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Designing and Delivering K-12 Education Professional Development: A Delphi Study

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Designing and Delivering K-12 Education Professional Development: A Delphi Study

A Dissertation by

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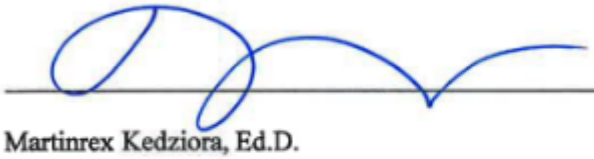

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Now, I look forward to being “one step closer” to coffee on the front porch and pondering the next journey to embark on.

ABSTRACT

Designing and Delivering K-12 Education Professional Development: A Delphi Study

by Christalle A. Hart

Purpose: This futures Delphi study aims to determine what experts in professional development predict the delivery and content of K-12 education and how K-12 educational organizations will need to structure themselves to deliver predicted professional development in 2026 and beyond. Also, the purpose was to have the experts rate the likelihood of the predictions made to be enacted by 2026 and beyond.

Methodology: The research design for this study used a Delphi approach which allowed for data collection from a panel of experts in K-12 education leading professional development in a public school district. The Delphi study collected data during three rounds of electronic surveys. The electronic surveys contained open-ended questions in Round 1 and 3, while Round 2 included a Likert scale rating.

Findings: The initial round of data collection returned 26 predictions for professional development delivery and content, which then needed to be rated. Round 2 rated the likelihood of implementation for the top five delivery methods and top five content areas.

Conclusion: The study had three major conclusions. The first was associated with the importance of providing differentiated professional development to all learners. The second conclusion indicated that professional development should be data driven. The final conclusion highlighted the importance of embedding instructional best practices in professional development.

Recommendation for Action: Nine total recommendations for future research are provided to advance the body of literature and knowledge around designing and delivering professional development in K-12 education districts.

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CHAPTER I: INTRODUCTION

Education aims to increase student learning and prepare students to contribute to society (Vadeboncoeur, 2005). Educators must prepare students for a future we may not imagine, solving problems that have not been discovered, and using technologies that do not exist. The Future of Jobs Survey (World Economic Forum, 2020) listed the top skills for 2025 employers sought: (a) analytical thinking, (b) innovation, (c) complex problem solving, (d) critical thinking, (e) creativity, (f) emotional intelligence, and (g) resilience. To better prepare students to be contributors to society, educators must provide ample opportunities to apply 21st century learning skills such as (a) communication, (b) collaboration, (c) critical thinking, and (d) creativity in their daily instructional experiences. Educational reform spurred many opportunities for increased teacher professional development (PD) through additional funding.

As educational reform progressed, the standards for student learning became increasingly rigorous. In 1965 the Elementary and Secondary Education Act (ESEA) was established by President Lyndon Johnson, a former school teacher. Title II allocates most funds to state and district-level activities to improve teacher and student learning (McKnight, 2018). A Nation at Risk (U.S. Department of Education [DoE], 2008) recommended new rigorous standards that required students to meet higher-level requirements to graduate. Recent educational reforms, including No Child Left Behind (NCLB) (DoE, 2007, 2017), and the Every Student Succeeds Act (DoE, n.d.), have addressed the importance of continued educator development. Teachers have the highest impact on student learning; therefore, it is critical to provide high-quality professional

learning opportunities to increase their quality and effectiveness (Hattie, 2012; Reyna, 2019).

The *California Standards for the Teaching Profession (CSTPs)* were developed in the 1990s and intended to provide new educators with a framework for formative assessment and best practices. The standards are organized into six interrelated domains of teaching practice. These standards include:

- Supporting and engaging learners.
- Effective learning environments.
- Subject matter knowledge.
- Designing learning experiences.
- Assessment.
- Developing as a professional educator.

These six areas allow educators to reflect on their practice and student learning, create professional goals to increase student learning, and assess their progress towards these goals (Commission on Teacher Credentialing, 2009). The CSTPs acknowledge that teachers are never finished with their professional learning because they teach a diverse student population in a rapidly changing world (Commission on Teacher Credentialing, 2009). However, there are discrepancies between the teaching and learning educators provide their students and the teaching they experience with their professional learning (Hunzicker, 2011; Tate, 2012).

Traditionally, PD consists of fragmented learning, one-day sit-and-get workshops, and in-service meetings that do not connect to a school-wide or individualized plan (Dede, 2006; Tate, 2012). Adult learners need professional learning to be relevant and

purposeful. The learning should also build upon life experiences (Knowles et al., 2005). PD should be ongoing, intensive, job-embedded, data-driven, collaborative, personalized, and classroom-focused (Tate, 2012; Tucker, 2006). In addition, school districts need a professional growth and improvement system, which is essential for increasing student achievement.

Background

Today's diverse student population is rapidly evolving, and teachers need ongoing support to foster excellence in teaching and learning. PD is a critical component to increased student achievement (Yoon et al., 2007). Hattie (2012) argued that teachers are the most important factor influencing student achievement. PD affected student achievement through enhanced teacher knowledge, skills, and improved teaching practices (Bastin, 2003; Guskey & Yoon, 2009; Yoon et al., 2007). Theories of adult learning enrich the design and delivery of PD, which is also a critical component to the success of the PD. PD is continually evolving; however, there is little research on identifying and outlining the most effective PD activities utilized in K-12 districts that have allowed PD administrators to reach expert status and subsequently impact student achievement. It is essential to understand the impact of effective PD systems in K-12 districts and bridge the gap between theory and practice in organizations.

History of Professional Development and Education Policy

The methods for planning and providing PD have dramatically changed over the years. In the 1800s, PD, or in-service, was mandatory for all teachers, and it often took the form of a "convention" that occurred over multiple days, generally in the evening (Grosz, 2004). There was an increase in the number of students and the need for

additional teachers; however, many teachers were typically poorly educated and had gaps in the subject matter. During the 1900s through the 1940s, PD was a way to help remedy teachers' deficiencies and improve their academic competency (Grosz, 2004).

The first wave of school reform began in 1957 when the Russians launched the satellite Sputnik. The United States did not want to be academically behind the Russians. In reaction to Sputnik, policymakers focused on academic content, including math, science, and English (Grant et al., 2001). A majority of PD in the 1950s was in the form of workshops where teachers could collaborate with specialists, curriculum coordinators, or resource persons. The cornerstone of these workshops was to increase student achievement in the core academic subjects. In the 1960s, President Lyndon Johnson's War on Poverty legislation aimed to provide equal educational opportunities for low-income families (Grant et al., 2001). Consequently, the federal government has become increasingly more involved in building educational policies.

In 1965, the ESEA focused on improving equal access to education for schools with high percentages of students from low-income families. Title II allocates most funds to state and district-level activities to improve teacher and student learning, and Title II includes PD (Lin, 2013; McKnight, 2018). In 2001, NCLB reauthorized ESEA and introduced standardized testing to monitor student achievement in schools with low-income students (Okere, 2011). However, title II funds were still allocated for training, preparing, and recruiting high-quality teachers and principals. ESEA and NCLB caused educators to analyze the PD schools offer to meet the needs of educators and students (Grosz, 2004).

School reform continued with the publication of A Nation at Risk in 1983 (DoE, 2008). The United States educational system was not keeping the pace of progress as other nations. This report indicated the school system had lost sight of the purpose of education, become complacent, and needed to increase the expectations for educators. Twenty-five years later, in a review of a Nation at Risk, the report acknowledges that there is still much work to be done; however, we are a more informed nation (DoE, 2008). The report explained that we are at greater risk because of rising demands in the global economy, which requires students to be educated at a higher level to compete. Unfortunately, our education system is not keeping up with these growing demands (DoE, 2008). Haug and Mork (2021) explained that to prepare students for handling the complexity of global societies, policy documents, and educational reforms, they need to refine 21st century skills. Such skills and competencies include engaging in high-level reasoning, understanding content, and complex problem-solving skills.

California Teacher Standards

The CSTPs were developed in the 1990s and intended to provide new educators with a framework for formative assessment and best practices. The standards are organized into six interrelated domains of teaching practice. These standards include:

- Supporting and engaging learners.
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- Developing as a professional educator.

These six areas allow educators to reflect on their practice and student learning, create professional goals to increase student learning, and assess their progress towards these goals (Commission on Teacher Credentialing, 2009).

Standard six addresses developing as a professional educator and identifies that teachers would reflect on their teaching practice to support student learning establish goals and engage in continuous professional growth, engage in collaboration, and learn how to employ families to help students. Standard six also addresses (a) enlisting local communities to help students; (b) managing professional responsibilities; and (c) demonstrating professional responsibility, integrity, and ethical conduct (Commission on Teacher Credentialing, 2009). The state of California recognizes the importance of ongoing PD for educators.

The CSTPs acknowledge that teachers are never finished with their professional education because they teach a diverse student population in a rapidly changing world (Commission on Teacher Credentialing, 2009). Therefore, high-quality PD is vital to increase educators' skills while helping meet the needs of 21st century learners. However, there are discrepancies between the teaching and learning educators provide their students and the teaching they experience with their professional learning (Hunzicker, 2011; Tate, 2012).

Theoretical Frameworks

The Russian psychologist, Lev Vygotsky, became noted for his research on learning and development. His work focused on the idea that most learning was due to social interactions, such as adult and child relationships (Vygotsky, 1978). Vygotsky's (1978) sociocultural approach to learning saw the process of learning as a whole

experience that is unique to each individual and situation (Chism, 2000). Effective PD must connect to the learner's perspective (Smith, 2016). As a learner, the socio-cultural context for the teacher is the school community, including other teachers, students, parents, and administrators. Learners work within a zone of proximal development (ZPD), learning through collaboration with more capable peers (Vygotsky, 1978). According to Roth and Lee (2007), ZPD can generally apply to learners. Many teachers participate in a community of practice, which serves as PD, where teachers learn from each other within a supportive framework (Francois van, 2017).

Adult Learning Theory

Knowles' theory of adult learning, known as andragogy, is based on several assumptions. Knowles et al. (2005) described these assumptions as adults needing to see a reason or purpose for the learning, be self-directed, and the learning needs to be task-centered. Educators are more likely to engage in professional learning when it has personal meaning and positively impacts their lives. Lutrick and Szabo (2012) found four themes regarding what instructional leaders viewed as effective PD traits, agreeing with Knowles' theory. These themes were that PD should be ongoing, collaborative, data-driven, and interest-driven in design. Educators will identify the value-added to their jobs when PD aligns with these themes, and they will often be more engaged in the PD. According to Disch (2020), many PD programs during the 1980s and 1990s failed to look at the process of adult learning. Effective PD shapes teachers' thinking, shaping their practice (Disch, 2020). Therefore, it is vital to incorporate adult learning theory into the design and delivery of PD programs so that educators can apply the learning to their practice.

Professional Development Models

Gissy (2010) explained PD could occur in various formats, including face-to-face meetings, informational sessions, weeklong academies, online meetings, and multiple publications. Additional PD formats included PD schools, coaching, and mentoring. A school site and district can determine PD. Some smaller school districts do not provide professional learning opportunities, and the teachers must pursue their professional learning outside of the school setting.

One PD model is professional development schools (PDS), which are specially structured schools where higher education institutions and public schools partner. PD improves schools and teachers and supports growth in researched-based areas of education (Gissy, 2010). According to the National Commission on Teaching & America's Future (1996) PDS improve teaching quality and student learning.

Workshops generally occur over a short period, are often offered by consultants outside of the school, and do not include follow-up or support. Guskey and Yoon (2009) described workshops as often criticized as ineffective and a waste of time and money. However, studies have indicated a positive relationship between PD and improvements in student learning after teachers attend workshops. Practical workshops included research-based instructional practices, involved active-learning experiences, and provided participants with opportunities to adapt the learning to their classrooms (Guskey & Yoon, 2009). The positive relationship between workshops and increased student achievement implies this PD format is a good choice for teachers, mainly because the workshops occur quickly.

Instructional coaches work from a school site or district level to provide instructional support for teachers. Coaching looks different based on the unique needs of each teacher. For example, coaches can offer in-class mentoring, teach model lessons, provide feedback, or share new ideas with teachers (Blackburn, 2020). There are also different methods of coaching. According to Blackburn (2020), embedded coaching occurs during instructional time and promotes collaboration. Okere (2011) advocates for peer coaching when teachers take charge of their learning and practice new classroom strategies with peers. Okere identified peer coaching as a method that results in school achievement.

The Changing Needs of the Teacher

Educators prepare students to contribute to the ever-changing and rapidly expanding global workforce. In 2006, the U.S. Department of Education (DoE) released a report entitled Answering the Challenge of a Changing World: Strengthening Education for the 21st Century. This report drew attention to the need for America to innovate and improve education while helping students develop the skills necessary to compete and succeed in higher education and the workforce. Employers are seeking employees who demonstrate 21st century skills, such as flexibility, creativity, critical thinking, and being knowledgeable in their area of expertise (DoE, 2006; World Economic Forum, 2020). To better prepare students for the world, teachers must continually pursue high quality, research-based PD (DoE, 2006).

The purpose of PD is to introduce teachers to strategies that help meet the changing needs of students (Guskey, 2009). PD programs designed well can inspire and motivate teachers to continue their lifelong learning (Potchka, 2009). Because today's

teachers must understand how to reach students from various backgrounds, learning opportunities must provide teachers with strategies for success (McCarthy & Riley, 2000; Potchka, 2009). PD is an essential part of an educator's personal growth (Bastin, 2003).

Statement of Research Problem

Educators are preparing students for college, career, and civic life, yet many lack the wide range of skills necessary to contribute to a rapidly changing workforce and society (Jimenez, 2020). A solid K-12 education is critical for the United States to thrive in a global economy (Klein & Rice, 2014). Professional learning is vital for increasing student achievement (Fullan, 2010). To better prepare students for the global workforce, PD must train teachers to integrate 21st century learning skills into daily educational routines to prepare graduates to be global contributors. District-level PD systems are responsible for preparing teachers, and a "one-size-fits-all" approach does not work.

Innovative PD systems can provide teachers with a mechanism to engage in personalized, collaborative, meaningful professional learning. Organizations employ PD administrators, staff development specialists, and instructional coaches to design and deliver ongoing professional learning opportunities. They are also responsible for providing access to high-quality PD for all teachers. According to Rodman (2018), effective PD plans should consider the learners' needs to be sustainable and ongoing. Contrary to a typical sit and get PD workshop model, PD should be instructional focused, job-embedded, and allow for teacher's voice and choice (Hunzicker, 2011; Rodman, 2018).

Although various research has been conducted on K-12 organizations and the benefits of PD, there is limited research on the systems approach of differentiated

professional learning opportunities in a school district. Models of PD can include collaboration with a coach or mentor, engaging in professional learning communities (PLC), or site-based learning, which is determined by the needs of individual teachers (Latz et al., 2009; Nishimura, 2014; Svendsen, 2020). However, studies about PD trends and models do not always include assessment measures that determine the effectiveness of professional learning and its impact on student achievement (Guskey & Yoon, 2009; McKnight, 2018). Additionally, the amount of research on the professional opinions of expert-status PD administrators on high-quality PD models for K-12 organizations is lacking.

Purpose Statement

The purpose of this futures Delphi study was to determine what experts in professional development predict the delivery and content of K-12 education will look like in 2026 and beyond, to determine how the experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted professional development in 2026 and beyond.

Research Questions

The following questions were investigated to address the purpose of the study:

1. What do experts in professional development predict the delivery and content of K-12 education professional development will look like in 2026 and beyond?
2. How do experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond?

3. How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for delivery and content of professional development?
4. How do experts in professional development respond to the predictions made from Research Question 3, and what final suggestions do they make for implementation in 2026 and beyond?

Significance of the Study

The DoE (2008) emphasized the importance of PD in educational reform throughout the years. Providing ongoing opportunities for differentiated PD for teachers will continue to positively impact student achievement (Guskey & Yoon, 2009; Yoon et al., 2007). This study is designed to supplement existing research on PD in K-12 organizations by identifying and outlining the most effective PD activities utilized in K-12 districts that have allowed PD administrators to reach expert status and subsequently impact student achievement. The outcomes of this study are significant to practitioners in the education field in various ways.

Studies of PD in K-12 organizations already point to the benefits of differentiated PD (John, 2014; Rodman, 2018). John (2014) determined that one-size-fits-all professional learning will not work for teachers. Instead, teachers need a variety of instructional strategies based on their grade level and content area to meet the diverse needs of their students. Nishimura (2014) expands on this notion, explaining that for meaningful change to occur, coaching, which is a model of PD, needs to be differentiated to be relevant to the needs and interests of the teacher.

This study will identify effective PD systems that improve teachers' skill sets as outlined in the Commission on Teacher Credentialing, (2009). As a result of this added research, district leadership would strategically create a more effective PD plan that systematically supports ongoing professional growth and allows teachers to progress toward reaching their personal learning goals.

Additionally, the outcomes of this study regarding effective PD systems will be of great significance to districts within the state of California that are underperforming, as indicated by the California Assessment of Student Performance and Progress (CAASPP). For example, Foster (2004) examined 30 California school districts that administered, scored, and analyzed common assessments in a way that guided PD and led to a change in teaching strategies. As a result, these districts saw growth in test scores on the statewide-standardized tests. The article *Shifting the Focus to Learning: California's Accountability Debates* (EdSource, 1998) explained that standards are rigorous, and teachers must acquire a deeper knowledge of subject matter and how to teach it. Subsequently, PD should be comprehensive to support the students' needs.

Aside from identifying best practices for sustainable and effective PD in a K-12 organization, this study will potentially inform PD models for district leaders' identification of research-based best practices and sustainable models of PD that meet the needs of all learners.

Definitions

Andragogy or adult learning theory. Framework for teaching adult learners. The core assumptions are that adult learners are self-directed, bring experiences to new

learning, demonstrate a readiness to learn, and learn with a purpose (Hunzicker, 2011; Knowles et al., 2005; Svendsen, 2020).

Differentiated professional development. Altered learning experiences through a change in the content, learning process, learning environment, and products created (John, 2014).

Instructional coaching. Instructional coaches partner with teachers to analyze current classroom practices and set goals. Then, the coach and teacher will identify instructional strategies that will help meet the goals, and the coach will provide support as needed (Latz et al., 2009).

Professional development (professional learning, staff development, teacher professional development, and teacher training). The process of educators learning to improve their practice. The new learning could occur in various formats, including face-to-face meetings, informational sessions, and multiple publications.

Professional learning community. A model of PD where educators work collaboratively to improve student learning (DuFour, 2004).

Delimitations

This study was delimited to expert K-12 PD administrators in California. One expert K-12 PD administrator was selected from 15 to make up the expert panel. Data was collected from this panel of experts during the timeframe of eight weeks.

Organization of the Study

This research study consists of five chapters, a reference list, and appendices. Chapter II provides background and a review of the literature surrounding the history of K-12 education PD, educational policy, adult learning theory, PD models, and the

changing needs of the K-12 educational teacher. Chapter III outlines the research design and methodology, population, sample, instrumentation, and procedures used to collect and analyze data. Chapter IV presents the data collection results and analysis of the findings of this study. Chapter V contains the summary, findings, conclusions, and recommendations for further research.

CHAPTER II: REVIEW OF THE LITERATURE

Literature Review

The literature review explores the current research on PD in K-12 public schools and the different PD models available to educators. The chapter opens with an overview of the role of PD in K-12 education. Teacher PD is critical to increased student achievement (Guskey, 2002; Yoon et al., 2007; Zambak et al., 2017). Hattie (2012) argued that teachers are the most important factor influencing student achievement. According to Yoon et al. (2007), PD affects student achievement through enhanced teacher knowledge, skills, and improved teaching practices. This literature review also explores the history of K-12 PD and the evolution of teaching models.

Policymakers have acknowledged the importance of ongoing learning for educators, evident from the historical perspectives of K-12 PD. And so, this literature review will continue with a discussion of the impact of federal reforms on PD policies and the development of the California standards for the teaching profession. Educational reform has consistently acknowledged the need for ongoing professional learning, but the policies have never specifically identified how to provide effective PD. As such, each school district in California determines how to structure PD opportunities differently, spending the funds in various ways.

As the literature review continues, several different models for providing PD are analyzed. PD opportunities include conferences, workshops, coaching and mentoring, and PLCs. In addition, informal learning, including social media and blogs, has become a form of asynchronous PD. Consequently, the wide variety of PD models requires a deeper understanding of the effectiveness of the design and delivery of the chosen model.

Theories of adult learning enrich the design and delivery of PD, a critical component of the success of PD.

PD is continually evolving; however, little research has been done to identify strategies that bridge the gap from theory to practice in teacher PD. Determining the effective strategies when designing and delivering PD requires closely examining the connection between PD, high-quality teaching, and student achievement. The problem is that there are many challenges when determining the effectiveness of implementation strategies for PD because of the multiple variables contributing to PD. Few researchers are looking at assessing the effectiveness of PD in K-12 school districts and the impacts on increased student learning, even though PD is a critical component of student achievement. Thus, Chapter II will conclude with an overview of the gaps identified in the literature review, underlining the need for this research study. A synthesis matrix is included in Appendix A, which displays the alignment between the themes and literature.

The Role of Professional Development

Research uncovered a variety of definitions of teacher PD. Guskey (2002) defined PD as processes and activities designed to enhance educators' professional knowledge, skills, and attitudes. Hargreaves' (1995) definition of PD focused on the importance of purpose, passion, and desire in teaching. Guskey (1994) and Hargreaves (1995) concur that PD is an integral part of the teaching profession, and the journey should be meaningful and self-directed. Teachers refine their craft through ongoing, voluntary PD (Pokhrei & Behera, 2016). However, educators need access to structured opportunities for high-quality professional learning to remain current on advances in their field (Guskey, 1994; Svendsen, 2020).

High-quality PD leads to increased student achievement (Guskey, 2002; Yoon et al., 2007; Zambak et al., 2017). Characteristics of high-quality PD include coherence, active learning, sufficient duration, collective participation, and a focus on content knowledge (Darling-Hammond & McLaughlin, 1995; Yoon et al., 2007). In addition, teachers need to be actively involved in PD through collaboration, which includes observing one another, modeled instruction, and opportunities to discuss instructional problems and create solutions (Darling-Hammond & McLaughlin, 1995; Guskey, 2009; Svendsen, 2020). Although there is agreement that high-quality PD is necessary to increase student achievement, there is a shortage of such opportunities (Frerichs et al., 2018; Yoon et al., 2007). Guskey (2009) asserts that no improvement effort in the history of education has succeeded without the teachers' access to high-quality PD.

According to the National Commission on Teaching and America's Future (1996), report entitled *What Matters Most: Teaching for America's Future*, effective PD should not be a one-time experience; rather, it needs to provide ongoing, follow-up support. By interacting in PD continually, significant teacher development occurs (Svendsen, 2020). Therefore, regardless of how K-12 educational organizations are structured, PD is fundamental to increasing teacher effectiveness and student achievement.

The Commission on Teacher Credentialing (2009) explained that a high-quality educator matters the most for school student development and learning. Effective teaching requires extensive content knowledge, passion, and commitment (Commission on Teacher Credentialing, 2009; Hargreaves, 1995). Effective teachers also strive to know and understand their students, families, communities, and the individual strengths

and needs of the students. In addition, effective teaching requires thoughtful planning focused on standards-based defined learning objectives (Commission on Teacher Credentialing, 2009). Finally, effective teachers actively engage within a professional learning community (Commission on Teacher Credentialing, 2009; National Commission on Teaching and America's Future [NCTAF], 2006). PD opportunities contribute to high-quality teaching and learning experiences (Commission on Teacher Credentialing, 2009; DoE, 2008; Yoon et al., 2007).

Historical Perspective of K-12 Professional Development

History of Professional Development: 1800s to 1960s

The methods for planning and providing PD have dramatically changed. In the 1800s, PD, or in-service, was mandatory for all teachers. It often took the form of a "convention" that occurred over multiple days, generally in the evening (Neil, 1986). There was an increase in the number of students and the need for additional teachers; however, many teachers were typically poorly educated and had gaps in the subject matter they were teaching. During the 1900s to 1940s, PD was a way to help remedy teachers' deficiencies and improve their academic competency (Neil, 1986).

The first wave of school reform began in 1957 when the Russians launched the satellite, Sputnik. The United States did not want to be academically behind the Russians. In reaction to Sputnik, policymakers insisted on a focus on academic content, including math, science, and English (Grant et al., 2001). Most PD in the 1950s was in the form of workshops where teachers could collaborate with specialists, curriculum coordinators, or resource persons. The cornerstone of these workshops was to increase student achievement in the core academic subjects. In the 1960s, President Lyndon Johnson's

War on Poverty legislation aimed to provide equal educational opportunities for low-income families (Grant et al., 2001). In addition, the federal government had become more involved in building educational policies.

In 1965, the ESEA focused on improving equal access to education for schools with high percentages of students from low-income families. Teacher PD was a targeted area of the act. In 2001, NCLB reauthorized ESEA and introduced standardized testing to monitor student achievement in schools with low-income students. In addition, Title II funds were allocated to train, prepare, and recruit high-quality teachers and principals. ESEA and NCLB raised the standards and accountability, which caused administrators to analyze the PD offered to meet better the needs of educators and students (DoE, 2006).

History of Professional Development: 1970s to Present

In the 1970s, B. F. Skinner's learning theory, behaviorism, began a shift in the classroom that required additional professional learning opportunities for teachers. Behaviorism follows key principles, including how behavior is learned, the importance of immediate feedback, and effective teaching, including positive reinforcements (Al-Shammari et al., 2019; Grant et al., 2000; Skinner, 1968). School reform continued with the publication of A Nation at Risk in 1983 (DoE, 2008). This report indicated the school system had lost sight of the purpose of education, become complacent, and needed to increase the expectations for educators. Reform initiatives have challenged educators with new skills and responsibilities, which has required a change in practice, which occurs through ongoing PD (Corcoran, 1995).

In the 1980s, Madeline Hunter's curriculum planning model fueled the continued educational reform. Teachers attended PD through workshops on effective teaching

(Grant et al., 2001). According to Grant et al. (2001), the Hunter model trained teachers in lesson design and delivery components. Many teacher evaluations were based on the successful implementation of the model (Grant et al., 2001). Ongoing PD is a critical component of implementing and sustaining educational reform because continual PD allows teachers to deepen their content knowledge and learn new methods of teaching (Corcoran, 1995).

Because PD is recognized as necessary, several organizations have developed guidelines and standards to direct ongoing teacher education. The standards of the DoE and the National Staff Development Council (NSDC) apply to all general PD (Grant et al., 2001). NSDC standards address three domains: (a) context, (b) process, and (c) content. The NSDC ensures student success through staff development and school improvement. Hirsh (2007) stated more than 40 states had adopted PD standards, and more than 25 are using NSDC's standards. However, PD assessment and its implementation and impact on student achievement is still inconsistent across the nation. Significant resources have been spent on funding, planning, and implementing PD. Unfortunately, the NSDC does not have an evaluation tool to assess the effectiveness of the standards, which allows for inconsistency in measuring effectiveness. PD should enrich teachers' knowledge of content and pedagogy and increase student achievement (Guskey, 2002; Pharis et al., 2019; Yoon et al., 2007). Creating meaningful and effective PD for teachers is an ongoing challenge.

The Impact of Federal Reforms on Professional Development Policies

Teacher PD is an essential aspect of growth as an effective educator (Guskey, 1994). As a result, most educational reform initiatives acknowledged the importance of

PD and included financial allocations that contribute to PD implementation (Corcoran, 1995; Guskey, 1994). The work complements the vital work at the state and federal levels (DoE, 2008). However, education reforms do not dictate how PD must occur or what topics will be taught. According to Guskey (1994), because of the variability, it is difficult to assess the effectiveness of PD as a result of educational reform.

In 1965, the ESEA targeted teacher PD, and in 2001, NCLB reauthorized ESEA. However, PD was still an area of focus for educational reform because of the increased expectations for students and teachers (Corcoran, 1995). The DoE (2008) published *A Nation Accountable, Twenty-Five Years After a Nation at Risk*. The report stated in 1989, President G. W. Bush convened with the nation's governors and agreed to adopt national K-12 performance goals for the year 2000. The DoE (2008) explained that since the implementation of the national performance goals, some states have tried to align their teacher training with the goals, standards, and assessment.

The educational reforms require high-quality PD, and research recognizes the short supply (Corcoran, 1995; Yoon et al., 2007). The NCLB mandated teachers receive high-quality learning opportunities and set five criteria for PD to be considered high quality:

- PD must first be sustained, intensive, and content-focused.
- Second, PD must be aligned and directly related to state academic content standards, student achievement, and assessment.
- Third, PD improves and increases teachers' knowledge of the subjects they teach.
- Next, it is grounded in research-based practices.

- Finally, PD is regularly evaluated for the effects on teacher effectiveness and student achievement (Yoon et al., 2007).

The current standards and accountability movements in educational reform have forced K-12 educational organizations to analyze the PD their teachers have access to. The educational reform has also provided reliable data to evaluate student performance and determine areas teachers need additional PD to target areas where increased student achievement must occur (DoE, 2008). As a result, the educational system has access to valuable data, coupled with high-quality PD, and will continue to increase student achievement.

California Standards for the Teaching Profession

The CSTP provide a common language and definitions of teaching for educators as they develop their practice (Commission on Teacher Credentialing, 2009). The CSTPs include six standards encompassing:

- Engaging and supporting learners.
- Learning environments.
- Organizing subject matter.
- Lesson design.
- Assessment.
- Developing as a professional educator (Commission on Teacher Credentialing, 2009).

The CSTPs is the cornerstone of teaching policy in California, and many districts across the state use these standards for teacher evaluation (Whittaker et al., 2001).

Standard six addresses developing as a professional educator and states that teachers will reflect on their teaching practice to support student learning, establish goals and engage in continuous professional growth, collaborate, and learn how to employ families to support students. Standard six also addresses enlisting local communities to help students, managing professional responsibilities, and developing in the area of demonstrating professional commitment, integrity, and ethical conduct (Commission on Teacher Credentialing, 2009). The state of California recognizes the importance of ongoing PD for educators.

From 1988 to 1992, according to Whittaker et al. (2001), the California New Teacher Project work revealed the need for a commonly understood set of expectations by beginning teachers. The framework was developed and outlined these expectations, including the knowledge, skills, and abilities required by beginning teachers. The framework also acknowledged that teaching is complex and requires time to develop teaching expertise (Whittaker et al., 2001). The framework's goal was to create the most significant teaching elements rather than a checklist of behaviors (Whittaker et al., 2001). In 1997, the California Standards for the Teaching Profession were adopted, a milestone in the long-term effort to foster professionalism in California teaching (Whittaker et al., 2001).

The California Department of Education (CDE) (n.d.) includes professional learning in its framework for high-quality learning. The CDE (n.d.) provides opportunities for educators to engage in professional growth and help students learn. The CDE defines professional learning opportunities like workshops and other more traditional types of PD and elaborates with the following:

> But it also goes further, engaging educators in self-reflection, peer support, experimentation, and modification of instruction and management practices based on student performance data, student work, and both learning and social behaviors. Through an intensive process of collaborative and job-embedded learning, educators can gain more than content knowledge or technical strategies-they can gain an improved understanding of their own teaching and learning and of the various ways by which students learn. Through this effort, educators also come together as a community of self-developing practitioners. (para. 1)

California recognizes the importance of professional growth and educators' impact on student achievement, yet there is no standardized assessment for the quality of professional learning. High-quality PD is essential to increase the skills educators possess, which implies assessing the quality of PD and its impact on student achievement.

Professional Development Effective Practices

There is growing evidence about what defines effective PD practices. Miles and Guiney (2000) explained the importance of shared goals within districts and schools when designing teacher PD opportunities. PD is more effective when the effort is district-wide, versus varying by school and teacher and aligned to common district goals (Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Miles & Guiney, 2000). Successful PD must be high-quality and relevant to teachers' needs (Corcoran, 1995; Elmore, 2004). Continued follow-up support is important in effective PD (Darling-Hammond & McLaughlin, 1995; Guskey, 1994). When school districts align the PD

offered to district goals and teachers' needs, student learning will increase (Corcoran, 1995; Miles & Guiney, 2000; Yoon et al., 2007; Zambak et al., 2017).

Professional learning includes various experiences that deepen teachers' content knowledge and add to the methods of teaching used in their classroom. These experiences can consist of collaboration with colleagues and opportunities for reflection (Corcoran, 1995; Frerichs et al., 2018; Guskey, 2009). One of the most effective PD practices is participation in a PLC (DuFour, 2004; Miles & Guiney, 2000; Nishimura, 2014; Showers & Joyce, 1987). According to Corcoran (1995) and Guskey (2009), good PD should address curriculum content and design and instructional and assessment strategies that allow students to engage in higher-order thinking. For example, the constructivist teaching model allows teachers the time to explore, question, and debate new learning and ideas (Corcoran, 1995). Engaging in this process helps teachers grow as professionals, apply their learning to instructional routines, and master the new content through collaboration and practice.

Guskey (2009) determined that effective PD may not be found on a list of "best practices." Still, instead, core elements of effective PD can be adapted to meet the needs of a particular district or school. Darling-Hammond and McLaughlin (1995) stated that district policies directly affect teacher PD opportunities. Studies have found that when districts and schools value lifelong learning and create a culture of collaboration, the benefits can include improved classroom instruction and enhanced student learning (Archambault et al., 2010; John, 2014). Additionally, strategies included among the consensus in the literature regarding effective teaching and learning elements focus on student and teacher learning, content and pedagogy, opportunities for collaboration and

reflection, and sustained support (Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Haug & Mork, 2021).

Professional Development Delivery Models

PD can be delivered in various models, which the school district or outside vendors can provide. Also, PD content can be determined at district, school, or teacher levels. Some smaller districts do not offer professional learning opportunities, and the teachers must pursue their professional learning outside the school setting; however, the most effective PD aligns with the district's goals (Miles & Guiney, 2000). PD opportunities include conferences, workshops, coaching and mentoring, and PLCs. In addition, informal learning, such as from Twitter and blogs, has become a form of asynchronous PD.

Workshops and Conferences

Workshops and conferences generally occur over a short period and are often offered by consultants during the school day or on the weekend. Guskey and Yoon (2009) described workshops as often criticized as ineffective and a waste of time and money. Experts from outside the school typically address trending topics and issues, leaving the attendees with some practical tips, but they seldom offer follow-up support (Corcoran, 1995). Teachers may leave a workshop with handouts and ideas; however, they do not gain a deep understanding of the new learning in one short PD workshop (Corcoran, 1995). On-going PD is needed to better support teachers in implementing new learning and best practices (Corcoran, 1995; Pokhrei & Behera, 2016).

Conversely, some studies have indicated a positive relationship between PD and improvements in student learning after teachers attend workshops. Effective workshops

included research-based instructional practices, involved active-learning experiences, and provided participants with opportunities to adapt the teaching to their classrooms (Guskey & Yoon, 2009). The positive relationship between workshops and increased student achievement implies this PD format could be a good choice for teachers, mainly because the workshops occur over a short time.

District Provided Learning Opportunities

An effective method of providing PD is building capacity from a district level by making principals be the lead learner and providing teacher learning opportunities aligned with district goals (DuFour, 2004; Luke & McArdle, 2009; Sharratt & Fullan, 2009). Anderson (2006) also reviewed research on district effectiveness and identified district-wide, job-embedded PD as a critical component to success. Sharratt and Fullan (2009) elaborated that administrators have a shared responsibility and must engage district PD experts to facilitate active professional learning opportunities based on teacher or student needs. According to Darling-Hammond and McLaughlin (1995), district leadership must provide schools with the necessary resources to support PD and increase student learning.

School leaders are expected to play a big role in improving teaching and learning. Tong and Razniak (2017) explained that administrators must understand their staffs' needs and strengths. Administrators can further support teachers by providing opportunities for collaboration and reflection (Tong & Razniak, 2017). Building a lifelong learning and risk-taking culture are key components administrators can offer their teachers (Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Tong & Razniak, 2017). When teachers feel safe, they will be more willing to apply the new

learning in the classroom; therefore collaborative leadership is a key to providing opportunities for PD at the district and school levels.

In 1998, San Diego City Schools engaged in a three-year educational reform process, which focused on increasing student achievement by supporting teaching and learning in the classroom. Hightower (2002) stated that San Diego City Schools recognized that school districts can influence teacher learning by engaging the principals as instructional leaders. They restructured their district office and created a team of seven principals who became district-wide "instructional leaders" and created seven working groups of 25 principles each, called "learning communities." These teams engaged in long-term, professional learning networks for teachers and principals, collaborated, and provided opportunities for reflection and refinement of practice (Hightower, 2002). Continuous PD was a cornerstone in San Diego City School's reform agenda. The district also created a network of highly qualified teachers who served as "peer coaches" or "staff developers." Each school site in the district had one of these coaches, and they would focus on coaching teachers in research-based strategies for learning within the school context. Historically, district PD models can include PLCs, instructional coaching, and content-specific workshops (DuFour, 2004), which were incorporated into San Diego City School's reform agenda. System changes occur over time, and San Diego City School' is an example of a large school district that successfully implemented change focused on increasing student achievement by supporting teaching and learning in the classroom (Hightower, 2002).

Coaching Model

PD is designed to improve schools and teachers, thereby increasing student achievement by learning through researched-based areas of education (Guskey, 2002; Yoon et al., 2007; Zambak et al., 2017). Novota (2003) indicated that when PD has been built into the daily teaching job, it has changed teacher practice and increased student learning. Teachers can improve their practice through observation, reflection, and coaching (Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Farr & Saltmarsh, 2018; Les, 2013). Instructional coaches work from a school or district level to provide instructional support for teachers. Frerichs et al. (2018) explained that coaching sessions are based on the unique needs of each teacher, which allows the coaching to be relevant and personalized. Coaches can provide in-class mentoring, teach model lessons, provide feedback, or share new ideas with teachers (Blackburn, 2020). Coaching is to remain supportive, and the coach does not function as an evaluator (Frerichs et al., 2018; Knight; 2019; Les, 2013).

There are different coaching methods, such as using the impact cycle, developed by Jim Knight. Coaching is an intentional process with three stages: identify, learn, and improve (Knight, 2019). Knight (2019) explained that during the identify stage the teacher and coach partner to determine the current reality of the classroom, a goal, and a strategy that can be implemented while working towards achieving the goal. Then, during the learn stage, the coach will model instructional strategies while also encouraging the teacher to adjust the strategy based on the needs of their students. Finally, during the improve stage the teachers implement the strategies and make adaptations until the goal is met. Farr and Saltmarsh (2018) described the impact cycle as a partnership approach to

instructional coaching, including a collaborative conversation after each instructional cycle. Knight asserts that the instructional coaching partnership improves teaching and positively impacts student learning.

Another type of coaching is peer coaching when a teacher-leader helps a peer improve their instruction by engaging students in 21st century learning activities (Les, 2013). Coaches help teachers take charge of their learning while practicing new classroom strategies. A peer coach might provide just-in-time training or resources, co-planning learning activities, modeling or team teaching to demonstrate effective teaching and reflection afterward, and observing teachers and reflecting on what was observed (Darling-Hammond & McLaughlin, 1995; Les, 2013). Les (2013) discovered that the process of observation and reflection is the most effective form of formative assessment for teachers, and it is a key to lifelong learning. Peer coaching is a research-based method of PD that results in helping teachers improve student learning (Darling-Hammond & McLaughlin, 1995; Les, 2013).

Blackburn (2020) states that embedded coaching occurs during instructional time and promotes collaboration. Instructional coaching provides differentiated PD for teachers because the coaching styles and models may vary depending on the teacher's needs (Les, 2013; Weidenfeld & Bashevis, 2013). However, a disadvantage of coaching is the required investment of time and energy on the part of the school to launch and maintain effective coaching programs. Also, some coaching models need the coach to be an expert in the content knowledge, and it can be challenging to find experts willing to leave the classroom and coach others (Blackburn, 2020; Les, 2013). Knight (2019) described additional skills needed for effective coaching, including (a) discipline, (b)

organization, (c) professionalism, (d) flexibility, and (e) good listening skills. Nevertheless, instructional coaching is an effective form of job-embedded professional learning that requires collaboration and increases student learning, even though there can be implementation challenges.

Professional Learning Community

A PLC is a school, grade-level team, high school department, or an entire district that moves away from an industrial model of education and enables a new model, which allows the team to function as a learning organization to improve student achievement (Beach, 2012; DuFour & Eaker, 2009). In a PLC, one must focus on the learning rather than the teaching, engage in collaboration, and be accountable for the results (DuFour & Eaker, 2009). DuFour (2004) further explained that a PLC model requires schools to have a set of characteristics, such as (a) a shared mission, vision, and values; (b) collective inquiry; (c) collaborative teams; (d) an orientation toward action and a willingness to experiment; (e) commitment to continuous improvement; and (f) a focus on results. A vital component of a successful PLC is developing a culture of collaboration.

A culture of collaboration can be created when a PLC recognizes that they must work together to achieve their common goals (DuFour & Eaker, 2009). Corcoran (1995) added that teacher networks positively affect teacher motivation, subject matter knowledge, risk-taking, and overall commitment to improvement. An effective PLC builds structures to promote a collaborative culture because the teachers recognize that they must work together to achieve learning for all students (DuFour, 2004). Many PLCs face the challenge of shifting teachers' mindsets to one of collaboration versus working in isolation (DuFour, 2004; John, 2014). In addition, John (2014) contends that a necessary

prerequisite for breaking down teacher isolation is to embed time during the workday for collaboration, lesson planning, and assessing student work. Teachers must meet regularly to build trust, engage in productive collaboration, and focus on the results (DuFour, 2004; John, 2014; Tong & Razniak, 2017).

According to DuFour (2004), PLCs evaluate their effectiveness based on student achievement results. PLCs participate in the ongoing evaluation process, which identifies the current level of student achievement, goal setting, collaboration to achieve the goal, and then engaging in dialogue to analyze student data and determine the evidence of progress (DuFour, 2004). Teachers build social capital while interacting and engaging in conversation to improve teaching practices, therefore, student achievement (Tong & Razniak, 2017). For example, when teacher teams develop common formative assessments and participate in the evaluation process, they can determine the effectiveness of the teaching strategies implemented and replicate or make corrections as needed (DuFour, 2004). PLCs focus on continual improvement and results, which requires educators to embrace the process and foster a culture of collaboration.

Professional Learning Networks

Traditional PD models typically include courses offered by the school, district, university, or for-profit vendors. Most traditional PD is "one-size-fits-all" and "sit-and-get," which does not meet the needs of the diverse educators attending the learning opportunities (Archambault et al., 2010; Dede, 2006; Tate, 2012). Therefore, many 21st century educators are forming PLNs, which is defined as a system of interpersonal connections and relationships that support learning (Beach, 2012; Krutka et al., 2017; Trust, 2012). PLNs often occur through social media and include informal learning

opportunities, which allows the learning to be self-directed, voluntary, connected, and collaborative (Archambault et al., 2010; Krutka et al., 2017). Additional benefits include immediate access to information and learning opportunities, diverse audiences, multimodal learning and communication, and immediate feedback (Archambault et al., 2010). PLNs are alternatives to traditional PD, allowing educators to take ownership of their learning by engaging in collaborative and asynchronous PD.

Common asynchronous online PLNs include blogs, Twitter, Wikis, podcasts, and online videos (Archambault et al., 2010; Beach, 2012). These platforms allow educators to acquire and share ideas and resources to enrich the learning experience. Reflection is essential when participating in a PLN because it enables learners to think critically about their instruction, beliefs, and student outcomes (Beach, 2012; Darling-Hammond & McLaughlin, 1995). Beach (2012) elaborates that for teachers to grow as professionals, they have to engage in reflection as they try out new ideas and practices. Unfortunately, a disadvantage of PLNs is the difficulty of tracking professional learning or quantifying the hours of professional education (Darling-Hammond & McLaughlin, 1995). Krutka et al. (2017) explained that learning through technology is still relatively new and evolving. Therefore, educators must be aware, reflective, and intentional about using technology for PD.

Barriers to Effective Professional Development

Educational reform initiatives, including the Race to the Top grant application (DoE, 2017) and the School Improvement Fund regulations (DoE, 2018), acknowledge the importance of PD and, as a result, include funding to support ongoing learning opportunities. Guskey (2009) explained that high-quality PD must be well organized,

carefully structured, and purposefully directed. Haug and Mork (2021) agreed, adding that high-quality PD allows teachers to engage actively, collaborate, and reflect on their learning. Barriers to effective PD include finding the time to provide professional learning, applying the new learning and reflecting on the practice (Guskey, 1994, 2009).

Professional learning should not occur in one-time workshops; instead, the learning should be extended over time and linked to classroom teaching (Guskey, 1994; John, 2014). In addition, John (2014) acknowledged the importance of time for individual and collaborative reflection when considering instructional changes resulting in new learning from PD. New strategies acquired during PD also take time to implement in the classroom and gather data (John, 2014). Guskey (1994) and John (2014) assert that teachers are more likely to try out the new practices, receive feedback, and reflect when learning activities are extended over a long time. One strategy to support the time barrier is providing job-embedded PD opportunities.

PD greatly influences job-embedded and built into the regular workday (Darling-Hammond & McLaughlin, 1995; John, 2014; Tate, 2012). Job-embedded PD refers to teacher learning with a foundation in daily teaching practices and is designed to enhance teachers' content-specific instructional practices (Darling-Hammond & McLaughlin, 1995). Job-embedded PD includes instructional coaching, mentoring, model lessons, and PLCs. One barrier to implementing job-embedded professional learning opportunities is the financial impact and access to human capital at a district and school level (Darling-Hammond & McLaughlin, 1995; Graham et al., 2020; Miles & Guiney, 2000). According to Miles and Guiney (2000), few districts are prepared to support teachers with these opportunities despite the substantial need for job-embedded professional learning. Most

PD offered does not offer ongoing support, is fragmented, and is one-size-fits-all (Corcoran, 1994; Hunziker, 2001; Miles & Guiney, 2000). District leadership is a critical component of implementing effective PD.

Darling-Hammond and McLaughlin (1995) explained the importance of district and site leadership when implementing high-quality PD that increases student learning. Fullan (2016) added, acknowledging the difficulty of improving whole systems, stating that districts often identify the wrong policy drivers, such as testing and evaluation. Fullan asserts success in improving systems lies in changing the culture and relationship toward the issues. Additional research agrees, explaining administrative leadership must create and sustain an environment where teachers feel safe to engage in new learning and risk-taking, and unfortunately, this is often ignored (Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Tong & Razniak, 2017). Organizational leadership plays a vital role in system improvement.

Challenges for Determining the Effectiveness of Professional Development

Blank et al. (2009) reported that current educational policies prioritize improving teacher quality and effectiveness, and PD can enhance the quality of teachers. However, according to Guskey (2009), determining the effectiveness of PD is complicated because studies can consume considerable time and resources, there are many variables, and it is often difficult to attract participants to the study. Another challenge for determining the effectiveness of PD is isolating the effects of the PD because schools often participate in multiple new initiatives (Guskey, 2009). Despite the challenges, gathering data and assessing PDs effectiveness is still critical.

Guskey and Yoon (2009) discussed the importance of gathering data on the effectiveness of PD in their study of *What Works in Professional Development.* They stressed the importance of planning and collecting data after PD. PD will not improve student achievement immediately and it takes time to see the impacts (Guskey, 2009; Yoon et al., 2007). Unfortunately, some PD leaders reluctantly collect data and assess their effectiveness (Guskey, 2009).

Guskey and Yoon (2009) explained that effective PD requirements include carefully structured, purposefully directed, focused on content and pedagogy, and organized time. Additionally, assessing effective PD is complex because it is unclear who needs to be assessed for effectiveness. Since a variety of people contribute to PD, including the designer, deliverer, and participant who applies the new learning in the classroom, there are many challenges in determining the effectiveness of PD (Guskey & Yoon, 2009).

Adult Learning Theory

Knowles' theory of adult learning, known as andragogy, is based on several assumptions, which vary from the assumptions of pedagogy, which is teaching children. Knowles et al. (2005) described these assumptions as adults needing to see a reason or purpose for the learning, be self-directed, and the learning needs to be task-centered. In addition, educators are more likely to engage in professional learning when the learning is differentiated, has personal meaning, and will positively impact their life (Knowles, 1984; Tong & Razniak, 2017).

Lutrick and Szabo (2012) found four themes regarding what instructional leaders viewed as traits of effective PD, which agrees with Knowles' theory. These themes were

that (a) PD should be ongoing, (b) collaborative, (c) data-driven, and (d) interest-driven in design. Educators can identify the value added to their jobs when PD is aligned with these themes. Unfortunately, not all PD applies the adult learning theory assumptions to the design or delivery of PD.

According to Southerland et al. (2016), many PD programs during the 1980s and 1990s failed to even look at the process of adult learning. Knowles (1973) referred to the traditional educational system as "progressively regressive" because the methods and approaches to adult learning had not progressed in innovations and education. Progress has been made in applying adult learning theory, and effective PD now shapes teachers' thinking, shaping their practice (Frerichs et al., 2018; Southerland et al., 2016). Frerichs et al. (2018) indicated adult learners require ongoing PD experiences to improve their skills and abilities. When designing adult learning experiences, build opportunities to collaborate and reflect, immediate options to practice, and develop a learning community (Frerichs et al., 2018; Tong & Razniak, 2017). Adult learning must shift from the teachers being passive participants to becoming active learners (Svendsen, 2020). Tong & Razniak (2017) assert the importance of incorporating adult learning theory into the design and delivery of PD programs so that educators are engaged and able to apply the learning to their practice.

21st Century Learning

Education aims to increase student learning and prepare students to contribute to an ever-changing society (Carbaugh et al., 2015; Vadeboncoeur, 2005). The Commission on Teacher Credentialing (2009) purports that today's diverse student population is rapidly evolving, and teachers need ongoing PD opportunities to foster excellence in

teaching and learning. PD is critical for increased student achievement (Yoon et al., 2007). To better prepare students to be contributors to society, educators must provide ample opportunities to apply 21st century learning skills such as communication, collaboration, critical thinking, and creativity in their daily instructional experiences. PD should prepare teachers with the strategies to engage students in these learning experiences where they apply 21st century skills; however, most PD falls short of this goal.

According to Darling-Hammond McLaughlin (1995), all systems of PD should be flexible and able to respond to the changing needs of educators. Darling-Hammond and McLaughlin argued policymakers need to be mindful of the demands of society, acknowledging when systems may need revising because of the changes in society. PD systems should be adaptable because structures in one school may not work in another. In addition, PD systems must provide multiple opportunities for collaboration and critical reflection for teachers to learn (Darling-Hammond & McLaughlin, 1995). Teaching is not a static occupation, and Carbaugh et al. (2015) further explained that rapid technological advances put additional pressure on educators to improve continuously.

The demands of the 21st century require continuous improvement to increase student learning. The Commission on Teacher Credentialing (2009) expanded on the notion that teaching is more than methodology. It is understanding student development, families, and communities, subject matter, instructional methods, and assessment of student learning, which is evolving. Administrators at the district and school levels are critical to supporting the improvement of teaching and learning (Carbaugh et al., 2015). Tong and Razniak (2017) indicated that administrators must develop a culture of trust

and risk-taking to foster 21st century learning. Teachers will be more willing to adjust their teaching practices if administrators create a culture of trust, promote collaboration, and model risk-taking (Corcoran, 1995; Novota, 2003; Tong & Razniak, 2017). Leadership is vital in creating a safe learning environment for teachers to refine, develop, and share new learning strategies and better prepare students for the 21st century (Tong & Razniak, 2017).

Research Gap

While there is research that identifies the need for ongoing, job-embedded, PD that also includes opportunities for collaboration and reflection to prepare students with the skills needed for the 21st century and successfully implement the practices in the classroom, there is a need for more (Holme, 2019; Yoon et al. 2007). A historical review and synthesis of the existing literature surrounding the topics above lead to a gap in the research surrounding the impact of effective PD systems in K-12 districts and bridge the gap between theory and practice in organizations.

This gap points to the need to conduct a study using the Delphi methodology to identify what specific PD activities experienced by expert PD administrators in California helped them reach expert status and impact the desired teacher learning outcomes defined earlier. Secondly, the gap infers a need to study which activities are the most effective toward the same result. Lastly, the gap implies the need to allow the expert PD administrators to best implement these practical activities in future PD initiatives, including the design and delivery. A study created to answer these questions will help provide answers to school districts seeking strategies to help their district and school

reach expert status and subsequently positively increase student achievement through improved teaching and learning.

Summary

Teacher PD is an integral part of the teaching profession and is defined as processes and purposeful activities designed to enhance educators' professional knowledge, skills, and attitudes (Guskey, 2002; Hargreaves, 1995). High-quality PD leads to increased student achievement (Guskey, 2002; Yoon et al., 2007; Zambak et al., 2017). Characteristics of high-quality PD include coherence, active learning, sufficient duration, collective participation, and a focus on content knowledge (Darling-Hammond & McLaughlin, 1995; Yoon et al., 2007). Although there is agreement that high-quality PD is necessary to increase student achievement, there is a shortage of such opportunities, even though PD has evolved since the 1800s (Frerichs et al., 2018; Yoon et al., 2007).

Education reform initiatives have challenged educators with new skills and responsibilities, which has required a change in practice, which occurs through ongoing PD (Corcoran, 1995). In 2001, NCLB reauthorized the ESEA and introduced standardized testing to monitor student achievement in schools with low-income students. In addition, Title II funds were allocated to train, prepare, and recruit high-quality teachers and principals. ESEA and NCLB raised the standards and accountability, which caused administrators to analyze the PD offered to better meet the needs of educators and students (DoE, 2006). However, education reform allocates funds to provide ongoing learning for educators but does not dictate how PD must occur, which causes variability.

As a result, it is difficult to assess the effectiveness of PD and its impact on student achievement.

The research identified that PD is more effective when the effort is district-wide, versus varying by school and teacher and aligned to common district goals (Corcoran, 1995; Darling-Hammond & McLaughlin, 1995; Miles & Guiney, 2000). Also, successful PD must be high quality and relevant to teachers' needs (Corcoran, 1995; Elmore, 2004). PD workshops and conferences positively impact teachers; however, job-embedded learning opportunities that offer ongoing support are the most effective (Corcoran, 1994; Hunziker, 2001; Miles & Guiney, 2000). Unfortunately, some PD lacks active participation, collaboration, and reflection opportunities. Therefore, determining the effectiveness of PD is crucial when district leaders are making decisions on which models to design, deliver and provide teachers in the district.

Research studies on the effectiveness of PD can consume considerable time and resources, there are many variables, and it is often difficult to attract participants to the study. Guskey and Yoon (2009) emphasized the importance of collecting PD data so that data-driven decision-making can occur within school districts. Another factor affecting teacher PD is the integration of adult learning theory based on several assumptions. Knowles et al. (2005) described these assumptions as adults needing to see a reason or purpose for the learning, be self-directed, and the learning needs to be task-centered. When designing and delivering PD, facilitators should apply adult learning theory to prepare teachers with the strategies required to engage students in learning experiences where they use 21st century skills.

Research acknowledges administrators at the district and school levels are critical to supporting the improvement of teaching and learning by developing a culture of trust and risk-taking to foster 21st century learning (Carbaugh et al., 2015; Tong & Razniak, 2017). In addition, teachers will be more willing to adjust their teaching practices if leadership engages in behaviors that support and promote collaboration and model risk-taking (Corcoran, 1995; Novota, 2003; Tong & Razniak, 2017). And so, the purpose of this Delphi study is to determine what experts in PD predict the delivery and content of K-12 education will look like and how districts need to structure themselves to deliver the predicted content. This research may advance the theory of K-12 organizational leadership and contribute to PD literature and best practices.

CHAPTER III: METHODOLOGY

Overview

This study adds to the body of knowledge regarding K-12 educational PD, specifically determining what experts predict the delivery and content of K-12 education PD and how K-12 educational organizations will need to structure themselves to deliver predicted PD. This chapter describes the study's framework, beginning with the purpose statement followed by the research questions and research design. The population, target population, and sample utilized for this study are also addressed. Next, the study's instrumentation, including the process and procedures used to collect and analyze data, are examined. Finally, Chapter III concludes with the study's limitations and a summary.

Purpose Statement

The purpose of this futures Delphi study was to determine what experts in professional development predict the delivery and content of K-12 education will look like in 2026 and beyond, to determine how the experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted professional development in 2026 and beyond.

Research Questions

The following questions were investigated to address the purpose of the study:

1. What do experts in professional development predict the delivery and content of K-12 education professional development will look like in 2026 and beyond?

2. How do experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond?
3. How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for delivery and content of professional development?
4. How do experts in professional development respond to the predictions made from Research Question 3 and what final suggestions do they make for implementation in 2026 and beyond?

Research Design

This study used the classical Delphi method to collect data from K-12 administrators regarding the delivery and content of PD in K-12 educational organizations. Furthermore, the Delphi method allowed the researcher to determine how K-12 educational organizations in California will need to structure themselves to deliver predicted PD in 2026 and beyond. The RAND Corporation developed the Delphi method in 1950 (Dalkey & Helmer, 1963). The classical Delphi method is a forecasting process framework that uses various rounds of questionnaires sent to a panel of experts (Dalkey & Helmer, 1963; Sitlington & Coetzer, 2015). Using the classical Delphi method as a qualitative research design, the researcher obtained descriptive data through the questionnaires.

This study used the classical Delphi method to gather perceptual data from an expert panel of K-12 administrators who decide on PD structures in their districts. This methodology systematically collects information from a group of experts and then reduces the opinions to reach a consensus on the views (Yousuf, 2007). The researcher

sent out three rounds of questionnaires electronically, and the survey collected the responses anonymously. After the first round, the answers were aggregated and the controlled feedback was shared with the panel of experts for subsequent rounds. Sekayi and Kennedy (2017) expressed that the Likert-type questionnaire provided controlled feedback rather than having the panel communicate with one another, which eliminates groupthink. This classical Delphi study was used to gain insight into future K-12 education PD systems and structure trends.

An essential feature of the Delphi method's multiple rounds of questioning allows the expert panel members to review the collective list of responses to the questionnaire. Then, each expert panel member will rate or evaluate the list of answers based on a predetermined criterion of importance. Finally, the third questionnaire will include a list and the ratings indicated. This would also be indicated if the experts arrived at a consensus during the third round. One benefit is that the experts can revise their opinions or explain their reasoning without arriving at a consensus (Yousuf, 2007). Another benefit of a Delphi study is that the panel of experts remains anonymous. Anonymity reduces the impact of peer pressure to conform and allows all opinions to be considered. Also, according to Fischer (1978), the results gathered from a Delphi study can be used for planning by administrators.

Population

A population is a group that "conforms to specific criteria" (McMillan & Schumacher, 2010, p. 129) to which research results can be generalized. The population for this study is expert PD administrators/curriculum and instruction administrators in California public school districts. Each district's organizational chart differs; however,

this population comprises administrators from any district-level department designing and delivering PD. The CDE (2019) reported 1,037 public school districts.

Sampling Frame

According to Taherdoost (2016), “A sampling frame is a list of the actual cases from which the sample will be drawn” (p. 20). The sampling frame for a research study is the collective group for which the study's data and findings can be generalized. The sampling frame refers to the group of individuals the researcher collected data from for this study (McMillan & Schumacher, 2010). The sampling frame for this study was expert K-12 district-level administrators representing California public school districts in California. The expert K-12 educational administrators who were purposefully selected have worked in the field for at least three years and have been involved with certificated PD.

According to the CDE (2019), 1,037 public school districts provided professional learning for certificated staff. The sampling frame was K-12 district administrators representing all public schools in California. The expert K-12 educational administrators had worked in the field for at least three years and have been involved with certificated PD.

Sample

The population sample is the participants from whom the data is collected (McMillian & Schumacher, 2010). For example, the potential sample population for this study was composed of 15 district administrators working in California public school districts, who, as administrators, successfully lead the implementation of PD in the district. The sample selection process included a purposive method. McMillian

and Schumacher (2010) describe purposive sampling as selecting specific characteristics from the population that will inform the researcher. Delphi studies require a panel of experts who will make up the sample (Dalkey & Helmer, 1963; Yousuf, 2007). The experts chosen for this study were district administrators who have successfully implemented certificated PD in their respective school districts. The criterion used for the selection of these experts were:

- Must currently be a K-12 public education administrator at the district level.
- Must have a minimum of three years of experience as a district administrator.
- Must oversee the implementation of certificated PD.

The sample for this study was 15 expert district administrators from California school districts that have successfully implemented PD for certificated staff.

Sample Selection Process

1. Potential participants were identified by utilizing school district websites, listing employees in the curriculum and instruction departments.
2. Potential participants who met the criteria were contacted via email (see Appendix B).
3. Those who responded were sent the demographic questionnaire via email (see Appendix C).
4. Of the individuals who met the criteria, 17 were selected to participate in the study.

5. Those who responded and met the demographic criteria were sent the informed consent material (see Appendix D and E).
6. Surveys were administered.

Instrumentation

This research study utilized the online survey tool, Survey Monkey, and email to collect data and communicate with the expert panel. The researcher used three rounds of questioning to answer the study's research questions. The first round included an open-ended question. The second round used the results from round one to create a Likert scale survey that allowed the experts to rate the importance of the round one responses and rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond. The final round allowed the experts to refine their responses and deliver feedback on PD implementation practices.

The researcher developed the surveys using Survey Monkey and emailed the hyperlinked survey to the panel, along with instructions on how to complete the survey.

Round 1

The survey instrument that was used in Round 1 asked the following open-ended question: *What do experts in professional development predict the delivery and content of K-12 Education professional development in 2026 and beyond?* The researcher coded the responses to the first question and placed the answers into a list to be used in Round 2 (see Appendix F).

Round 2

Next, the expert panel used a six-point Likert scale to rate the importance of the indicated structures of PD delivery and content revealed during Round 1 (see Appendix

G). The ranges on the Likert scale will be: *Very Important, Important, Slightly Important, Slightly Unimportant, Unimportant, and Very Unimportant.* The expert panel was also asked to rate the likelihood of predictions being enacted for each of the indicated structures of PD delivery and content revealed during Round 1. Again, the ranges on the Likert scale will be: *Very Likely, Likely, Slightly Likely, Slightly Unlikely, Unlikely, and Very Unlikely.*

Round 3

The survey instrument that was used in Round 3 contained an open-ended question for each of the highest rated structures of PD delivery and content revealed during Round 2 (see Appendix H). The question was: *How do experts in professional development respond to the predictions made from Research Question 3 and what final suggestions do they make for implementation in 2026 and beyond?*

Validity

According to McMillan and Schumacher (2010), validity determines the extent to which data is credible and trustworthy. Validity also determines whether the research truly measures what it intended to (Bashir et al., 2008). Qualitative researchers have a responsibility to determine the validity of their study by implementing verification strategies during the research. A pilot test in the same format as described in the research design of this study was administered to four district administrators to ensure that the instrument used in this study accurately measured what was intended. These administrators met the same criteria as the sampling for this study. The feedback from the field test volunteers was used to ensure the validity of the surveys. Furthermore, validity

in a Delphi study is assured by the expert consensus achieved after three rounds of surveys and controlled feedback (Yousuf, 2007).

Reliability

Bashir et al. (2008) contend the most important issue in qualitative research is to ensure reliability and validity. Reliability in qualitative research refers to the stability and consistency of measures between responses and multiple coders (McMillan & Schumacher, 2010). A reliable research study's results can be reproduced under the same conditions (Golafshani, 2003; McMillan & Schumacher, 2010). By leveraging the expert panel, this study should produce results that would remain comparable or consistent if this study was used to replicate the findings.

Data Collection

Permission to conduct this research study was granted by the University of Massachusetts Global Institutional Review Board (IRB) (see Appendix I), after the researcher completed the required coursework and was granted a certification from the National Institutes of Health (see Appendix J). Upon receiving IRB consent to collect data, the researcher contacted potential expert panelists by email. The email explained the research purpose to the potential expert panelist, and they were asked to volunteer for the three-round study.

This research study consisted of three questionnaires that were developed to have California K-12 expert district-level administrators describe the predicted structures for PD delivery and content in 2026 and beyond. In addition, three rounds of anonymous surveying took place using Survey Monkey, an online survey program.

Round 1

An email was sent to the expert panel of California K-12 district administrators, outlining an anticipated timeline, a link to the Round 1 survey, and the researcher's contact information. The expert panel was asked to respond to the following open-ended question: *"What do experts in professional development predict the delivery and content of K-12 education professional development will look like in 2026 and beyond?"* The anonymous responses from Round 1 were compiled into one list of themes and used to prepare the Round 2 survey.

Round 2

Round 2 provided another survey, which was developed from the responses in Round 1. The researcher emailed the expert panel of California K-12 district administrators an anticipated timeline for completion and a link to the Round 2 survey. The expert panel was asked to use a six-point Likert scale to rate the importance of the indicated structures of PD delivery and content revealed during Round 1. The expert panel was also asked to rate the likelihood of predictions being enacted for each of the indicated structures of PD delivery and content revealed during Round 1.

Once the Round 2 surveys were completed, the researcher tallied the score and calculated the mean average for each indicated structure. Next, the researcher organized the themes for each indicated structure of PD delivery and content. Structures were then organized from highest mean score to lowest mean score. The top identified structures in Round 2 were used for Round 3.

Round 3

The researcher identified the top strategies with the highest mean score in Round 2 to develop the Round 3 survey. An email was sent to the expert panel of California K-12 district administrators, including the anticipated timeline for completion, and a link to the Round 3 survey. The expert panel was asked to respond to the following question: *"How do experts in professional development respond to the predictions made from RQ3 and what final suggestions do they make for implementation in 2026 and beyond?"*

Upon completion of the Round 3 surveys, the researcher compiled the responses. Then, the researcher coded and sorted the responses into themes.

Data Analysis

The researcher collected and analyzed data in this Delphi study in three stages. The qualitative data collected from each round was used to develop the questionnaire for the subsequent round. After Round 2, mean scores for each structure were calculated, and the structures were ranked from the highest to lowest mean score. After Round 3, the researcher compiled the responses, coded and sorted the responses into themes. A summary was prepared to describe the top predicted structures for PD delivery and content in K-12 education.

Round 1

Round 1 used Survey Monkey to collect an anonymous response to the following question: *"What do experts in professional development predict the delivery and content of K-12 education professional development will look like in 2026 and beyond?"* The anonymous responses from Round 1 were compiled into one list of themes and used to prepare the Round 2 survey.

Round 2

Round 2 used Survey Monkey to collect anonymous responses using a six-point Likert scale to rate the importance of the indicated structures of PD delivery and content revealed during Round 1. The expert panel was also asked to rate the likelihood of enacted predictions for each of the indicated structures of PD delivery and content revealed during Round 1. Once the Round 2 surveys were completed, the researcher tallied the score and calculated the mean average for each indicated structure. Next, the researcher organized the themes for each suggested structure of PD delivery, and content and structures were then organized from highest mean score to lowest mean score. The top identified structures in Round 2 will be used for Round 3.

Round 3

The researcher identified the top strategies with the highest mean score in Round 2 to develop the Round 3 survey. The expert panel was asked to respond to the following question: *"How do experts in professional development respond to the predictions made from Research Question 3 and what final suggestions do they make for implementation in 2026 and beyond?"*

Upon completion of the Round 3 surveys, the researcher compiled the responses. Then, the researcher coded and sorted the responses into themes. The researcher prepared a summary to describe the top predicted structures for PD delivery and content in K-12 education.

Limitations

There were several limitations to this classical Delphi study. First, determining the qualifications of an expert is subjective, and the Delphi methodology requires an

expert panel. Second, the study focused on PD administrators, which could have varying definitions. Additionally, the researcher works in PD and may exhibit bias. Furthermore, this study was limited to California public school districts and did not include charter or private schools. Lastly, the instrumentation used was field-tested but may lack contextual measures.

Summary

Chapter III included an overview, review of the purpose statement, research questions, and research design. The methodology used for the study was a classical Delphi method. The classical Delphi method is a forecasting process framework that uses various rounds of questionnaires sent to a panel of experts (Dalkey & Helmer, 1963; Sitlington & Coetzer, 2015). Next, a description of the population, target population, and sample used for this study were presented. Additionally, information about the instruments, including the field test, validity, and reliability, is presented, followed by a description of data collection, analysis, and limitations. The objective of Chapter III was to describe the rationale for conducting a qualitative research study using a classical Delphi method as the data collection technique.

CHAPTER IV: RESEARCH, DATA COLLECTION, AND FINDINGS

Chapter IV presents the data collected for this study, followed by data analysis. This study was meant to determine what experts in PD predict delivery and content of K-12 education will look like in 2026 and beyond, to rate the likelihood of the predictions being enacted by 2026 and beyond, and to identify how the experts predict K-12 educational organizations need to structure themselves to deliver predicted PD in 2026 and beyond. Furthermore, Chapter IV reiterates the purpose and research questions for this study, along with the methodology, population, sample, and presentation of the data. This chapter will close with a detailed report of the findings of the research study.

Overview

Chapter IV presents the data collected during the Delphi study's various rounds, accompanied by analysis. This study was meant to determine what the experts in PD predict the delivery and content of K-12 education and identify how K-12 educational organizations need to structure themselves so that other districts can build, improve, or implement PD models within their districts. Chapter IV restates the study's purpose and research questions along with the chosen methodology, population, and specific sample before presenting data. Finally, Chapter IV concludes with a summary of the findings.

Purpose Statement

The purpose of this futures Delphi study was to determine what experts in professional development predict the delivery and content of K-12 education will look like in 2026 and beyond, to determine how the experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and

beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted PD in 2026 and beyond.

Research Questions

The following questions were investigated to address the purpose of the study:

1. What do experts in professional development predict the delivery and content of K-12 education professional development will look like in 2026 and beyond?
2. How do experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond?
3. How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for delivery and content of professional development?
4. How do experts in professional development respond to the predictions made from Research Question 3, and what final suggestions do they make for implementation in 2026 and beyond?

Research Methods and Data Collection Procedures

This study used the classical Delphi method to collect data from K-12 administrators regarding the delivery and content of PD in K-12 educational organizations. Additionally, the Delphi method allowed the researcher to determine how K-12 educational organizations in California will need to structure themselves to deliver predicted PD in 2026 and beyond. The RAND Corporation developed the Delphi method in 1950 (Dalkey & Helmer, 1963). The classical Delphi method is a forecasting process framework that uses various rounds of questionnaires sent to a panel of experts (Dalkey

& Helmer, 1963; Sitlington & Coetzer, 2015). Consequently, the researcher obtained descriptive data through the questionnaires using the classical Delphi method as a qualitative research design.

This study used the classical Delphi method to gather perceptual data from an expert panel of K-12 administrators who decide on PD structures in their districts. To reach a consensus on the views, this methodology systematically collected information from a group of experts and then reduced the opinions to reach a consensus (Yousuf, 2007). The researcher sent out three rounds of questionnaires electronically, and the survey collected the responses anonymously. After the first round, the answers were aggregated and the controlled feedback was shared with the panel of experts for subsequent rounds. The Likert-type questionnaire provided controlled feedback rather than having the panel communicate with one another, which eliminates groupthink (Sekayi & Kennedy, 2017). Ultimately, this classical Delphi study was used to gain insight into future K-12 education PD systems and structure trends.

An important feature of the Delphi method's multiple rounds of questioning allows the expert panel members to examine the collective list of responses to the questionnaire. Then, each expert panel member will rate or evaluate the list of answers based on a predetermined criterion of importance. Finally, the third questionnaire will include a list and the ratings indicated. This would also be indicated if the experts reached a consensus during the third round. According to Yousuf (2007), one advantage is that the experts can revise their opinions or explain their reasoning without arriving at a consensus. An additional benefit of a Delphi study is that the panel of experts remains anonymous. Anonymity reduces the impact of peer pressure to conform and allows all

opinions to be considered. Finally, according to Fischer (1978), the results gathered from a Delphi study can be used for planning by administrators.

Population and Sample

A population is a group that "conforms to specific criteria" (McMillan & Schumacher, 2010, p. 129) to which research results can be generalized. The population for this study is expert PD administrators/curriculum and instruction administrators in California public school districts. Typically, each district's organizational chart differs; however, this population comprises administrators from any district-level department designing and delivering PD. The CDE (n.d.) reported 1,037 public school districts.

The population sample is the participants from whom the data is collected (McMillian & Schumacher, 2010). As such, the potential sample population for this study would be composed of 15 district administrators working in California public school districts, who, as administrators, successfully lead the implementation of PD in the district. The sample selection process will include a purposive method. Purposive sampling is selecting specific characteristics from the population that will inform the researcher (McMillian & Schumacher, 2010). Delphi studies require a panel of experts who will make up the sample (Dalkey & Helmer, 1963; Yousuf, 2007). The experts selected for this study were district administrators who have effectively implemented certificated PD in their school districts. The criterion used for selecting these experts were:

- Must currently be a K-12 public education administrator at the district level.
- Must have a minimum of three years of experience as a district administrator.
- Must oversee the implementation of certificated PD.

The sample for this study was 15 expert district administrators from California school districts that have successfully implemented PD for certificated staff.

Presentation of the Data

This section presents the data collected for each research question and analysis. Tables have been embedded to help display the data. The data is presented sequentially, as outlined by the research methodology.

Research Question 1

Research Question 1 asked: What do experts in professional development predict the delivery and content of K-12 education professional development will look like in 2026 and beyond?

Round 1

The researcher began the study by creating an electronic survey using Survey Monkey, which asked the following open-ended question: *What do experts in professional development predict the delivery and content of K-12 Education professional development will look like in 2026 and beyond?* This initial round was intended to produce an extensive list of possible professional development attributes for delivery and content. The survey was sent out to 17 participants.

Fourteen expert PD administrators responded to this question. After the responses were established, the researcher examined the responses and organized them into a table to begin the coding process and determine themes. Most of the 14 respondents provided multiple qualifications; however, one participant shared only one qualification; the remaining responses varied from four to 14. Some of the responses were simple such as "virtual" or "hybrid," while others were more detailed, like, "In person will involve more

things such as instructional rounds, more modeling, and more in-class support." The researcher coded the data to establish themes before developing the survey for Round 2.

Analysis of Round 1. Fourteen out of the 17 expert PD administrators participated during Round 1 of the study. Again, the data was analyzed and coded which allowed the researcher to identify emerging themes. The research question was split into two categories: predictions for PD delivery and predictions for PD content. The researcher identified 10 different PD delivery themes and 16 PD content areas that emerged from the experts' responses.

Seven of the 14 respondents indicated that PD delivery will be in-person learning opportunities. Further review of the data indicated that six respondents indicated PD delivery would be delivered in a variety of modalities, which could include:

- In-person
- Virtual
- Asynchronous
- Synchronous

Five of the 14 expert PD administrators recognized virtual PD as an acceptable delivery model. Virtual PD can occur via platforms such as Zoom or Google Meet. The PD can be recorded so that participants can refer back to the learning.

Five of the 14 expert PD administrators who responded to the Round 1 questions identified PD would be delivered in a hybrid or blended model. The PD delivery associated with this type of model could be:

- Asynchronous reading and videos.
- Online discussion boards.

- Synchronous class time for collaborative work and discussion.
- Small group and one-on-one time to individualize instruction during in-person sessions.

The participant's list of predictions for PD delivery is outlined in Table 1.

Table 1

List of Possible Professional Development Attributes for Delivery Models

-	Possible Professional Development Attributes	Frequency
1	In-person delivery of professional development	7
2	Virtual delivery of professional development	5
3	Blended (synchronous & asynchronous)	5
4	Self-paced/asynchronous	4
5	Professional development will be data-driven	2
6	Integrated Model	1
7	Personalized professional development	1
8	Job embedded	1
9	Coaching/modeling	1
10	Focus on best practices for instruction	1

Three of the 14 participants stated that PD content will be integrated, rather than PD that focuses on only one content area. Further analysis of the data showed that the integrated content could include:

- Social Emotional Learning (SEL).
- Technology.
- Subject-matter content.
- Pedagogy.

Content specific conceptual knowledge was identified by three of the 14 respondents. Content-specific knowledge refers to subject areas, such as English

language arts, mathematics, science, or social studies. Also, content knowledge generally refers to the facts, concepts, and theories that are taught in academic courses.

Three of the 14 respondents believed that student data analysis would be important content that should be addressed in professional learning opportunities. PD focused on student data analysis could include:

- Predictive analytics for student success.
- Disaggregating student data into trackable skills and goals.
- Using short cycle assessments to inform instruction.
- Processes for data analysis and determining next steps.

Two of the four respondents said PD needs to emphasize skills. An emphasis on skills requires teachers to learn and refine the pedagogies necessary to teach students these skills. Students need skills such as communication, collaboration, critical thinking, and creativity to thrive in the 21st century.

Two of the 14 respondents identified the importance of differentiated content in PD for educators. Blended PD would be an example of a method to provide differentiated PD opportunities effectively. The list for PD content areas is outlined in Table 2. Items with the same frequency were added at random.

Table 2

List of Possible Professional Development Content Areas

-	Possible Professional Development attributes	Frequency
1	Content-specific conceptual knowledge	3
2	Data analysis	3
3	Emphasis on skill	2
4	Digital integration	2
5	Social Emotional Learning (SEL)	2
6	Digital Literacy	2
7	Driven by economic climate	2
8	Differentiated content	2
9	Instructional strategies	2
10	Standards-based grading	1
11	Project-based learning	1
12	Calibration of grading practices	1
13	Digital integration	1
14	Universal Design for Learning (UDL)	1
15	Social Emotional Learning (SEL)	1
16	Digital Citizenship	1
17	Driven by district initiatives and priorities	1
18	Driven by social climate	1
19	Ethnic studies	1

Research Question 2

Research Question 2 asked: How do experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond?

Round 2

During this round, the researcher prepared a second electronic survey through Survey Monkey in an effort to allow the 14 expert PD administrators to rate the likelihood of enacting the 10 different PD delivery themes and 16 PD content areas that emerged from the experts' responses. The survey contained the following prompt: *Using the five-point Likert scale provided below, please rate the likelihood of the aggregate responses obtained from Round 1 surrounding the predicted professional development delivery modalities and content in K-12 education.*

As stated previously, all 17 expert PD administrators were invited to participate during this round. Of the 17, there were 14 participating. The researcher's primary goal for this round was to determine the top five PD modalities for delivery and the top five content areas in an effort to gather data for the third and final round. After presenting the ten PD delivery themes and 16 PD content areas, the researcher asked participants to rank each one on a five-point Likert scale. The data from this round were then placed into two tables and a mean was calculated for each (see Table 3 and Table 4).

Table 3

Mean Ranking of Professional Development Attributes for Delivery Models

Professional Development Delivery Models	Mean
Blended (synchronous & asynchronous)	4.85
Professional development will be data-driven	4.64
Professional development will focus on best practices for instruction	4.61
Virtual delivery of professional development	4.57
Self-paced/asynchronous	4.35
In-person delivery of Professional development	4.07
Integrated Model	4.07
Personalized professional	4
Job embedded	3.64
Coaching/modeling	3.57

Table 4

Mean Ranking of Professional Development Content Areas

Professional Development Content	Mean
Driven by district initiatives and priorities	4.42
Data analysis	4.28
Content-specific conceptual knowledge	4.23
Differentiated content	4.21
Universal Design for Learning (UDL)	4.21
Standards-based grading	4.21
Social Emotional Learning (SEL)	4.15
Digital Literacy	4.15
Digital integration	4.14
Ethnic studies	4.14
Calibration of grading practices	4.07
Project-based learning	4
Emphasis on skill	3.92
Digital Citizenship	3.92
Driven by social climate	3.64
Driven by economic climate	3

Analysis of round 2. Fourteen of the 17 participants involved with the study participated in Round 2. Six of the 26 questions were answered by only 13 participants. The participants were asked to rank the predictions of all enacting the 10 different PD delivery themes and 16 PD content areas that emerged from the experts' responses during Round 1 on a five-point Likert scale ranging from *Not Likely at All* to *Very Likely*. Each point on the Likert scale was then given a point value ranging from 1 point for *Not Likely at All* up to 5 points for *Very Likely*. The mean was able to be established by assigning a point value to each point on the Likert scale. The mean scores for PD delivery models ranged from 4.85-3.57 and the mean scores for content ranged from 4.42-3.

PD administrators predicted that the highest quality for PD, with a mean score of 4.85 is:

- Blended (asynchronous and blended)

Second to that, the data shows that with a mean score of 4.64, the second highest predicted quality of PD is:

- Data-driven

Next, the data indicated with a mean score of 4.61, a model for PD will:

- Focus on best practices for instruction

The data showed with a mean score of 4.35, PD will be:

- Self-paced/asynchronous

Finally, the data identified with a mean score of 4.07 two predictions:

- Integrated model
- In-person delivery

Table 5 shows the highest rated PD delivery predictions.

Table 5

Highest Rated Professional Development Delivery

Professional Development Delivery Models	Mean
Blended (synchronous & asynchronous)	4.85
Professional development will be data-driven	4.64
Professional development will focus on best practices for instruction	4.61
Self-paced/asynchronous	4.35
In-person delivery of professional development	4.07
Integrated Model	4.07

The PD content area highest rated by PD administrators, with a mean score of 4.42 will be:

- Driven by district initiatives and priorities

The second highest rated PD content area, with a mean score of 4.28 will be:

- Data analysis

Next, with a mean of 4.23, PD administrators indicated:

- Content-specific conceptual knowledge

Finally, PD administrators identified three content areas with a mean score of 4.21:

- Differentiated content
- Universal Design for Learning (UDL)
- Standards-based grading

Table 6 shows the highest rated PD content predictions.

Table 6

Highest Rated Professional Development Content Predictions

Professional Development Content	Mean
Driven by district initiatives and priorities	4.42
Data analysis	4.28
Content-specific conceptual knowledge	4.23
Differentiated content	4.21
Universal Design for Learning (UDL)	4.21
Standards-based grading	4.21

The lowest rated of the predictions for K-12 PD delivery, with a mean score of 3.57 was:

- Coaching/modeling

The second lowest rated predicted delivery model, with a mean score of 3.64 was:

- Job-embedded

The predicted least likely PD content quality, with a mean score of 3 included:

- PD driven by the economic climate

Finally, with a mean of 3.64, the next lowest rated PD content quality was:

- PD driven by the social climate

Table 7 shows the lowest ranked predicted PD delivery and content.

Table 7

Lowest Ranked Professional Development Delivery and Content

Professional Development Content	Mean
Job embedded	3.64
Coaching/modeling	3.57
Driven by social climate	3.64
Driven by economic climate	3

The purpose of Round 2 during this Delphi study was to predict the top five qualities for K-12 PD delivery and content from the aggregated data from Round 1 and utilize that information in creating the Round 3 survey question in efforts to answer the research questions associated with this study.

As previously stated, the goal of Round 2 was to narrow the list of 26 predictions for K-12 PD to the top five for delivery and content. The top five predictions for delivery and content were returned to the panel of expert PD administrators in order to petition responses to answer the final research questions in this study (see Table 8).

Table 8

Top Five K-12 Professional Development Predictions for Professional Development Delivery and Content

Professional Development	Rank
Delivery Method	
Blended (synchronous & asynchronous)	1
Professional development will be data-driven	2
Professional development will focus on best practices for instruction	3
Self-paced/asynchronous	4
Integrated Professional development model	5
Content	
Driven by district initiatives and priorities	1
Data analysis	2
Content-specific conceptual knowledge	3
Differentiated content	4
Universal Design for Learning (UDL)	5

Research Question 3

Research Question 3 asked: How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for delivery and content of professional development?

Round 3

The final round of this study took the five top-rated predictions from the previous round and provided the expert panel the opportunity to answer three open-ended questions. The first question was: *How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for the delivery of professional development?* The top five predictions for PD delivery: Blended (asynchronous & synchronous), Data-driven, Focus on best

practices for instruction, Self-paced asynchronous learning, and Delivery will be an integrated model, addressing multiple topics in one PD.

The second question was: *How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for the content of professional development?* The top five predictions for PD content were: Driven by district initiatives and priorities, Data analysis, Emphasis on skill, Differentiated content, and Universal design of learning.

The final question was: *How do experts in professional development respond to the predictions made from Research Question 3 and what final suggestions do they make for implementation in 2026 and beyond?* The top five predictions for PD delivery were: Blended (asynchronous & synchronous), Data-driven, Focus on best practices for instruction, Self-paced asynchronous learning, and Delivery will be an integrated model, addressing multiple topics in one PD. The top five predictions for PD content were: Driven by district initiatives and priorities, Data analysis, Emphasis on the skill, Differentiated content, and Universal design of learning. The panel was asked to describe what they believe will be important for school districts to successfully implement these predictions in the content and delivery of PD in their districts.

Analysis of Round 3. All 17 expert PD administrators were invited once again to participate during this round. Of the 17, there were nine respondents. The data from Round 3 was qualitatively analyzed, coded, and arranged into a frequency table in an effort to identify the themes that a district may implement in order to change its PD content and structures based on the predictions.

In analyzing the data for how districts need to structure themselves in order to deliver Blended (synchronous/asynchronous) PD, the most frequent concept that surfaced from the expert panel, with a frequency of 2, was that of:

- Provide after-school learning opportunities, including short PDs after school or longer PD on Saturdays. After-school PD is convenient for teachers because they do not need to make lesson plans for substitute teachers. Teachers who need more time for learning would be able to attend the longer learning sessions offered on Saturdays.

With a frequency of 2, the PD administrators reported the theme of:

- Design learning opportunities that are short and concise. Providing PD after school would allow teachers to learn in short periods of time and the information can be condensed to be more concise. These PD opportunities are ideal for veteran teachers who have already experienced many cycles of initiatives in education and only need the essential information to add to their robust pedagogical toolkits.

The least recurring themes, at a frequency of 1, were:

- Blended PD should be inclusive.
- Blended PD should occur over 2 days.

Table 9 displays the structures suggested by the panel of experts that may be implemented when designing blended (synchronous/asynchronous) PD learning opportunities.

Table 9

Top Structures for Implementing K-12 Professional Development Predictions for Blended Professional Development Delivery

Structures for Blended Professional Development Delivery Models	Frequency
After school learning opportunities	2
Short and concise after school professional development	2
Inclusive	1
Occur over two days	1

Prediction 2 was identified during Round 2, and its structures for implementation were discovered during Round 3 are presented below.

With Prediction 2, PD delivery models will be *Data-driven*, the panel of experts produced a theme that recurred three times for a response percentage of 33%. The prediction was:

- Use student data from standardized assessments to decide the target areas of student need. This data will determine the PD offerings.

The next most significant themes had a frequency rate of two and was mentioned 22% of the time. The themes were:

- Qualitative data should be gathered during instructional round walkthroughs within the district.
- District leaders should observe other high performing districts.

The last theme had a frequency rate of one, and a response rate of 11%. The last theme was:

- Research based practices must be applied to effective PD. District leaders should choose the best practices that have the highest effect size on increasing student achievement.

Table 10 displays the structures suggested by the panel of experts that may be implemented when using data to determine PD delivery models.

Table 10

Top Structures for Implementing K-12 Professional Development Predictions for Data-driven Professional Development Delivery

Structures for Data-Driven Professional Development Delivery Models	Frequency
Student need	3
Instructional round walkthroughs	2
Observe high performing districts	2
Research-based best practices for student achievement	1

During Round 2, the expert panel found *Focus on Best Practices for Instruction* to be a predictor of what will drive PD delivery models. During Round 3, the expert panel identified three themes for integrating best practices into PD delivery models. Each theme had a frequency of 1 or an 11% frequency rate. These three themes were:

- Develop units of instruction for teachers that include research-based best practices.
- Determine what content can be delivered asynchronously and which content must be taught synchronously.
- Backwards map PD and apply best practices.

Table 11 displays strategies suggested by the panel of experts that may be applied when designing the delivery model of PD that focuses on best practices for instruction.

Table 11

Top Structures for Implementing K-12 Professional Development Predictions for Professional Development that focuses on Best Practices for Instruction

Structures for Professional Development Delivery Models Focused on Best Practices	Frequency
Develop units of study	1
Determine which content can be delivered synchronous versus asynchronous	1
Backwards map and apply best practices	1

Again, during Round 2, the respondents made predictions that would help other district administrators lead PD implementation. During that round, that same panel overwhelmingly provided responses and identified one particular theme over and over again with a frequency of 6 or 66% of responses; that theme was:

- Provided asynchronous, on-demand learning so that teachers can learn based on their self-identified needs.

There were only two other themes that surfaced. The next most significant theme had a frequency rate of 2 and was mentioned 22% of the time. The theme was:

- Asynchronous learning can be job-embedded. Teachers would be able to access the learning during their prep period, or before and after instruction.

The last theme had a frequency rate of one, and a response rate of 11%. The last theme was:

- Districts need to use a Learning Management System (LMS) to organize the content and collect data. The LMS allows teachers to easily navigate the content. Administrators will be able to access data, such as course completion rates and accuracy.

Table 12 displays structures suggested by the panel of experts that may be implemented when designing self-paced learning opportunities for teachers.

Table 12

Top Structures for Implementing K-12 Professional Development Predictions for Self-paced, Asynchronous Learning

Structures for Self-paced, Asynchronous Professional Development Delivery	Frequency
Provide on-demand, asynchronous professional development to meet self-identified needs	6
Asynchronous professional development can be job-embedded	2
Find a Learning Management System to support the needs	1

The last structure identified during Round 2 was an *Integrated Professional Development Model.* During Round 3, the expert panel spoke about two themes, yielding a frequency of two and a response rate of 22%:

- Hire staff developers and teachers on special assignment (TOSA) to focus on creating PD that addresses multiple content areas or district initiatives.
- Provide opportunities for staff developers and TOSAs to collaborate across instructional departments. This collaboration will be intentional and will allow for the creation of integrated content in one PD session.

Lastly, the respondents identified one other theme, with a frequency of 1 the theme was:

- Provided access to differentiated content in PD. PD that has a variety of content areas, an integrated approach, should also be differentiated for teachers.

Table 13 displays structures suggested by the panel of experts that may be implemented when designing PD with content that is integrated, addressing multiple content areas, for teachers.

Table 13

Top Structures for Implementing K-12 Professional Development Predictions for a Model Focused on Integrated Content

Structures for Integrated Professional Development Delivery Models	Frequency
Hire staff developers and Teachers on Special Assignment	2
Collaborate across instructional departments	2
Provide differentiated content	1

The next data set analyzed the data for how districts need to structure themselves in order to implement the top rated predictions for PD content. With a frequency of 3, PD that has *Content Driven by District Initiatives and Priorities* should:

- Focus on content alignment to district initiatives and priorities. The alignment should be present and explicitly called out in each PD opportunity.

With a frequency of 2, the PD administrators reported the theme of:

- Communication with the school leaders is essential. District priorities should be revisited at leadership meetings throughout the year. There should be constant reminders of where the district is headed and the content of PD will support this journey.

The least recurring themes, at a frequency of 1, were:

- Content driven by district initiatives and priorities should be determined through strategic planning.

- Districts need to prioritize initiatives and be aware of the initiative overload teachers may feel. Prioritizing initiatives will allow district leaders to make informed decisions when planning PD content.

Table 14 displays the structures suggested by the panel of experts that may be implemented when designing PD driven by district initiatives and priorities.

Table 14

Top Structures for Implementing Professional Development Content Driven by District Initiatives and Priorities

Structures for Implementing PD Content Driven by District Initiatives and Priorities	Frequency
Content alignment to district initiatives and priorities	3
Communication with school leaders	2
Strategic planning	1
Prioritize district initiatives and understand initiative overload	1

Prediction 2 was identified during Round 2, and its structures for implementation were discovered during Round 3 are presented below.

With Prediction 2, PD content will be driven by *Data Analysis*, the panel of experts produced a theme that recurred three times for a response percentage of 33%. The prediction was:

- The needs for PD would be determined based on the data analysis. PD offerings would only be available if the data demonstrated a need in this content area.

The next most significant themes had a frequency rate of two and was mentioned 22% of the time. The themes were:

- Data must be progress monitored in order for PD content to reflect the current needs.
- District leadership must engage in conversations with the site leadership. The data will guide the topics of the conversations and in turn the PD offerings to teachers.
- Share the data with all stakeholders. It will be important for teachers to connect the PD to how it will improve student achievement in areas needing growth.

Table 15 displays the structures suggested by the panel of experts that may be implemented when using data analysis to drive PD content.

Table 15

Top Structures for Implementing K-12 Professional Development Content Driven by Data Analysis

Structures for Implementing Professional Development Content Driven by Data Analysis	Frequency
Determine the needs for professional development offerings based on data analysis	3
Data analysis through progress monitoring	2
Data driven conversations with leadership	2
Communicate what the data is showing to all stakeholders	2

During Round 2, the expert panel found *Emphasis on Skill* to be a predictor of what will drive PD content. During Round 3, the expert panel identified the top theme for PD content. The theme had a frequency of 3 or a 33% frequency rate. This theme was:

- Collect PD feedback from sites, reflect on the data, and pivot or continue, based on findings.

With a frequency of 2, the PD administrators reported the theme of:

- Implement universal screener to determine the skills that need development. Provide PD based on identified needs.

The least recurring themes, at a frequency of 1, were:

- Teachers need skills in data literacy, in order to determine the content students need to develop skills.
- There must be collaboration across instructional departments when creating PD content that supports skills.

Table 16 displays strategies suggested by the panel of experts that may be applied when designing the PD content that emphasizes instruction based on skill.

Table 16

Top Structures for Implementing K-12 Professional Development Predictions for Professional Development content with an Emphasis on Skill

Structures for Implementing Professional Development Content with an Emphasis on Skill	Frequency
Collect professional development feedback from sites and pivot as needed	3
Implement universal screeners to determine the skills that need development	2
Teachers need skills in data literacy	1
Cross-departmental collaboration on professional development content development	1

Again, during Round 2, the respondents made predictions that would help other district administrators lead PD implementation. During that round, that same panel overwhelmingly provided responses and identified each theme with a frequency of 1 or 11% of responses; those themes were:

- Provide teachers with opportunities for differentiated learning through model lessons and classroom observations.

- Identify direct connections between different content areas and the differentiated PD opportunities that would support the learning. Recognize that not all PD should be one-size-fits all. Teachers in different grade levels, content areas, and even school sites have unique needs.
- Provide clarity around what learning success looks like in the classroom. This will need to be differentiated for our different learners in one classroom, including English language learners, special education, and even foster and homeless students.
- After each PD provides a follow-up email with takeaways and addresses questions that came up during that particular session.

Table 17 displays structures suggested by the panel of experts that may be implemented when designing PD with differentiated content.

Table 17

Top Structures for Implementing Differentiated Content in K-12 Professional Development

Structures for Implementing Differentiated Content	Frequency
Opportunities for differentiation through model lessons and classroom observations	1
Identify direct connections between different classrooms and different professional development offerings	1
Provide clarity around what learning success in classroom looks like	1
After each professional development provide a follow-up email with take aways and address questions that came up during the professional development	1

The last structure identified during Round 2 was implementing *Content that is Universally Designed for all Learners.* During Round 3, the expert panel spoke about two themes, yielding a frequency of one and a response rate of 11%:

- Inclusivity should be present in all content. Every learner should be represented and have access to the standards. PD should support these goals.
- Student social-emotional learning should be addressed in PD. Teachers need access to information and strategies to support the well-being of their students.

Table 18 displays structures suggested by the panel of experts that may be implemented when designing PD content that is universally designed for all learners.

Table 18

Top Structures for Implementing K-12 Professional Development Content that is Universally Designed

Structures for Implementing Differentiated Content that is Universally Designed	Frequency
Inclusivity should be present in all content	1
Student social-emotional learning should be addressed in professional \ development content	1

Research Question 4

Research Question 4 asked: How do experts in professional development respond to the predictions made from Research Question 3 and what final suggestions do they make for implementation in 2026 and beyond?

Research Question 4 Analysis

The last question was an open-ended question that solicited final thoughts from the expert panel. The instrument asked: "*How do experts in professional development respond to the predictions made from Research Question 3 and what final suggestions do they make for implementation in 2026 and beyond?"* Nine expert PD administrators responded to the open-ended questions.

In analyzing the data from the responses to the predictions and suggestions made, the most frequent concept that surfaced from the expert panel, with a frequency of 3, was that of:

- The predictions from the expert panel are relevant to the needs in districts regarding K-12 PD.

With a frequency of 2, the experts reported the themes of:

- Acknowledge the gaps in the data and respond to the identified needs. Provide teachers with learning opportunities to support student achievement in these areas.
- Apply research-based practices to teaching adult learners. Engage adults by using andragogy strategies to teach adult learners.
- Collaborate with the teachers' union. Negotiate required PD that is built into the teachers' contract.
- Districts need to be consistent with implementing PD opportunities.
- Instruction in the classroom looks different now and so should PD. Teachers are no longer solely providing direct instruction and they are required to facilitate. Strategies used during PD should model this.
- PD should be offered outside of instructional time so that teachers can stay in the classroom. The more instructional time the teacher misses, the more chances students have for missing learning opportunities.
- Offer on-demand, asynchronous PD for all teachers. This allows teachers to learn based on self-identified needs.

- Analyze student data and create PD offerings based on the findings. PD should be data-driven and progress monitored.
- The COVID-19 pandemic has created unique challenges for administrators and teachers. PD offerings should consider these challenges and respond. For example, teachers need more PD on social-emotional learning and trauma-informed practices because of the trauma and loss students experienced during the pandemic.

The least recurring themes, at a frequency of 1, were:

- Alignment with district goals should be present in all PD.
- Be mindful of initiative overload and prioritize the PD offerings, ensuring they support district priorities.
- Emphasis on skill is important and PD should integrate strategies that support teachers with skills that can be applied across all content areas.
- Feedback from stakeholders is critical and it should drive the decision-making surrounding PD.
- Provide opportunities for teachers so that they can observe best practices and learn from other teachers on their campus by allowing them to participate in model lessons.

Table 19 displays each of the identified themes and their frequency count.

Table 19

Expert Responses to Predictions

Expert Responses to Predictions	Frequency
Predictions are relevant	3
Acknowledge the gaps in the data and respond	2
Apply research-based practices to teaching adult learners	2
Collaborate with the teachers union	2
Districts need to be consistent with implementation	2
Instruction in the classroom looks different now, so professional development should look different	2
Keep teachers in classrooms and offer professional development outside of instructional hours	2
On-demand, asynchronous professional development should be available	2
Professional development should be based on the needs of the students	2
Response to gaps in learning from the pandemic will pose ongoing challenges	2
Alignment with district goals	1
Be mindful of initiative overload	1
Emphasis on skill is important	1
Feedback from stakeholders is critical	1
Model lessons for teachers	1

Summary

Chapter IV offered the data and an analysis of this classical Delphi study. The purpose of this futures Delphi study was to determine what experts in PD predict the delivery and content of K-12 education will look like in 2026 and beyond, to determine how the experts in PD rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted PD in 2026 and beyond.

The subsequent research questions directed the study:

1. What do experts in professional development predict the delivery and content of K-12 education professional development will look like in 2026 and beyond?
2. How do experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond?
3. How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for delivery and content of professional development?
4. How do experts in professional development respond to the predictions made from Research Question 3, and what final suggestions do they make for implementation in 2026 and beyond?

Round 1 of the student was a qualitative round designed to petition as many examples of possible PD attributes for delivery and content. The sample size consisted of 17 expert district administrators; 14 of these experts responded to the question sent to them via electronic survey in Survey Monkey during Round 1. The information collected during Round 1 answered Research Question 1. The information was then structured into a chart, analyzed, and coded and then utilized to create the survey question for Round 2.

Round 2 of this Delphi study was also quantitative as the participants were asked to rank the aggregate responses from Round 1 on a five-point Likert scale ranging from *Not Likely at All* to *Very Likely*. The research question was split into two categories: predictions for PD delivery and predictions for PD content. The researcher identified 10 different PD delivery themes and 16 PD content areas that emerged from 14 experts'

responses. The mean for each ranking was then calculated and placed in a chart. Finally, the researcher sorted the mean for each prediction from high to low, finding the top five predictions for PD delivery and content and answering Research Question 2.

Round 3 was also a quantitative round meant to generate expert opinions from the participants on how to best structure PD to enact the predictions for PD content and delivery. The answers of nine respondents were organized into charts, analyzed, and coded. Then, the researchers placed the data into frequency charts for each prediction for PD delivery and content. In all, 17 themes for PD delivery and 18 themes for PD content were identified, again, separated into ten charts. The data collected during this round would serve K-12 school districts looking to improve their current structures for PD delivery to students and/or content.

Round 3 asked a final open-ended question, which allowed the experts to provide final thoughts and suggestions to the predictions made in Round 1 and Round 2 surveys. The answers of nine respondents were organized into charts, analyzed, coded, and placed into frequency charts. 15 themes emerged and 10 of the themes reiterated themes from previous rounds. This round answered Research Questions 3 and 4.

The purpose of Chapter IV was to present information surrounding the data related to this Delphi study on the content and delivery of PD in K-12 school districts. To finalize this study, Chapter V will present conclusions, implications, and recommendations for future research.

CHAPTER V: FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V provides a review of this classical Delphi study's purpose statement, research questions, methodology, and the study's population and sample. Furthermore, this chapter provides the researcher's findings, conclusions, implications for action, and recommendations for future research. The chapter concludes with the researcher's final remarks and reflections on the research study.

Purpose Statement

The purpose of this futures Delphi study was to determine what experts in professional development predict the delivery and content of K-12 education will look like in 2026 and beyond, to determine how the experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted professional development in 2026 and beyond.

Research Questions

The study was guided by the following research questions:

1. What do experts in professional development predict the delivery and content of K-12 education professional development will look like in 2026 and beyond?
2. How do experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond?
3. How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for delivery and content of professional development?

4. How do experts in professional development respond to the predictions made from Research Question 3 and what final suggestions do they make for implementation in 2026 and beyond?

Methodology

The methodology chosen for this study was the classical Delphi method. The study collected data from K-12 administrators regarding the delivery and content of PD in K-12 educational organizations. The Delphi methodology allowed the researcher to determine how K-12 educational organizations in California will need to structure themselves to deliver predicted PD in 2026 and beyond. Round 1 was to allow the panel of experts to make predictions about the content and the delivery of PD. After analysis, their responses were used to create the Round 2 survey instrument. The purpose of Round 2 was to rank, on a five-point Likert scale, the major themes discovered during Round 1. The experts were to identify the top five predictions for both, PD delivery and content.

There were 17 expert PD administrators identified to participate in the study. During Round 1, a total of 14 expert PD administrators responded (82%). The research question was split into two categories: Predictions for PD delivery and predictions for PD content. After qualitatively analyzing and coding the data, the researcher identified 10 different PD delivery themes and 16 PD content areas that emerged from the experts' responses. During Round 2, a total of 14 administrators responded (82%). Their responses allowed the researcher to determine the mean of each of the 26 previously identified predictions from Round 1. That information was used to identify the top five predictions for PD delivery and the top five predictions for PD content. Round 2 data allowed the researcher to create the Round 3 survey instrument. During Round 3, a total

of nine PD administrators responded to the survey (52%). In all, 17 themes for PD delivery and 18 themes for PD content were identified, again, separated into ten charts. Round 3 also asked a final open-ended question, which allowed the experts to provide final thoughts and suggestions to the predictions made in Round 1 and Round 2 surveys. The answers of nine respondents were organized into charts, analyzed, coded, and placed into frequency charts. Fifteen themes emerged and 10 of the themes reiterated themes from previous rounds.

Major Findings

This section of Chapter V presents the major findings of the study. These findings will be presented for the research questions identified in this chapter.

Research Questions

Research Question 1

The first research question associated with Delphi study was: *What do experts in professional development predict the delivery and content of K-12 Education professional development will look like in 2026 and beyond?*

Round 1. The major finding associated with this initial round was the 10 different PD delivery themes and 16 PD content areas identified by the expert panel. The top 10 PD delivery themes, ranked in order from the most frequent to the least frequent are:

1. Blended (synchronous & asynchronous).
2. Data-driven.
3. Focused on best practices for instruction.
4. Virtual delivery of PD.
5. Self-paced/asynchronous.

6. In-person.
7. Integrated.
8. Personalized.
9. Job embedded.
10. Coaching/modeling.

The top 16 PD content themes, ranked in order from the most frequent to the least frequent are:

1. Driven by district initiatives and priorities.
2. Data analysis.
3. Content-specific conceptual knowledge.
4. Differentiated content.
5. Universal Design for Learning (UDL).
6. Standards-based grading.
7. Social Emotional Learning (SEL).
8. Digital literacy.
9. Digital integration.
10. Ethnic studies.
11. Calibration of grading practices.
12. Project-based learning.
13. Emphasis on skill.
14. Digital citizenship.
15. Driven by social climate.
16. Driven by economic climate.

Research Question 2

The second research question of this classical Delphi study was: *How do experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond?*

Round 2. The major finding associated with this round was the mean calculation of each identified of the 26 qualifications from Round 1. The researcher then sorted the scores from high to low, subsequently identifying the top five predictions for professional development delivery and content. The top five predictions for PD delivery, ranked in order are:

1. Blended (synchronous and asynchronous).
2. Data-driven.
3. Focus on best practices.
4. Virtual PD.
5. Self-paced/asynchronous.

The top five predictions for PD content, ranked in order are:

1. Driven by district initiatives and priorities.
2. Data analysis.
3. Content-specific conceptual knowledge.
4. Differentiated content.
5. Universal Design for Learning (UDL).

Research Question 3

The third research question for this Classical Delphi student was: *How do experts in professional development predict K-12 school districts will need to structure their*

organizations to implement the top five rated predictions for delivery and content of professional development?

Research Question 4

The fourth, and final research question for this study was: *How do experts in professional development respond to the predictions made from Research Question 3, and what final suggestions do they make for implementation in 2026 and beyond?*

Round 3. The major finding to Research Question 3 was the collective predictions of the expert panel on the content and delivery of PD structures identified during Round 2 to help other districts provide exemplary PD in their districts. There were 17 themes for PD delivery, and 18 themes for PD content were identified, again, separated into 10 charts.

Prediction 1: Professional Development Delivery Models will Deliver Content Through a Blended (synchronous/asynchronous) Model. There were four recommendations from the expert panel that support the PD delivery model that will focus on blended learning opportunities. Ranked order from most frequently suggested to least frequently suggested, the four expert recommendations are:

1. Provide after-school learning opportunities, including short PDs after school or longer PD on Saturdays. After-school PD is convenient for teachers because they do not need to make lesson plans for substitute teachers. Teachers who need more time for learning would be able to attend the longer learning sessions offered on Saturdays.
2. Design learning opportunities that are short and concise. Providing PD after school would allow teachers to learn in short periods, and the information can

be condensed to be more concise. These PD opportunities are ideal for veteran teachers who have already experienced many cycles of initiatives in education and only need the essential information to add to their robust pedagogical toolkits.

3. Blended PD should be inclusive.
4. Blended PD should occur over two days.

Prediction 2: Professional Development Delivery Models will be Data-Driven. There were four recommendations from the expert panel that support the PD delivery model that will focus on best practices for instruction. Ranked order from most frequently suggested to least frequently suggested, the four expert recommendations are:

1. Use student data from standardized assessments to decide the target areas of student need. This data will determine the PD offerings.
2. Qualitative data should be gathered during instructional round walkthroughs within the district.
3. District leaders should observe other high performing districts.
4. Research based practices must be applied to effective PD. District leaders should choose the best practices that have the highest effect size on increasing student achievement.

Prediction 3: Professional Development Delivery Models will Focus on Best Practices for Instruction. There were three recommendations from the expert panel that support the PD delivery model that will focus on best practices for instruction. Ranked order from most frequently suggested to least frequently suggested, the three expert recommendations are:

1. Develop units of instruction for teachers that include research-based best practices.
2. Determine what content can be delivered asynchronously and which content must be taught synchronously.
3. Backwards map PD and apply best practices.

Prediction 4: Professional Development Delivery Models will Provide Self-Paced, Asynchronous Learning. There were three recommendations from the expert panel that support the PD delivery model that will provide self-paced, asynchronous learning. Ranked order from most frequently suggested to least frequently suggested, the three expert recommendations are:

1. Provided asynchronous, on-demand learning so that teachers can learn based on their self-identified needs.
2. Asynchronous learning can be job-embedded. Teachers would be able to access the learning during their prep period, or before and after instruction.
3. Districts need to use a learning management system to organize the content and collect data. The learning management system allows teachers to easily navigate the content. Administrators will be able to access data, such as course completion rates and accuracy.

Prediction 5: Professional Development Delivery Models will Deliver Professional Development with Integrated Content. There were three recommendations from the expert panel that support the PD delivery model that will provide PD with integrated content. Ranked order from most frequently suggested to least frequently suggested, the three expert recommendations are:

1. Hire staff developers and teachers on special assignment to focus on creating PD that addresses multiple content areas or district initiatives.
2. Provide opportunities for staff developers and teachers on special assignment to collaborate across instructional departments. This collaboration will be intentional and will allow for the creation of integrated content in one PD session.
3. Provided access to differentiated content in PD. PD that has a variety of content areas, and an integrated approach, should also be differentiated for teachers.

The expert panel made four predictions for PD content. The predictions and recommendations are:

Prediction 6: Professional Development Delivery Models will Have Content That is Driven by District Initiatives and Priorities. There were four recommendations from the expert panel that support the PD content that is driven by district initiatives and priorities. Listed in rank order from most frequently suggested to least frequently, the four expert recommendations are:

1. Focus on content alignment to district initiatives and priorities. The alignment should be present and explicitly called out in each PD opportunity.
2. Communication with the school leaders is essential. District priorities should be revisited at leadership meetings throughout the year. There should be constant reminders of where the district is headed and the content of PD will support this journey.

3. Content driven by district initiatives and priorities should be determined through strategic planning.
4. Districts need to prioritize initiatives and be aware of the initiative overload teachers may feel. Prioritizing initiatives will allow district leaders to make informed decisions when planning PD content.

Prediction 7: Professional Development Delivery Models that will Determine Content After Engaging in Data Analysis. There were four recommendations from the expert panel that support the PD content that is determined after data analysis. Listed in rank order from most frequently suggested to least frequently, the four expert recommendations are:

1. The needs for PD would be determined based on the data analysis. PD offerings would only be available if the data demonstrated a need in this content area.
2. Data must be progress monitored in order for PD content to reflect the current needs.
3. District leadership must engage in conversations with the site leadership. The data will guide the topics of the conversations and in turn the PD offerings to teachers.
4. Share the data with all stakeholders. It will be important for teachers to connect the PD to how it will improve student achievement in areas needing growth.

Prediction 8: Professional Development Content will Emphasize Skills. There were four recommendations from the expert panel that support PD content that emphasizes skills. Listed in rank order from most frequently suggested to least frequently, the four expert recommendations are:

1. Collect PD feedback from sites, reflect on the data, and pivot or continue, based on findings.
2. Implement a universal screener to determine the skills that need development. Provide PD based on identified needs.
3. Teachers need skills in data literacy in order to determine the content students need to develop skills.
4. There must be collaboration across instructional departments when creating PD content that supports skills.

Prediction 9: Professional Development Content will be Differentiated for all Learners. There were four recommendations from the expert panel that support differentiated PD content. Listed in rank order from most frequently suggested to least frequently, the four expert recommendations are:

1. Provide teachers with opportunities for differentiated learning through model lessons and classroom observations.
2. Identify direct connections between different content areas and the differentiated PD opportunities that would support the learning. Recognize that not all PD should be one-size-fits all. Teachers in different grade levels, content areas, and even school sites have unique needs.

3. Provide clarity around what learning success looks like in the classroom. This will need to be differentiated for our different learners in one classroom, including English language learners, special education, and even foster and homeless students.
4. After each PD provides a follow-up email with takeaways and addresses questions that came up during that particular session.

Prediction 10: Professional Development Content That is Universally Designed For All Learners. There were two recommendations from the expert panel that support PD content that is universally designed for all learners. Listed in rank order from most frequently suggested to least frequently, the two expert recommendations are:

1. Inclusivity should be present in all content. Every learner should be represented and have access to the standards. PD should support these goals.
2. Student social-emotional learning should be addressed in PD. Teachers need access to information and strategies to support the well-being of their students.

The major finding with respect to Research Question 4 was the collective responses and suggestions to the identified predictions. There were 15 collective themes that emerged and 10 of the themes reiterated themes from previous rounds. Ranked order from most frequently suggested to least frequently suggested, the responses are:

1. The predictions from the expert panel are relevant to the needs in districts regarding K-12 PD.
2. Acknowledge the gaps in the data and respond to the identified needs. Provide teachers with learning opportunities to support student achievement in these areas.

3. Apply research-based practices to teaching adult learners. Engage adults by using andragogy strategies to teach adult learners.
4. Collaborate with the teachers' union. Negotiate required PD that is built into the teachers' contract.
5. Districts need to be consistent with implementing PD opportunities.
6. Instruction in the classroom looks different now and so should PD. Teachers are no longer solely providing direct instruction and they are required to facilitate. Strategies used during PD should model this.
7. PD should be offered outside of instructional time so that teachers can stay in the classroom. The more instructional time the teacher misses, the more chances students have for missing learning opportunities.
8. Offer on-demand, asynchronous PD for all teachers. This allows teachers to learn based on self-identified needs.
9. Analyze student data and create PD offerings based on the findings. PD should be data-driven and progress monitored.
10. The COVID-19 pandemic has created unique challenges for administrators and teachers. PD offerings should consider these challenges and respond. For example, teachers need more PD on social-emotional learning and trauma-informed practices because of the trauma and loss students experienced during the COVID-19 pandemic.
11. Alignment with district goals should be present in all PD.
12. Be mindful of initiative overload and prioritize the PD offerings, ensuring they support district priorities.

13. Emphasis on skill is important and PD should integrate strategies that support teachers with skills that can be applied across all content areas.
14. Feedback from stakeholders is critical and it should drive the decision-making surrounding PD.
15. Provide opportunities for teachers so that they can observe best practices and learn from other teachers on their campus by allowing them to participate in model lessons.

Unexpected Findings

There were two unexpected findings associated with this classical Delphi study. First, the comparison of the most frequently mentioned PD delivery predictions in Round 1 to the ratings of the most important of the delivery predictions in Round 2 became an unexpected finding. According to the frequency of which they were mentioned, the highest rated predictions for PD delivery were identified in Round 1 based on frequency scores (f) were:

- In-person delivery of PD (f =7).
- Virtual delivery of PD (f = 5).
- Blended (synchronous & asynchronous) (f = 5).
- Self-paced/asynchronous (f = 4).
- PD will be data-driven (f =2).
- Integrated Model (f =1).
- Personalized PD (f =1).
- Job embedded (f =1).

- Coaching/modeling (f =1).
- Focus on best practices for instruction (f =1).

Only three of the most frequently identified predictions from the above list - *Blended (synchronous & asynchronous), Virtual deliver of PD and Self-paced/asynchronous* - were rated amongst the list of the most likely to be implemented into PD delivery models. This unexpected finding suggests that the factors that were most prevalent in Round 1 were not the only predictions for PD delivery models that were the most important because other predictions ranked higher in Round 2.

Second, two of the identified factors for PD content in Round 2 should all be integrated into all PD within districts. The two content areas - *Differentiated content and Universal design for learning (UDL)* - are elements of PD that will provide access to the content for all participants, no matter their experience or education levels. This finding was surprising because although these are strategies teachers use in the classroom daily, they are typically not strategies applied to PD.

Conclusions

The purpose of this futures Delphi study was to determine what experts in PD predict the delivery and content of K-12 education will look like in 2026 and beyond, to determine how the experts in PD rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted PD in 2026 and beyond.

Conclusion 1

After reviewing the study's findings, the first conclusion is the importance of providing differentiated learning opportunities for all teachers. PD content will need to include the knowledge and skills teachers must have to increase students' achievement. The content must meet teachers' diverse needs and support developing teachers' areas of interest to continue developing life-long learners. Furthermore, the PD delivery methods must vary to meet diverse learners' needs. Too often, district-provided PD is a one-size-fits-all experience. In order to meet the needs of all teachers, PD offered by the school district should be provided synchronously, asynchronously, and blended. Therefore, it is concluded that, in the future, PD must be tailored to the individual teachers' specific needs.

Conclusion 2

PD content and delivery should be driven by student data. The expert panel was clear, explaining student data analysis should be multi-faceted. The different measures will include predictive analytics, short-cycle assessments, and disaggregated data. As such, all of the student data will inform the PD opportunities offered to teachers. Therefore, it is concluded that, in the future, PD must be driven by specific identified needs based upon student data.

Conclusion 3

The final conclusion of this study is that when district leaders are designing PD opportunities, they should focus on best practices that have the highest effect size on increasing student achievement based on John Hattie's research. PD aims to build teacher efficacy, which is the teacher's belief in their ability to bring about desired outcomes in

student achievement. PD that will build teacher efficacy and increase teacher effectiveness will focus on best practices such as aligning instruction to the, standards, designing formative assessments, and providing meaningful student feedback. Therefore, it is concluded that, in the future, PD must be designed using proven models, such as Hattie's, that have a history of producing the highest effect on student achievement.

Implications for Action

Teacher PD plays an integral role in increasing student achievement. Multiple legislation acts, including ESEA and NCLB raised the standards and accountability, which caused administrators to analyze the PD offered to better meet the needs of educators and students. The rigor of the Common Core State Standards accentuates the call for teachers to be highly skilled and impact student outcomes. As such, this section provides two implications for action for districts to consider.

Implications for Action 1

The study focused on determining what experts in PD predict the delivery and content of K-12 education will look like in 2026 and beyond and the likelihood of successful implementation. The findings and conclusions of this study indicated that there are many attributes that already exist in the delivery and content districts offered for PD. Many districts currently offer PD on content-specific knowledge or standards-based grading; however, typically, these offerings are one-size-fits-all. Therefore, districts must design differentiated professional learning opportunities and creativity leverage technology to help support successful implementation. The experts in the study indicated that blended learning, which includes synchronous and asynchronous learning opportunities, would be an emerging delivery method that allows easier access to

differentiated content. That being said, districts must explore learning management systems that could provide a platform that is easy to navigate for the teacher and student. Districts are missing a significant opportunity to impact desired learning outcomes for teachers.

Implications for Action 2

The second implication for action to be presented in this section is that a district needs to establish processes and structures to collect and analyze data pertaining to PD. Not only should student data drive decision-making, PD feedback data should also be considered when designing the delivery and content of learning opportunities. Districts need to create one standard PD feedback form that is aligned to district priorities and require the feedback form is completed after each PD session. Also, districts need to establish short-term assessment cycles for analyzing the PD feedback data. PD facilitators should make changes to content and delivery based on the data. Finally, districts should look for trends for improvement in student achievement that correlates to the target PD offered. Continual data monitoring will determine what PD is needed and how the PD will support student outcomes, thus improving the overall effectiveness of district PD provided.

Implications for Action 3

The final implication for action to be presented in this section is that each district must have one person responsible for PD to ensure focus and direction for PD are consistent. Very few districts in California have one central person responsible for all PD in the district. Typically, districts have several people responsible for different content areas of PD, which can allow for inconsistency and create barriers to providing high-

quality PD to all teachers. As such, employing a Director of Professional Development would allow for the implementation of a cohesive PD plan, which would increase the quality of the PD provided for teachers.

Recommendations for Further Research

The following areas for further research denote the findings and limitations associated with this classical Delphi study on PD. K-12 PD exists in every school district and can benefit from additional research. The following list represents recommendations for future research:

- Replicate this study in different school districts from different counties or states. This study was limited to 10 school districts: Apple Valley, Alvord, Corona-Norco, Hemet, Lawndale, Moreno-Valley, Orange, Palo-Alto, Riverside, and Upland, in California.
- Recreate this Delphi study but focus on the staff development specialists, who generally design and deliver PD to teachers.
- Recreate this study but use site administrators rather than district administrators.
- Replicate this Delphi study with only representation from academically high-performing districts.
- A similar study that identifies any differences between elementary and secondary content and delivery structures.
- A study that analyzes district office structures for implementation of PD.
- Conduct a study to determine whether there would be a difference in findings from classroom teachers.

- Conduct a study with educational consultants who provide PD for school districts.
- Conduct a study to determine whether blended or asynchronous professional learning has a greater impact than traditional in-person PD on student achievement.

Concluding Remarks and Reflections

Educational reform has consistently acknowledged the need for ongoing professional learning, but the policies have never specifically identified how to provide effective PD. As such, each school district in California determines how to structure PD opportunities differently, spending the funds in various ways, which is a difficult task for any district. As far as I could determine, districts have an idea of some of the elements that contribute to high-quality PD, but they do not strategically implement these structures for PD content and delivery. I contemplate if these predictions were more open-minded to innovative delivery methods, such as blended learning, virtual or asynchronous learning, because of the COVID-19 pandemic and the need to dramatically shift teaching and learning. This study has opened my eyes to the slow evolution of PD and revealed there is still so much more work to be done.

The major findings of this study will allow for districts to create strategic plans for providing high-quality PD to all teachers. Meeting the needs of all teachers is a difficult task with many different challenges that arise along the way. The predictions for the content and delivery of PD found over the course of this study are meant to help district leaders create a formal plan for providing differentiated, accessible PD that helps teachers provide high-quality instruction where all students reach their academic goals.

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APPENDICES

APPENDIX A

Synthesis Matrix

Source	Methodology	Theoretical Frameworks	Historical Perspecitves	The Impact of Federal Reforms on Professional Development Policy	Professional Development Effective Practices	Professional Development Delivery Models	Barriers to Effective Professional Development	21st Century Learning
(Al-Shammari et al., 2019)		X						
(Anderson, 2006)					X			
(Archambault et al., 2010)					X	X		X
(Bashir et al., 2008)	X							
(Bastin, 2003)					X			
(Beach, 2012)					X	X		X
(Blackburn, 2020)					X	X		
(Blank et al., 2009)							X	
(Carbaugh et al., 2015)								X
(Chism, 2000)		X			X	X		
(Corcoran, 1995)				X	X	X	X	X
(CDE, n.d.)		X			X	X		
(CSTP, 2009)		X			X			
(CTC, 2009)		X			X			X
(Dalkey & Helmer, 1963)	X							
(Darling-Hammond & McLaughlin, 1995)					X	X	X	X
(Dede, 2006)					X	X		X
(Department of Education, 1983)			X	X				
(Department of Education, 2006)			X	X				
(Department of Education, 2008)				X		X		
(Disch, 2020)		X	X		X	X		
(DuFour, 2004)					X		X	
(DuFour & Eaker, 2009)					X	X		
(Elmore, 2002)					X	X		
(Farr & Saltmarsh, 2018)					X	X		
(Fischer, 1978)	X							
(Francois van, 2017)					X	X		
(Frerichs et al., 2018)		X				X	X	
(Fullan, 2010)					X	X		

Source	Methodology	Theoretical Frameworks	Historical Perspecitves	The Impact of Federal Reforms on Professional Development Policy	Professional Development Effective Practices	Professional Development Delivery Models	Barriers to Effective Professional Development	21st Century Learning
(Fullan, 2016)							X	
(Golafshani, 2003)	X							
(Graham et al., 2020)							X	
(Grant et al., 2001)		X	X	X	X	X		
(Grosz, 2004)			X	X				
(Guskey, 1994)					X		X	
(Guskey, 2002)					X			
(Guskey, 2009)					X	X	X	
(Gusky & Yoon, 2009)					X	X	X	
(Hargreaves, 1995)					X	X		
(Hattie, 2012)					X			
(Haug & Mork, 2021)				X			X	X
(Hightower, 2002)					X	X		
(Hirsh, 2007)		X			X			
(Holme, 2019)					X	X		
(Hunzicker, 2011)		X					X	
(Jimenez, 2020)								X
(John, 2014)					X	X	X	
(Klein and Rice, 2014)								X
(Knight, 2019)					X	X		
(Knowles et al., 2005)		X						
(Krutka et al., 2017)						X	X	X
(Les, 2013)					X	X		X
(Lin, 2013)				X				
(Luke & McArdle, 2009)					X			
(Lutrick & Szabo, 2012)		X			X			
(McCarthy & Riley, 2000)					X		X	
(McKnight, 2018)				X			X	
(McMillan & Schumacher, 2010)	X							
(Miles & Guiney, 2020)					X	X	X	

Source	Methodology	Theoretical Frameworks	Hstorical Perspecitves	The Impact of Federal Reforms on Professional Development Policy	Professional Development Effective Practices	Professional Development Delivery Models	Barriers to Effective Professional Development	21st Century Learning
(Nishimura, 2014)						X		
(NCTAF, 1996)					X	X		
(Neil, 1986)			X			X		
(Novota, 2003)					X	X		X
(Okere, 2011)				X				
(Pharis et al., 2019)						X		
(Pokhrei & Behera, 2016)					X	X		
(Potchka, 2009)					X			
(Reyna, 2019)				X				
(Rodman, 2018)					X	X		
(Roth & Lee, 2007)		X						
(Sekayi & Kennedy, 2017)	X							
(Sharratt & Fullan, 2009)					X			
(Sitlington & Coetzer, 2015)	X							
(Skinner, 1968)		X						
(Smith, 2016)					X			
(Southerland et al., 2016)		X						
(Svendsen, 2020)		X			X	X		
(Taherdoost, 2016)	X							
(Tate, 2012)						X	X	X
(Tong & Razniak, 2017)		X			X	X	X	X
(Tucker, 2006)					X			
(Vadeboncoeur, 2005)								X
(Vygotsky, 1978)		X						
(Weidenfeld & Bashevis, 2013)					X	X		
(Whittaker et al.,2001)		X						
(World Economic Forum, 2020)								X
(Yoon et al., 2007)					X	X	X	
(Youself, 2007)	X							
(Zambak et al., 2017)					X	X		

APPENDIX B

Invitation to Participate

STUDY: A Delphi Study of the delivery and content of K-12 educational professional development and the likelihood of the predictions being enacted by 2026.

Date

Dear Prospective Study Participant,

You are invited to participate in a research study to identify the delivery and content of K-12 educational professional development and the likelihood of the predictions being enacted by 2026. The leading investigator for this study is Christalle Hart, Doctoral Candidate at the University of Massachusetts, Global (UMass Global) Doctor of Education in Organizational Leadership program. You were selected to participate in this study because of your expertise and experience in K-12 education and professional development.

PURPOSE: The purpose of this futures Delphi study is to determine what experts in professional development predict the delivery and content of K-12 education will look like in 2026 and beyond, to determine how the experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted professional development in 2026 and beyond.

PROCEDURES: If you decide to participate in this study, you will receive three rounds of electronic surveys via Survey Monkey, with each survey taking approximately 15 to 20 minutes to complete. The Round 1 survey will contain an open-ended question. The Round 2 survey will utilize a Likert scale survey where participants will rate the recommendations identified from the first-round survey. Finally, the Round 3 survey will contain open-ended questions about the recommendations that were rated highest.

RISKS, INCONVENIENCES, AND DISCOMFORTS: This study involves no more than minimal risk, and no known harms or discomforts are associated with this study. There is no cost to you for participating, and you will not be compensated for your participation. The survey will be completed anonymously, and the researcher will not know your identity.

POTENTIAL BENEFITS: Your participation in this study does not yield any direct benefits to you. However, analysis of the data generated from your participation in this study may contribute to the design and delivery of professional development in K-12 education. The information from this study is intended to inform researchers and educational leaders. Additionally, the findings from this study will be made available to all participants.

ANONYMITY: Records of information that you provide for the research study, and any personal information you provide, will not be linked in any way. Identifying you as the person who provided any specific information for the study will not be possible. Because you will complete the survey anonymously, your name or other identifying information will not be used in reports or publications. Only the researcher may access study records to protect participants' safety and welfare.

If you have any questions, comments, or concerns regarding this study, contact me at [redacted] or by email at [redacted]. You can also contact the study's Dissertation Chairperson, Dr. Phil Pendley, by email at pendley@umassglobal.edu. If you have any further questions or concerns about your rights as a research subject, please contact UMass Global's Office of Institutional Research, UMass Global, 16355 Laguna Canyon Road, Irvine, CA 92618. BUIRB@umassglobal.edu.

Respectfully,

Christalle A. Hart
Doctoral Candidate, UMass Global

APPENDIX C

Demographic Survey

RESEARCH STUDY TITLE: Designing and Delivering K-12 Education Professional Development: A Delphi Study

Lead Researcher:
Christalle A. Hart, Doctoral Candidate
UMass Global
Department of Education
[redacted], chart3@mail.umassglobal.edu

Faculty Sponsor:
Dr. Philip Pendley
UMass Global
Department of Education
951-712-2065, pendley@umassglobal.edu

- You are invited to participate in a research study to identify the delivery and content of K-12 educational professional development and the likelihood of the predictions being enacted by 2026. The main investigator for this study is Christalle A. Hart, Doctoral Candidate at the University of Massachusetts, Global (UMass Global) Doctor of Education in Organizational Leadership program. You were selected to participate in this study because of your expertise and experience in K-12 education and professional development.

- The purpose of this futures Delphi study was to determine what experts in professional development predict the delivery and content of K-12 education will look like in 2026 and beyond, to determine how the experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted professional development in 2026 and beyond.

- If you decide to participate in this study, you will receive three rounds of electronic surveys via Survey Monkey, with each survey taking approximately 15 to 20 minutes to complete. The Round 1 survey will contain an open-ended question. The Round 2 survey will utilize a Likert scale survey where participants will rate the recommendations that were identified from the first-round survey. Finally, the Round 3 survey will contain open-ended questions about the recommendations that were rated highest.

- This study involves no more than minimal risk, and no known harms or discomforts are associated with this study. There is no cost to you for participating, and you will not be compensated for your participation. The survey will be completed anonymously, and the researcher will not know your identity.

- Your participation in this study does not yield any direct benefits to you. However, analysis of the data generated from your participation in this study may contribute to the design and delivery of professional development in K-12 education. Therefore, the information from this study is intended to inform researchers and educational leaders. Additionally, the findings from this study will be made available to all participants.

- Records of information that you provide for the research study, and any personal information you provide, will not be linked in any way. Identifying you as the person who provided any specific information for the study will not be possible. Because you will complete the survey anonymously, your name or other identifying information will not be used in reports or publications. Only the researcher may access study records to protect participants' safety and welfare.

- If you have any questions, comments, or concerns regarding this study, contact me at [redacted] or by email at [redacted]. You can also contact the study's Dissertation Chairperson, Dr. Phil Pendley, by email at pendley@umassglobal.edu. If you have any further questions or concerns about your rights as a research subject, please contact UMass Global's Office of Institutional Research, UMass Global, 16355 Laguna Canyon Road, Irvine, CA 92618. BUIRB@umassglobal.edu.

Do you agree to participate in this study? ( ) Yes ( ) No

Experience / Demographic Information

1. Are you currently a K-12 district level administrator responsible, solely or in part, for leading teams that design and deliver professional development?
    a. ( ) Yes ( ) No

2. Please indicate your years of experience as a K-12 district level administrator.
    a. ( ) Less than one year
    b. ( ) At least one year, but less than two years
    c. ( ) At least two years, but less than five years
    d. ( ) Five years or more

3. Please indicate the size of your school district.
    a. ( ) 5,000 to 9,999 students
    b. ( ) 10,000 to 19,999 students
    c. ( ) 20,000 to 29,999 students
    d. ( ) More than 30,000 students

4. Please indicate the County in California where your school district is located.
    a. ( ) Los Angeles County
    b. ( ) Orange County
    c. ( ) Riverside County
    d. ( ) San Bernardino County
    e. ( ) San Diego County

APPENDIX D

Informed Consent and Confidentiality

RESEARCH STUDY TITLE: Designing and Delivering K-12 Education Professional Development: A Delphi Study

UMASS GLOBAL
16355 LAGUNA CANYON ROAD
IRVINE, CA 92618

RESPONSIBLE INVESTIGATOR: Christalle A. Hart, Doctoral Candidate

TITLE OF CONSENT FORM: Consent to Participate in Research

PURPOSE OF THE STUDY: This study is being conducted for a dissertation for the Doctor of Education in Organizational Leadership program at the University of Massachusetts Global (UMass Global). The purpose of this futures Delphi study was to determine what experts in professional development predict the delivery and content of K-12 Education will look like in 2026 and beyond, to determine how the experts in professional development rate the likelihood of the predictions made in Research Question 1 being enacted by 2026 and beyond, and identify how the experts predict K-12 educational organizations will need to structure themselves to deliver predicted professional development in 2026 and beyond.

PROCEDURES: In participating in this research study, I agree to either partake in three rounds of electronic surveys via Survey Monkey. The first-round survey will contain open-ended questions. The second round will utilize a Likert scale survey where participants will rate the recommendations identified from the first-round survey. Round 3 will contain open-ended questions about each of the recommendations rated highest.

I understand that:

A. No known major risks or discomforts are associated with this research.

B. Your participation in this study does not yield any direct benefits to you. However, analysis of the data generated from your participation in this study may contribute to the design and delivery of professional development in K-12 education. Therefore, the information from this study is intended to inform researchers and educational leaders. Additionally, the findings from this study will be made available to all participants.

   Christalle A. Hart, UMass Global Doctoral Candidate, will answer any questions concerning my participation in this study. I understand that Mrs. Hart

may be contacted by phone at [redacted] or by email at [redacted]. The dissertation chairperson may also answer questions: Dr. Phil Pendley at pendley@umassglobal.edu.

C. I understand that I may refuse to participate or withdraw from this study without any negative consequences. I also understand that the investigator may stop the study at any time.

D. The study will utilize electronic surveys. All surveys and research data collected will be stored securely and confidentially on a password-protected server.

E. No information that identifies me will be released without my separate consent, and all identifiable information will be protected to the limits allowed by law. If the study design or the use of the data is to be changed, I will be informed, and my consent re- obtained. If I have any questions, comments, or concerns about the study or the informed consent process, I may contact: UMass Global's Office of Institutional Research, UMass Global, 16355 Laguna Canyon Road, Irvine, CA 92618. BUIRB@umassglobal.edu.

I acknowledge that I have received a copy of this form and the Research Participant's Bill of Rights.

I have read the above and understand it and hereby voluntarily consent to the procedure(s) set forth.

_____ _____

Signature of Participant or Responsible Party Date

_____ _____

Signature of Principal Investigator Date

APPENDIX E

Participant Bill of Rights

UMASS GLOBAL
A nonprofit affiliate of the University of Massachusetts

UMASS GLOBAL INSTITUTIONAL REVIEW BOARD

Research Participant's Bill of Rights

Any person who is requested to consent to participate as a subject in an experiment, or who is requested to consent on behalf of another, has the following rights:

1. To be told what the study is attempting to discover.

2. To be told what will happen in the study and whether any of the procedures, drugs or devices are different from what would be used in standard practice.

3. To be told about the risks, side effects or discomforts of the things that may happen to him/her.

4. To be told if he/she can expect any benefit from participating and, if so, what the benefits might be.

5. To be told what other choices he/she has and how they may be better or worse than being in the study.

6. To be allowed to ask any questions concerning the study both before agreeing to be involved and during the course of the study.

7. To be told what sort of medical treatment is available if any complications arise.

8. To refuse to participate at all before or after the study is started without any adverse effects.

9. To receive a copy of the signed and dated consent form.

10. To be free of pressures when considering whether he/she wishes to agree to be in the study.

If you have questions regarding a research study at any time at any time, you should ask the researchers to answer them. You also may contact the UMass Global Institutional Review Board, which is concerned with the protection of volunteers in research projects. The UMass Global Institutional Review Board may be contacted either by telephoning the Office of Academic Affairs at (949) 341-9937 or by writing to the Vice Chancellor of Academic Affairs, UMASS GLOBAL, 16355 Laguna Canyon Road, Irvine, CA, 92618.

APPENDIX F

Survey Instrument Round 1

RESEARCH STUDY TITLE: Designing and Delivering K-12 Education Professional Development: A Delphi Study

What do experts in professional development predict the delivery and content of K-12 Education professional development will look like in 2026 and beyond?

APPENDIX G

Survey Instrument Round 2

RESEARCH STUDY TITLE: Designing and Delivering K-12 Education Professional Development: A Delphi Study.

The following is an example survey. The actual questions will be based on the responses provided by the participants in Round 1. Round 2 will include one question with a Likert rating and one open-ended question.

Based upon the first survey, the qualifications identified below as elements for delivery and content of K-12 education professional development.

Please rate the likelihood of the predictions made in Research Question 1 being enacted as it pertains to delivery and content of K-12 education professional development.

1. How do experts in professional development rate the likelihood of the predictions made in RQ1 being enacted by 2026 and beyond? 0

	Very Likely	Moderately Likely	Likely Important	Lowly Likely	Not at all Likely
Prediction 1	◯	◯	◯	◯	◯
Prediction 2	◯	◯	◯	◯	◯
Prediction 3	◯	◯	◯	◯	◯
Prediction 4	◯	◯	◯	◯	◯
Prediction 5	◯	◯	◯	◯	◯
Prediction 6	◯	◯	◯	◯	◯
Prediction 7	◯	◯	◯	◯	◯
Prediction 8	◯	◯	◯	◯	◯
Prediction 9	◯	◯	◯	◯	◯
Prediction 10	◯	◯	◯	◯	◯
Prediction 11	◯	◯	◯	◯	◯
Prediction 12	◯	◯	◯	◯	◯
Prediction 13	◯	◯	◯	◯	◯
Prediction 14	◯	◯	◯	◯	◯
Prediction 15	◯	◯	◯	◯	◯

How do experts in professional development predict K-12 school districts will need to structure their organizations to implement the top five rated predictions for delivery and content of professional development?

APPENDIX H

Survey Instrument Round 3

RESEARCH STUDY TITLE: Designing and Delivering K-12 Education Professional Development: A Delphi Study.

The survey instrument used in Round 3 will contain an open-ended question for each of the highest-rated structures of professional development delivery and content revealed during Round 2.

The question will be: *How do experts in professional development respond to the predictions made from RQ3 and what final suggestions do they make for implementation in 2026 and beyond?*

APPENDIX I

UMass Global IRB Approval

IRB Application Approved As Submitted: Christalle Hart Inbox ×

Institutional Review Board <my@umassglobal.edu> Fri, Sep 9, 7:48 AM

to me, pendley, irb

Dear Christalle Hart,

Congratulations, your IRB application to conduct research has been approved by the UMass Global Institutional Review Board. This approval grants permission for you to proceed with data collection for your research. Please keep this email for your records, as it will need to be included in your research appendix.

If any issues should arise that are pertinent to your IRB approval, please contact the IRB immediately at IRB@umassglobal.edu. If you need to modify your IRB application for any reason, please fill out the "Application Modification Form" before proceeding with your research. The Modification form can be found at the following link: https://irb.umassglobal.edu/Applications/Modification.pdf.

Best wishes for a successful completion of your study.

Thank you,
Doug DeVore, Ed.D.
Professor
Organizational Leadership
IRB Chair
ddevore@umassglobal.edu
www.umassglobal.edu

APPENDIX J

Collaborative Institutional Training Initiative-Certificate of Completion

CITI PROGRAM

Completion Date 15-May-2021
Expiration Date N/A
Record ID 42516501

This is to certify that:

Christalle Hart

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Human Subjects Research
(Curriculum Group)
Social-Behavioral-Educational Researchers
(Course Learner Group)
1 - Basic
(Stage)

Under requirements set by:

University of Massachusetts Global

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w2425a162-df6b-460e-958d-525767c7dce8-42516501