoothly?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
9. How much can you do to help your students value learning?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
10. How much can you gauge student comprehension of what you have taught?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
11. To what extent can you craft good questions for your students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
12. How much can you do to foster student creativity?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
13. How much can you do to get children to follow classroom rules?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
14. How much can you do to improve the understanding of a student who is failing?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
15. How much can you do to calm a student who is disruptive or noisy?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
16. How well can you establish a classroom management system with each group of students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
17. How much can you do to adjust your lessons to the proper level for individual students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
18. How much can you use a variety of assessment strategies?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
19. How well can you keep a few problem students form ruining an entire lesson?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
20. To what extent can you provide an alternative explanation or example when students are confused?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
21. How well can you respond to defiant students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
22. How much can you assist families in helping their children do well in school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
23. How well can you implement alternative strategies in your classroom?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
24. How well can you provide appropriate challenges for very capable students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨

E.2 Directions for Scoring Teachers' Self-Efficacy Scale

Developers: Megan Tschannen-Moran, College of William and Mary
Anita Woolfolk Hoy, the Ohio State University.

Construct Validity

For information the construct validity of the Teachers' Sense of Teacher efficacy Scale, see:

> Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17,* 783-805.

Factor Analysis

As we have used factor analysis to test this instrument, we have consistently found three moderately correlated factors: *Efficacy in Student Engagement, Efficacy in Instructional Practices*, and *Efficacy in Classroom Management*. At times, however, the make up of the scales may vary slightly. With preservice teachers we recommend that the full scale (either 24-item or 12-item short form) be used, because the factor structure often is less distinct for these respondents.

Subscale Scores

To determine the *Efficacy in Student Engagement, Efficacy in Instructional Practices*, and *Efficacy in Classroom Management* subscale scores, we compute unweighted means of the items that load on each factor. Generally these groupings are:

Short Form

Efficacy in Student Engagement:	Items 2, 4, 7, 11
Efficacy in Instructional Strategies:	Items 5, 9, 10, 12
Efficacy in Classroom Management:	Items 1, 3, 6, 8

Long Form

Efficacy in Student Engagement:	Items 1, 2, 4, 6, 9, 12, 14, 22
Efficacy in Instructional Strategies:	Items 7, 10, 11, 17, 18, 20, 23, 24
Efficacy in Classroom Management:	Items 3, 5, 8, 13, 15, 16, 19, 21

Reliabilities

In the study reported in Tschannen-Moran & Woolfolk Hoy (2001) above the following reliabilities were found**:**

	Long Form			Short Form		
	Mean	SD	alpha	Mean	SD	alpha
TSES	7.1	.94	.94	7.1	.98	.90
Engagement	7.3	1.1	.87	7.2	1.2	.81
Instruction	7.3	1.1	.91	7.3	1.2	.86
Management	6.7	1.1	.90	6.7	1.2	.86

[1] Because this instrument was developed at the Ohio State University, it is sometimes referred to as the *Ohio State Teacher Efficacy Scale*. We prefer the name, *Teachers' Sense of Efficacy Scale*.