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Effective Instruction in the Blended Learning Classroom

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LOYOLA MARYMOUNT UNIVERSITY

Effective Instruction in the Blended Learning Classroom

by

Stepan Mekhitarian

A dissertation presented to the Faculty of the School of Education,

Loyola Marymount University,

in partial satisfaction of the requirements for the degree

Doctor of Education

2016

Effective Instruction in the Blended Learning Classroom

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by

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This dissertation written by Stepan Mekhitarian, under the direction of the Dissertation Committee, is approved and accepted by all committee members, in partial fulfillment of requirements for the degree of Doctor of Education.

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Date

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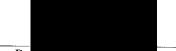Effective Instruction in the Blended Learning Classroom

by

Stepan Mekhitarian

With the growing prevalence of blended learning in classrooms across the country, the need for teacher training for effective blended learning implementation is critical. This research study focuses on the skills and training required to implement blended learning effectively. Observations of classroom instruction and professional development, surveys, and interviews with teachers and administrators added to an extensive literature review to inform training recommendations for school sites and teacher education programs. The results show that professional development is effective when it includes peer observations and collaboration, modeling of best practices, and the integration of blended learning programs with instructional practice. Individualized differentiation, constructivist learning opportunities, and strategic grouping are also key elements of effective blended learning implementation. With carefully planned professional development, teachers can use blended learning in the classroom to engage students and offer rigorous learning experiences that prepare students to be critical thinkers in school and beyond.

CHAPTER ONE

BACKGROUND OF STUDY

Topic of Interest

One of the greatest challenges for school leaders is supporting teachers in adopting a growth mindset and evolving pedagogy to address changes in the world around them. Effective teachers do far more than manage behavior in classrooms: They differentiate instruction, assess mastery, inspire students and teach them to self-monitor and take ownership of their learning so they can become lifelong learners. In recent years, the introduction of blended learning—an education program in which a student learns partly through online delivery of content and instruction with partial control over time, place, path, or pace (Knewton Blended Learning Infographic, 2014)—created new opportunities to enhance these practices through differentiated experiences and the incorporation of technology.

Research has suggested that blended learning is a highly effective approach to instruction. Researchers Ling, Ariffin, Rahman, and Lai (2010) have found that student satisfaction with the blended learning approach is very high. Blended learning can be a powerful tool to help students understand instructional content and apply it to real-world challenges that are critical for 21st-century learning (Beckem & Watkins, 2012). Research has also shown that blended learning is more engaging and leads to better student understanding than classroom instruction alone. Beckem and Watkins concluded that blended learning leads to effective and engaging instruction, explaining, "The learner's experience [is] meaningful, engaging, and transferable to the real world" (p. 62). Furthermore, Michael Pregot (2013) described how students who took part in a blended learning program demonstrated greater depth of knowledge.

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While the impact of blended learning on student achievement is promising, teachers leading this work require effective training to be successful. My focus is on identifying the knowledge and skills teachers need in order to provide effective instruction in a blended learning environment.

As I examined the foundations of blended learning, I was attracted to its approach regarding differentiation, constructivism, student ownership, and educational technology. I heard many educators over the years champion the benefits of these ideas without knowing how they could realistically be implemented in a classroom with fidelity. Blended learning changed that. It presented a way for teachers to differentiate for each student while offering opportunities for students to discover and make meaning of the content. I was working with teachers to incorporate elements of blended learning—such as student-led screencasts with online peer feedback—into instruction as an administrator when an offer to join a school that planned to implement blended learning school-wide was presented. I quickly seized the opportunity. My interest in this research emerged from my experience as administrator of a secondary school utilizing blended learning and the challenges we faced while searching for teachers trained in implementing blended learning effectively.

As the instructional leader of the public school, I quickly realized that hiring new teachers was challenging because very few candidates had prior training with blended learning. Our candidates had no experience with blended learning in previous teaching positions or in their teacher training programs. They did not know how to differentiate instruction for different groups, how to develop constructivist projects that required research and collaboration, or how to use data in real time to identify student strengths and areas of growth. It was challenging to contemplate how the dramatic potential of blended learning was limited by a dearth of training

opportunities for teachers. Furthermore, I did not have extensive blended learning teaching experience and wondered how applicable my instructional leadership would be for my teachers. I was also concerned about incorporating blended learning into my classroom observation feedback to instructors. To address this growing need, I decided to focus on identifying the knowledge and skills teachers need in order to be provide effective instruction in a blended learning environment. Although a great deal of literature exists on the effectiveness of blended learning as an approach to increase student learning, the pedagogical strategies and practices that impact effectiveness have not been explained in detail (Pregot, 2013). This notion was further supported in my experiences at the school site, making it more essential to research the skills and strategies teachers need to implement blended learning effectively.

The focus on blended learning is important from a social justice perspective because of the potential educational technology has for addressing learning gaps that students from under-resourced schools often experience as compared to peers from more affluent schools. Prominent private schools have begun to utilize this approach, giving their students opportunities to engage with technology and to become self-starters who take ownership of their learning; urban schools must give students from all socioeconomic backgrounds the same opportunities (Herold, 2014). The constructivist learning opportunities and flexibility in learning options offered in affluent schools contrast sharply with the structured timelines and extensive direct instruction that characterize many schools in low socioeconomic areas. This stark difference in approach can dramatically widen the achievement gap as students in affluent areas learn to become critical thinkers and leaders while students in low socioeconomic areas develop the tools needed to work in low-skill jobs. If individualized instruction and constructivist learning go underutilized in

urban schools, the achievement gap between students from affluent communities and students from low socioeconomic neighborhoods will further widen.

Researchers Picciano, Seaman, Shea, and Swan (2012) have also cited an increased use in blended learning, stating, "The data collected in our 2007 and 2009 studies indicate that online learning is spreading throughout K-12 education and specifically in secondary education" (p. 128). As its use grows, blended learning has the potential to address several challenges in classrooms, including class size, student time on task, and limited individualized learning experiences. This can have a dramatic impact on equity in education as more students from across the world gain access to a wide variety of educational resources and opportunities. Students from various schools can collaborate, engage in dialogue, and access similar tools. They can connect remotely to resources not immediately available in their neighborhoods and be exposed to different experiences and perspectives to further extend constructivist learning opportunities.

As technology and the self-starting approach ramp up across schools and companies, students need access to them in order not to be left behind (Cronjé, 2010). All students must have access to the latest innovations in learning so they can obtain 21st-century skills and compete with their more affluent counterparts. Providing access to technology is not enough; teachers must be well-prepared to utilize technology to enhance learning experiences and offer effective instruction. The 2012–15 LAUSD Education Technology Plan, which aimed to distribute iPads to every student, is one prominent attempt to increase blended learning exposure (Los Angeles Unified School District Education Technology Plan, 2012). Such plans, however, have been rife with controversy over implementation and a lack of training and support. Los

Angeles's Alliance College-Ready Charter Schools' initiation of the Blended Learning for Alliance School Transformation (BLAST) program signals another attempt to popularize blended learning because of its effectiveness, but professional development for the program is in its infancy. The trend of technology use in classrooms continues to increase, making the need for effective blended learning implementation all the more critical.

The Problems

Arguably the greatest challenge in using any resource is training educators to use it effectively. As the blended learning approach is relatively new, professional development to utilize it is still being developed and is in high demand. Picciano et al.'s (2012) research suggesting increased utilization of blended learning heightens the need for effective professional development. They explained:

> In a 2007 national study of school district administrators, the number of students enrolled in at least one online or blended courses in American K-12 schools was estimated at 700,000. In a 2009 follow-up study, the estimate was 1,030,000. These enrollments are the result of students taking either online or blended courses in three quarters of all the school districts (74.8%) in the United States. Approximately another 15% of the districts were planning to introduce them over the next 3 years. (p. 128)

This tremendous rate of growth signals an urgent need for training and supports to ensure effective implementation in the classroom. There is little evidence that robust training programs are being developed at the same rate, posing a serious concern about the potential to improve lackluster blended learning instruction across the country.

The growing number of schools and districts implementing blended learning has led to national conferences to bring educators and researchers together and an entire industry of educational software companies developing blended learning programs varying in accessibility, engaging interface, and offering rigorous content. In addition to understanding how to implement blended learning effectively, teachers must be able to navigate the programs to find the best offerings for students and to become adept at software effectiveness analysis to select programs that will complement—not hinder—rigorous instruction. Researchers have praised the pedagogical approach blended learning subscribes to but warn against choosing blended learning programs recklessly as some are of poor quality and may impede student learning (Calderon, Ginsberg, & Ciabocchi, 2012). The lack of established professional development to effectively implement blended learning instruction and to select resources that serve students' needs is a critical challenge that must be addressed if this approach is to be successful.

Purpose

Blended learning attempts to revolutionize the traditional relationship between teacher, students, and content by shifting the roles of all three in the classroom. Students develop meaning from the content through carefully facilitated, constructivist learning experiences with teacher support—as compared to the more traditional content knowledge sharing from teacher to student. This shift in classroom instruction potentially requires a new pedagogical skillset, leading to the need for this study. The purpose of this qualitative research study was to delineate the knowledge and skills needed to effectively implement blended learning. With this study, I identified effective practices and pitfalls in order to design improved school site professional development and to detect possible implications for teacher education programs. Based on the

research outcome, recommendations will be made on how to develop these skills for teachers who are utilizing the blended learning model. These opportunities can be offered on-site through professional development or through teacher education programs to ensure effective instruction in every classroom. The recommendations are particularly critical for teacher education programs to prepare new teachers for effectively implementing blended learning in the classroom, allowing on-site professional development to offer continual growth instead of remediation. In either case, teachers utilizing the blended learning model will be better-equipped to use the approach and to ensure student success through high levels of differentiation and data-based student learning assessment. It is important to note that blended learning is not the end result or goal of effective instruction but rather an approach to help students understand content through a constructivist approach and, at a deeper level, through increased levels of individualized differentiation and a self-starting model. Student mastery of course content and the development of critical thinking skills should always remain the focus of any instructional plan.

Research Questions

This research study sought to identify critical blended learning instructor skills and strategies that would improve instruction with the hope that the findings will lead to the development of effective training at school sites and teacher education programs to ensure all students receive an engaging and differentiated learning experience. Therefore, my first research question was: What knowledge and skills do teachers need to provide effective instruction in blended learning classrooms? The second research question investigated next steps once the skills were identified. Specifically, what type of training is needed for teachers to develop these

skills? The first question is the primary focus of the research, while the second seeks to offer recommendations. The answers to the questions can impact how teacher training is developed, implemented, and assessed.

Training for effective blended learning implementation appears to be limited but aligned with the increasing rate of blended learning implementation. Before we can determine what advances in training are necessary, we must identify the skills blended learning teachers need to be successful. At my school site, we provided training for blended learning—reviewing and selecting effective programs, analyzing student data, developing and implementing academic interventions, utilizing effective classroom management, and collaborating with project-based learning in other courses to develop interdisciplinary learning opportunities—but our approaches stemmed from necessity as teachers did not have previous experience or training with blended learning. We were not sure if our approaches were proven best practices as information on effective training for a blended learning environment proved scarce during inquiries.

Significance

While this study may at this time be significant to only a small percentage of schools, its impact can become widespread as blended learning becomes more prevalent in schools across the country. Research at the Christensen Institute suggests, "Online learning is gaining adoption . . . [and] growing disruptively," and "50% of all high school courses [will be] online by 2019" (Freeland Fisher, 2015). Blended learning has the potential to dramatically impact student learning if educators are trained to implement it effectively (Pregot, 2013). Its ability to offer individualized, differentiated instruction and a self-starting, constructivist approach can shift the educational landscape throughout the country. This new philosophy revolving around teaching

the student how to learn on his or her own is gaining prominence in K–12 schools as resources become more readily available, leading to the steady decline of the traditional approach of the teacher as the keeper of knowledge. Even postsecondary institutions are beginning to adopt blended learning, as evidenced by their development of MOOCs, or Massive Open Online Courses, which offer learning opportunities to all at individual paces and through exploratory methodologies (Rodriguez, 2012). The increasing availability of knowledge is spurring this movement, and blended learning aims to prepare students for this type of learning. As the field of education begins to experience this shift, it is more critical than ever for teachers to be prepared to apply effective teaching practices in this environment.

This study can impact the curriculum in teacher education programs for students who are interested in becoming blended learning teachers. There is a tremendous need for blended learning training in teacher education programs to maximize teacher and student success during the challenging first few years for new teachers. Unsurprisingly, not being well-trained in blended learning can have a devastating effect on success in the classroom for both teachers and students. Higher education instructors would also need to become acclimated with blended learning in order to train teachers effectively, including utilizing a constructivist approach to encourage questioning and meaning making (Cronje, 2010). By including blended learning training in teacher education programs, colleges can help teachers implement blended learning with fidelity from the outset. School site professional development can complement this training instead of serving as a substitute for initial teacher preparation. Recognizing the increased utilization of blended learning, some colleges have begun incorporating blended learning training

into their teacher preparation programs; this study can help identify the skills and training they should incorporate into their curriculum.

The focus of professional development can change at school sites to cover skills specifically applicable to blended learning labs. Differentiated professional development may become necessary to give each teacher an opportunity to develop the knowledge and skills he or she needs to be successful in a traditional classroom setup or in a blended learning lab. Since the blended learning model aligns well with project-based learning, there may also be a push to combine the two in professional development in order to deepen student learning and create opportunities for analysis guided by the Common Core standards. This can lead to authentic interdisciplinary learning experiences, such as math and English language arts skills being applied in project-based learning utilized in science and social science courses. If the research suggests that this approach is a best practice, it can impact interdisciplinary collaboration between educators and foster a deeper understanding of content for students.

Considerations Impacting the Research

The researcher of this study assumed that there were classrooms in which blended learning was being implemented effectively and that blended learning was improving instruction in those classrooms. The researcher also assumed that the type of technology available in each classroom observed was comparable and not a factor in determining instructional effectiveness. Research was conducted at three school sites—one middle school and two high schools—all in the same organization and had adopted blended learning in all classrooms. As a result, it was reasonable to assume that some similarities to the approach toward blended learning existed, limiting the types of professional development and classroom instruction that could be observed.

However, differences in grade levels and varying instructional goals among the schools yielded different learnings.

To allow an adequate amount of data to be collected, there had to be enough classrooms utilizing blended learning. Teachers and administrators needed to be willing to allow observations, meet for interviews, and conduct surveys. The research timeline could have been a challenge, as determining instructional effectiveness may require multiple data points over the course of several months.

Selection could have also been an issue as teachers' varying training and experience in both traditional classrooms and blended learning environments can impact student performance outcomes. Attrition may have occurred during the course of the school year with some teachers electing to opt out of blended learning instruction in favor of a more traditional classroom approach. Furthermore, diffusion could have impacted results if other teachers at the school site had decided to incorporate elements of blended learning or to utilize the approach in small windows. The difference between traditional classroom layouts and blended learning environments could have been blurred, making the assessment of effective instruction specifically with blended learning potentially more difficult to ascertain. Experimenter bias could have also impacted the study's results. As I was the principal of a school that champions blended learning, it was reasonable to assume bias in favor of blended learning and hopes it will be presented as an approach that supports effective instruction better than others.

There will undoubtedly be detractors who reject the claims made by researchers praising the benefits and effectiveness of the blended learning approach. They may be traditionalists who support pedagogical approaches that have existed in classrooms for decades. There may also be

those who champion alternative approaches that may also be effective. Their concerns may be driven by how different a blended learning classroom looks from a traditional classroom: students are working on different projects, there may be no perceivable seating arrangement, the classroom is not silent, and textbooks are noticeably absent. Furthermore, a classroom observer may express concern over whether students are on-task when they are working with computers. The visual appearance of a typical blended learning classroom may appear to be chaotic, but closer inspection shows students who are genuinely engaged and working hard toward mastering the objectives presented. Indeed, several classrooms observed in this study initially appeared to be suffering from poor classroom management but, upon closer review, demonstrated individualized learning and engagement. Like any approach, effectiveness was closely aligned to implementation practices. Rather than promoting the benefits of blended learning, this study aimed to ensure that those who use this approach have access to professional development that leads to deeper understanding and facilitates effective implementation.

Detractors may also question the value of blended learning on student achievement, explaining that differentiation can be accomplished in the classroom without technology. While differentiation through grouping is possible, individualized differentiation is far more challenging without technology. Furthermore, technology fosters constructivist thinking by offering endless resources for students to access and research; without technology, students are left with a few primary texts to reference, which can severely limit their ability to develop their own meaning. Blended learning allows individualized differentiation and endless possibilities for constructivist critical thinking, two essential elements of instruction that are difficult to implement in a traditional classroom without technological resources.

The scope of this study was limited to schools in which the principal supports blended learning instruction and allocates time during professional development to support it. Though many school leaders had little experience effectively implementing blended learning in the classroom because it is a relatively new approach, they were willing to support teachers using it. They supported by providing instructional resources, identifying applicable professional development, and establishing professional learning communities for teachers using blended learning. This study was also limited to blended learning implementation at the school site level; it did not address the skills and training districts need to set up and support blended learning at multiple school sites. It also did not address district policy establishment to support blended learning in schools. However, the findings from this research study can be used to begin the work of developing district-wide training for schools interested in implementing blended learning. Districts can utilize the results gleaned from school sites to identify best practices and needs to inform training development plans.

The Promise of Blended Learning

As blended learning rapidly grows in popularity and prominence, educational institutions have an opportunity to improve student learning across the nation. The literature analysis suggested that blended learning is a highly effective approach to instruction and has the potential to transform classroom learning. However, instructors needed further training in effective pedagogy in a blended learning environment, including data analysis and software effectiveness assessment. There is great potential with blended learning but one that will only be realized if effective instruction and planning complement the student work on computers. While some may believe blended learning diminishes the role of the classroom teacher, teachers' impact on

student learning is more important than ever in the blended learning model. Effective blended learning implementation requires skillful direct instruction, lesson planning involving rigorous prompts, and classroom management skills that facilitate several different learning activities being implemented simultaneously.

Definitions of Terms

Blended learning and effective instruction are referenced throughout this study so it is important to define them from the outset. For the purposes of this study, *blended learning* is an education program in which a student learns partly through online delivery of content and instruction with partial control over time, place, path, or pace (Knewton Blended Learning Infographic, 2014). It is important to distinguish blended learning from online learning, which takes places entirely on a computer. *Effective instruction* is defined as the result of implementing the six elements of the teaching cycle with fidelity: utilizing an anticipatory set, teaching to the objective, engaging students, checking for understanding, monitoring and adjusting the lesson, and providing closure ("Essential elements," 2010, para. 8). These are essential elements for any effective lesson and will be used to gauge the successful planning and implementation of lessons.

CHAPTER TWO

LITERATURE REVIEW

The literature review served several purposes in this study. First, it highlighted research that demonstrated a need to study the skills and training required for effective blended learning implementation. There is a critical need for effective professional development to support teachers who have limited experience leading a blended learning classroom and several sources highlighted this need. This was directly connected to one of the research questions for this study, making the review of this literature particularly beneficial. Second, the literature review provided background information on the blended learning approach and what sets it apart from traditional pedagogical approaches. Third, the literature review highlighted the benefits and impact of blended learning and why it should be utilized in the classroom. This served to emphasize the potential impact of blended learning on the education landscape and why it is essential to support its implementation through effective professional development. Finally, it served to introduce constructivism, the theoretical framework to be used in this study. Constructivism—a learning modality in which the learner makes meaning based on new learning experiences coupled with his or her previous background knowledge and experiences—has been championed by great thinkers such as Vgotsky and Dewey and supported by education leaders for decades. It has been researched extensively by both psychologists and educational philosophers in multiple countries and aligned very closely to the learning approach utilized in effective blended learning classrooms. The differentiated and highly individualized nature of blended learning lends itself perfectly to a theoretical framework that supports learning through discovery and student ownership.

Conceptual Framework

With its emphasis on choice, multiple methods for understanding, collaborative learning and ownership of learning, constructivism was a strong choice for the conceptual framework of this research study. Researcher Ültanır (2012) described constructivism as

> an epistemology, a learning or meaning-making theory that offers an explanation of the nature of knowledge and how human beings learn. The real understanding is only constructed based on learners' previous experience and background knowledge. It maintains that individuals create or construct their own new understandings or knowledge through the interaction of what they already believe and the ideas, events, and activities with which they come into contact. (p. 195)

This definition supports the individualized and collaborative nature of blended learning: self-learning through blended learning software gives students opportunities to learn concepts through their own learning modalities, while students from different socioeconomic, racial, and cultural backgrounds construct meanings based on interactions during collaborative projects. Citing Vgotsky, researchers Liu and Matthews (2005) added, "consciousness is not the ability of an individual to know all the ontological answers to the universe, rather, it is the ability to perceive meaningfully" (p. 394). Their explanation aligns with the recent shift in content standards, which places greater emphasis on making meaning by problem-solving and offering reasoning over rote memorization of facts and procedures. Researchers Bryant and Bates (2015) further explained the merits of a *social* constructivist approach to education, stating, "As a learning theory, the primary goal of social constructivism is to provide collaborative instructional

approaches [that encourage deep thinking and application]" (p. 17). Yilmaz (2008) agreed,
adding,

> If the goals of teaching school subjects are to be successfully accomplished, teachers of
> different subject areas should transform students' engagement in subject matters from rote
> recall and comprehension to more meaningful analysis, synthesis, application, and
> evaluation via constructivist teaching models and methods. (p. 171)

When blended learning is implemented effectively with opportunities for discovery and meaning
making through self-led learning and heterogeneous collaboration, it champions constructivism
as a learning approach.

Blended learning focuses heavily on these ideas and is centered on giving students choice
in approach and timing (Cronje, 2010). Students need to develop a constructivist approach in
order to be successful in a blended learning environment, as Cronje's research suggested. Bose
(2010) agreed that a constructivist approach is critical when working with educational
technology, stating,

> [Information and Communication Technology] has the potential for creating powerful
> learning environments that support distributed, interactive, collaborative and constructive
> learning and its assessment and since the use of computer technology by youngsters is on
> the rise this trend needs to be harnessed for providing education. (p. 5)

Hubbard (2012) suggested that effective constructivist teaching can be summarized by four
essential elements:

- Eliciting prior knowledge
- Creating cognitive dissonance

- Applying prior knowledge with feedback

- Reflecting upon learning (p. 161)

All four elements are part of any effective blended learning program, making constructivism an appropriate theoretical framework for this study. Eliciting prior knowledge through collaborative activities can be great way to establish a foundation for high-level thinking, while cognitive dissonance can occur through thought-provoking discussions and projects. Applications can be learned through blended learning programs and collaborative opportunities, and reflections give students an opportunity to share their meaning-making with others. Ültanır (2012) added,

> It can be said that constructivism has an interdisciplinary viewpoint making a distinction with psychological, sociological, philosophical and critical educational theories. Constructivism, by recreating the learning and teaching theories of the past and present, has later been transformed into a role in which the intensive power of the teacher has been lifted, illuminating the learner as a significant part of the learning process. (p. 198)

A constructivist approach suggests that teachers will learn the skills and will adapt their application to fit the needs of their students. Ültanır (2012) explained that progressive schools utilize the following principles for teaching:

- Building the idea of individualist development instead of the idea of top-down forcing

- Embracing behavioral freedom (democracy) as opposed to practice external discipline

- Practicing active education instead of passive learning from teachers and texts

- Embracing the thought of learning to use skills and techniques as a means to achieve one's goal instead of isolated learning by practice

- Taking advantage of the current opportunities and benefiting from these in the best

  way possible. (p. 200)

Indeed, the opportunity to make meaning at your own pace and through your own learning

modalities demonstrates the constructivist learning approaches championed by blended learning.

This is particularly evident in the freedom to choose learning styles afforded by the blended

learning model.

Blended learning requires teachers to serve as facilitators as students take charge of their

own learning. Ültanır (2012) explained,

It is not uncommon to hear a teacher or trainer speak of her or his role as a "facilitator."

This concept represents a sharing of the power and responsibility in the room for when

the instructor consciously removes herself/ himself from the "centre" of the room,

students are empowered to exercise their volition and engage in learning activities that

meet their interests. The decentralization of education . . . is compatible with the idea that

the teacher is not an absolute authority on the course material. (p. 204)

Yilmaz (2008) shared a similar understanding of the teacher as a facilitator in a constructivist

classroom environment, stating,

Constructivist teaching affords learners meaningful, concrete experiences in which they

can look for patterns, construct their own questions, and structure their own models,

concepts, and strategies. The classroom becomes a micro-society in which learners

jointly engage in activity, discourse, and reflection. (p. 169)

With increased access to technology, the teacher is no longer the sole keeper of knowledge in the

classroom: Every student can access knowledge. However, the teacher's expertise is required to

create rigorous learning opportunities that engage students and encourage thought-provoking discussions, establish efficient routines and procedures that maximize learning, and ensure differentiated support for every student.

The collaborative, project-based nature of many blended learning models facilitates the use of a constructivist approach to learning. When evaluating a blended learning course, According to Alim (2007), social pressure increases students' responsibility within the team and, learners become motivated and engaged because of collaboration. These elements enhance constructivist learning opportunities by giving students chances to make meaning through interactions with both peers and instructional materials. Bryant and Bates (2015) stressed the importance of a constructivist approach to blended instruction to truly engage students and to activate rigorous thinking, stating,

> Online learning offers a unique way of building community, fostering the habit of student questioning, and providing the "space" for candidates to challenge each other and construct new knowledge in the process . . . The online, technology-rich environment provides unique opportunities for pre-service and in-service teachers to engage in a community of discourse, scaffold knowledge, experience cognitive presence and develop "personal" relationship with course instructors. (p. 22)

Furthermore, as blended learning is still in its infancy, there are many new ideas and approaches to consider and meaning-making is more important than ever. Researchers will need to unpack the blended learning approach and formulate best practices based on their experiences because data from previous experiences are limited with this new form of learning.

The Blended Learning Approach

As blended learning is a relatively new approach to instruction, many researchers, educators, and organizations have offered descriptions and definitions to explain how it looks and how it impacts education. A clear understanding of blended learning is critical before discussing the skills and knowledge necessary for effective blended learning implementation. It is important to distinguish blended learning from online learning, which offers instruction similar to the classroom experience in an entirely online setting. For example, courses taken virtually are examples of online learning rather than blended learning. Singh (2003) defined blended learning as follows:

> Blended learning mixes various event-based activities, including face-to-face classrooms, live e-learning, and self-paced learning. This often is a mix of traditional instructor-led training, synchronous online conferencing or training, asynchronous self-paced study, and structured on-the-job training from an experienced worker or mentor. (p. 51)

The blended learning approach includes many of the characteristics praised by educators and researchers—differentiated, self-paced, discovery-based, and collaborative—but offers a practical method for implementation. In the past, limitations in technology and pedagogical research have impacted the effectiveness and scope of this type of instruction. However, with blended learning, teachers can use technology to enhance the classroom experience through customized learning experiences designed to facilitate meaning-making.

The mix or "blend" of face-to-face instruction with online experiences enhances learning through flexible pacing and different modalities which can support different types of learning. As Singh (2003) explained:

Learning requirements and preferences of each learner tend to be different. Organizations

must use a blend of learning approaches in their strategies to get the right content in the

right format to the right people at the right time. Blended learning combines multiple

delivery media that are designed to complement each other and promote learning and

application-learned behavior . . . The concept of blended learning is rooted in the idea

that learning is not just a one-time event—learning is a continuous process. Blending

provides various benefits over using any single learning delivery medium alone. (p. 52)

Multiple delivery methods for content can lead to greater mastery for students with varying

learning modalities, while a continuous learning cycle promotes a growth mindset focused on

student-driven learning. The high levels of flexibility afforded by the blended learning approach

also give students several opportunities for mastery and understanding.

Several models for blended learning were offered by researchers, though there is limited

information on the relative effectiveness of each. Four popular examples included the rotation

model, the flex model, the self-paced or a la carte model, and the enriched-virtual model. These

models are described in depth in two critical reports: Darrow, Friend, and Powell's *A Roadmap

for Implementation of Blended Learning at the School Level: A Case Study of the iLearnNYC

Lab Schools* (2013) and the Innosight Institute's *Classifying K–12 Blended Learning* (2012).

According to the Innosight Institute (2012), a think tank dedicated to applying disruptive

learning theories championed by Harvard Business School's Clayton Christensen, the rotation

model is

a program in which within a given course or subject (e.g., math), students rotate on a

fixed schedule or at the teacher's discretion between learning modalities, at least one of

which is online learning. Other modalities might include activities such as small-group

or full-class instruction, group projects, individual tutoring, and pencil-and paper

assignments. (p. 8)

The rotation model allows students to experience the instructional content through different

approaches—often direct instructional, collaborative, and independent stations—creating

multiple opportunities for students to make meaning of the content.

The flex model is "a program in which content and instruction are delivered primarily by

the Internet, students move on an individually customized, fluid schedule among learning

modalities, and the teacher-of-record is on-site" (Innosight Institute, 2012, p. 12). The flex

model offers less structure and offers teachers and students more options for instructional

support; however, fewer classrooms structure around activity times, and assignments create more

opportunities for inefficient transitions as well as classroom management challenges.

Darrow et al. (2013) described the self-blend, or "a la carte," model as

an implementation in which students take one or more courses entirely online with an

online teacher of record and at the same time continue to have brick-and-mortar

educational experiences. Students may take the online courses either on the brick-and-

mortar campus or off-site. This model can encourage student ownership of learning but

offers limited opportunities for meaning-making through collaboration. (p. 14)

This model includes purely online coursework that requires particularly careful online program

selection by the teacher to ensure effectiveness. Since the teacher is not extensively involved in

the online learning portion after its initiation, the program must have useful systems built in to

support struggling students.

The fourth option—the enriched-virtual model—is:

a whole-school experience in which within each course (e.g., math), students divide their

time between attending a brick-and-mortar campus and learning remotely using online

delivery of content and instruction. Many Enriched-Virtual programs began as full-time

online schools and then developed blended programs to provide students with brick-and-

mortar school experiences. (Innosight Institute, 2012, p. 15)

Although each model offers a different approach to blended learning implementation, this study

focused on the skills and knowledge necessary for effective blended learning implementation

using any model.

Impact of Blended Learning

In addition to understanding how blended learning is defined, it is critical to describe its

importance and positive impact on the current educational landscape. Several researchers cited

the enhanced learning experience blended learning provides and the positive feedback received

from students using the approach. Patrick and Dawley (2009) conducted a nationwide survey in

2010 with 830 respondents representing teachers from virtual schools, supplemental online

programs, and brick and mortar programs offering online courses, and concluded that students in

both online learning and blended learning conditions performed better than students in face-to-

face classes. Based on the student survey results in their study on the implementation of blended

learning in eight courses at the college level in 2012, Owston and York (2012) stated that

blended learning is preferred by students "to either fully face-to-face or fully online" (p. 16).

Their study also revealed that instructors "reported that students did perform better overall and

they were not concerned about academic integrity or lack of student engagement in their

courses" (Owston & York, 2012, p. 19). When I served as school administrator, these results aligned to the feedback from parents and students who overwhelmingly supported the notion that greater learning was taking place through blended learning because of increased engagement, differentiated pacing, lesson alignment to student needs, collaborative learning, and students forming their own understanding through carefully planned learning activities.

Researchers Bonk and Graham (2004) highlighted the many merits of blended learning for both teachers and students, including, "(1) pedagogical richness, (2) access to knowledge, (3) social interaction, (4) personal agency, (5) cost effectiveness, and (6) ease of revision" (p. 7). They explained that these merits help combine the best of both traditional and online instruction but warned that ineffective planning can result in the adoption of the most challenging aspects of online and traditional learning instead. The merits—particularly the first four—reinforced the potential of blended learning to transform the educational experience for students through constructivist learning opportunities. Increased personal agency accrued through rigorous lesson plans, collaborative learning experiences, and access to content enhanced higher-level learning and meaning-making. Student learning can be dramatically impacted if we can improve the effectiveness of blended learning implementation through training.

Expansion of Blended Learning

As the merits of blended learning are documented and technology becomes more readily available, interest in blended learning has surged. According to the research study by iNACOL, the International Association for K-12 Online Learning, which focuses on student achievement through online learning opportunities:

Capitalizing on widely embraced digital tools, the landscape of the 21st Century

classroom will be markedly different than any time in history. The World Future Society

predicts that learning will become more personalized, less delineated between seat time

and free time, with greater implementation of gaming and social networking. At 800

million users—75% of which reside outside the United States—Facebook proves that

trend already exists outside of the classroom. The onus is on national and school-level

leaders to tap into the potential that digital learning provides. (Barbour et al., 2011, p. 10)

As innovations in technology reshape other aspects of our lives, they are poised to impact how

students learn as well. Educators must be prepared to train and support teachers and school

leaders so they can embrace this change and ensure success in each classroom.

Researchers Rice and Dawley (2007) added, "The expansion in online or virtual

education opportunities for students in elementary and secondary grades continues at an

astounding rate" (p. 8). They estimated that nearly one million high school students participate

in online classes and believed that every state now has some form of online learning (Rice &

Dawley, 2007, p. 8). There is tremendous potential for blended learning expansion, especially as

research about its effectiveness becomes more bountiful. This growth is not without concern,

however. Bonk and Graham (2004) questioned whether blended learning will be accessible and

effective for all students, stating, "The jury is still out on whether blended learning models can

be developed that are affordable and still address the needs of different populations with different

socio-economic conditions around the world" (p. 17). Educators who are currently utilizing

blended learning should have access to training that emphasizes the skills and knowledge needed

for effective implementation.

Professional Development Need

As a relatively new approach to instruction, blended learning has limited practitioners who have developed effective implementation practices. Despite praise for the effectiveness of blended learning, there was hesitation about expansion because of this deficiency. Owston and York (2012) explained,

> A solid majority of students appear to favour blended learning over fully online or lecture only courses. The main caveat in expanding blended learning in order to meet [enrollment] pressures is that instructors must be more adequately prepared to teaching this format and that they make their course expectations and the format clear to students. (p. 12)

These remarks support the notion that blended learning training is critical and may vary in content from trainings for more traditional classroom instruction, making this study particularly important.

Researchers Picciano, Seaman, Shea, and Swan (2012) explained that course quality is one of the most critical barriers to effective blended learning implementation. Professional development to improve lesson planning and delivery can address this concern. They added,

> While high schools are depending upon online and blended learning for many of their programs, concerns remain among educators. The issue of the quality of online instruction persists. There is a continuing need to establish and update state and local policies for funding, attendance requirements, and other issues related to online instruction. Careful evaluation needs to be undertaken for relatively new online programs such as credit recovery. The benefits, concerns, and costs related to online and blended

learning are prime areas for future research as they increasingly become a topic of focus

in the national dialog on improving American education. (Picciano et al., p. 135)

Indeed, the quality of blended learning coursework must be measured and considered when

establishing a blended learning program. To assist in the development of measures to assess

program quality, iNACOL developed standards that provide guidance for high quality blended

learning instruction. These standards, which describe elements of effective blended learning

instruction, can be found in the *National Standards for Quality Online Teaching* (2011). They

are designed to measure effectiveness in academic content, resource utilization, data analysis,

instructional strategies, and assessment. Although it is helpful in identifying what effective

blended learning implementation looks like, the inclusion of standards does not provide explicit

guidance on the training educators need to address the standards. The study *Online and Blended*

Learning: A Survey of Policy and Practice of K-12 Schools Around the World (2011) stated:

> While the demand for personalized learning for students has increased—and the benefits
>
> are undisputed—the major issue seems to be that the role of the teacher has clearly
>
> changed, but there is an international lack of focus on teacher training. This lack of
>
> training is not only in the use of new technologies, but also in the methodology and
>
> pedagogy necessary to fully understand how and why technology can positively impact
>
> student performance when in the hands of a competent, highly qualified teacher. (Barbour
>
> et al., 2011, p. 18)

The study went on to explain that, "The area of instructor professional development and training

for teaching online and blended learning is a global concern . . . there are no countries that have

established or implemented a comprehensive or systemic 'retraining' of the entire educational

profession" (Barbour et al., 2011, p. 30). This assessment largely aligned with the findings from this study, which showed that many professional development opportunities focused on various resources that could be used in the classroom but did not consistently integrate them with pedagogical practices. Researchers Patrick and Dawley (2009) also emphasized the need for professional development on effective blended learning implementation given the growing use of technology in education. They explained,

> The exponential increase in online learning in both regular and virtual classrooms is driving the need to incorporate new pedagogical content knowledge and strategies in preservice and inservice teacher education. Compared to many countries, the United States is behind in preparing K-12 teachers to teach online. Very few teacher education programs in the U.S. offer a curriculum for online teaching, leaving districts, states, and virtual schools to train online teachers. (Patrick & Dawley, 2009, p. 1)

As mentioned earlier, the professional development needs to effectively combine instructional learning with technology to ensure that teachers implement blended learning at a rigorous level; addressing technology and instructional practices in isolation will not prepare teachers to lead engaging and differentiated blended learning classrooms.

Researchers Davis and Rose (2007) argued that teacher training for traditional classroom instruction does not necessarily transfer seamlessly to the blended learning model, dispelling the notion that an effective traditional classroom teacher is immediately ready to lead a blended learning classroom (Davis & Rose, 2007, p. 7). Davis and Rose also cautioned educators about the

misconception that this is the course, little teaching is required, and students can learn without supervision. However, this is similar to saying that a course is the same as directing students to read the textbook. Asynchronous online teachers report they have never worked harder in their lives. (p. 7)

This argument emphasized the importance of training specific for blended learning to ensure effective implementation. Although many instructional best practices apply to blended learning classrooms, they must be coupled with training specifically designed to address the needs of students in a blended learning setting.

Discussions about what training is required for effective blended learning implementation largely remain at the theoretical level. The Southern Regional Education Board (SREB) (2007) pondered,

What is the best way to provide quality professional development for online teachers? There is no single answer to this question. Using multiple strategies, including real-time as well as "anytime" online training and traditional workshops, ensures that each online teacher has a rich, multi-layered understanding of online teaching. These strategies include:

- Viewing models of effective online teaching, communications and strategies — and role-playing situations that apply these strategies;

- Discussing how to handle difficult situations with students, parents and site-based staff;

- Using scenarios and case studies to differentiate instruction, based on knowledge about the students in the class and performance on class activities;

- Partnering experienced and new teachers for extended mentoring and support;

- Reviewing current research and practices;

- Developing systems to provide administrative monitoring and support, including clearly stated expectations for participation and performance in professional development activities; and

- Hands-on training and experimentation with the Learning Management System and other technology tools used to deliver and support instruction. (p. 2)

These strategies may be effective but provide little practical guidance for schools that are seeking immediate support for their teachers and students. They need to be developed further and offered to school sites where teachers need immediate support in effective blended learning implementation. This study aimed to integrate this research with findings from fieldwork to develop professional development for blended learning teachers who are looking for new ways to engage and grow students.

This literature review provided a solid base that highlights the importance of blended learning and the training requirements that can transform classroom instruction using blended learning. It revealed the rapidly growing use of blended learning and online learning throughout the world and the alarming lack of effective professional development to help teachers implement it in classrooms effectively. The developing disparity between the increased use of blended learning and the limited training opportunities must be addressed to ensure student success in blended learning classrooms. Differentiation, constructivist learning opportunities, collaboration, data analysis, and assessment must all be addressed in an effective blended

learning professional development program. This study will identify how training to address

these needs can be developed.

CHAPTER THREE

METHODOLOGY

Objective of the Study

As mentioned in the first chapter, the objective of this study is to develop a better understanding of the knowledge and skills needed to effectively implement blended learning. The study is designed to lead to the development of a training guide for blended teachers to hone their craft and to answer two critical questions about instruction with blended learning. First, what knowledge and skills do teachers need in order to provide greater mastery through effective instruction in blended learning classrooms? Once the skills are identified, what type of training is needed for teachers to develop these skills? The findings and recommendations would assist teachers in implementing blended learning effectively.

Overview

For this research study, I sought schools that were implementing blended learning. I was introduced to the principal of a blended learning middle school, and she ultimately helped make connections at other schools sites that were implementing blended learning. I described the study to other principals and secured two high schools and one middle school to participate. This led to 23 classroom observations and 32 survey participants including school administrators. All three schools utilized some form of the station-rotation model for blended learning, though the blended learning programs, professional development philosophies, and school culture varied dramatically.

The skills and training teachers require to implement blended learning effectively were discussed, analyzed, and assessed in open dialogue, leading to a decidedly qualitative study.

Prior to collecting evidence in the field, I conducted research to identify literature and scholarship focusing on the knowledge and skills required for effective implementation of blended learning. This literature review complemented the data I collected from my school site visits. My first visit included an introduction of the study to the faculty during professional development time, including signing appropriate paperwork and scheduling interview times. I answered questions about the study and offered to share the findings with the school to inform their professional development planning. This visit also included an observation of each school's professional development format and content and an opportunity to schedule classroom observations and interviews. We also set a timeline for survey completion.

Teachers and administrators completed the survey to gauge effectiveness of blended learning instruction. Administrators and teachers who utilized or supported blended learning at three different schools took the survey, which included questions on which instructional strategies teachers were utilizing in a blended learning setting and what additional training and knowledge they needed. I also used the survey to gather information on the impact blended learning has had on students' ability to make meaning and develop a deeper understanding of content as well as the training teachers have received in their credential programs and at their school sites.

The study also included classroom observations, interviews with administrators and teachers, observations of school-site professional development on blended learning. and analysis of blended learning professional development materials. Professional development observations and analysis of handouts and other materials gathered information to better understand the support teachers receive and which aspects of blended learning instruction the school focused on.

I observed classrooms to derive context before each teacher was interviewed and to better understand how blended learning was implemented in classrooms. In addition, I documented how student responses to blended learning instruction made connections between blended learning professional development and how it was applied in classrooms.

During the interviews, I centered the questions on training blended learning teachers have received, successes and challenges they have experienced in the classroom, supports they would like to receive, and how their experience with blended learning has differed from their pedagogy in a traditional classroom. Teachers offered detailed responses about what has been effective in the classroom and during professional development, and offered specific advice for professional development. Administrators who served as instructional leaders were also interviewed and shared their insights about growing their blended learning knowledge to better support their teachers.

Research Participants

The study took place on one middle school and two high school campuses in Los Angeles. All three schools had decided to implement blended learning throughout the curriculum but had limited exposure to effective blended learning implementation training. Principals and teachers at each school were interviewed and given surveys. In addition, I observed teachers implementing blended learning to develop context for the interviews.

Appendix A shows all collected demographic information for the participants, including age range, experience level, gender, subjects taught, and grade levels taught by the participants. Appendices B–F show summaries of the demographic data, including a percentage breakdown. Nearly two thirds of the participants were female and just over 40% of all participants had two

years or less of teaching experience. A full 71% of all participants were 34 years old or younger, and there were a wide variety of subjects taught, with English language arts and mathematics being the most prevalent, at 18% each. Just over a third of all participants taught multiple grade levels, followed by 23% of participants teaching only 9th-grade students. The third most prevalent teaching group was 6th-grade teachers, at 10%. Of the 39 faculty and administration members at the three sites, 32 took the survey and 22 participated in interviews.

Design

The primary instruments in this study were a survey and a series of interview questions. Both were reviewed and vetted by a team of three experts, doctoral students, and the committee chair working on this research study. The experts examined them for alignment to the objective of this study and reviewed the questions to ensure validity in terms of bias, leading questions, and other elements that could call the results into question. All three schools had adopted blended learning on a school-wide level. This commonality helped reduce the likelihood that one group of teachers was receiving significantly more or less training on blended learning implementation than teachers at the other schools in the study. Appendices G and H include the survey and interview questions, respectively. The first six questions in the survey in Appendix G ask for participant background information, while questions 7–18 use a Likert scale from *Strongly Disagree* to *Strongly Agree* to collect data on instruction and professional development. The last seven questions are open-ended questions about teachers' and administrators' experiences implementing or supporting blended learning instruction. Appendix H includes the six interview questions about blended learning instruction and the three questions about professional development to support blended learning.

I recorded survey responses using a survey program that was also used to conduct analyses on the results. For the interview responses, however, I met with each participant in person or spoke to him or her over the phone and recorded by word processor and audio recording. The interviews were scheduled in advance and conducted on each teacher's respective school site for all but three participants, who elected to be interviewed over the phone. They served to gather data on what skills teachers need to effectively implement blended learning and what additional training they would benefit from.

Before the interviews, I observed teachers in their classrooms to develop context for the upcoming interviews. Data from the classroom observations served better understanding of the interview responses. School-site professional development observations provided insight into the type of blended learning training teachers received and how it impacted their instruction and expertise as blended learning facilitators. I recorded data from classroom and professional development observations on a two-column template: one for scripting and one for highlighting observation elements specifically related to blended learning. After the first round of data collection, I compiled the results and looked for patterns and common themes to determine if enough data had been collected to develop accurate conclusions from the findings. I assessed if more information was needed from schools or other sources—both local and national—to arrive at valid and reliable conclusions about the skills and training needed to effectively utilize blended learning.

Implementation

Before beginning the data collection process, I reached out to the principals of three schools that utilized blended learning to request permission to conduct the research study at their

school sites. After they agreed, a listing of potential interview candidates and survey participants was requested from the principals. The three principals sent the information, including gender, experience level, subject taught, and age, through email.

Upon research study approval, I contacted the schools to arrange dates to visit and begin interviews. Before proceeding, I secured informed consent from potential study participants for the interviews by meeting to share information about the research study. I discussed the informed consent with potential participants during their professional development time; after their answering any questions, I asked the participants if they could give their written consent using the provided consent form.

I sent the survey shortly after, along with information to schedule interviews. I attempted to conduct all interviews on campus in the teachers' rooms or main office, though the option to meet at another public place such as a coffee shop was offered. I conducted three interviews over the phone and the remaining interviews were conducted in each participant's respective classroom or office. The interviews required laptops for scripting and a recording device for audio recording. I provided the objective of the semistructured interview and overall research study to each participant at the commencement of each session and explained confidentiality and anonymity policies. To preserve anonymity, I used pseudonyms where applicable. The audio recording served as a tool to review responses in order to capture any comments that may have been missed during scripting. I also used a transcription service for the interviews to ensure accuracy only after a nondisclosure agreement was signed. I offered participants initial access to the blended learning guide that would be developed using the outcomes of the research study.

Data Processing and Analysis

I used a two-pass method to analyze the data collected at the school sites. After collecting the data through surveys, interviews, classroom observations, and professional development observations, I carefully looked for patterns and potential correlations in the research data using NVivo software, including connections between experience and needs and the type of training received and requested. The data analysis generated by Qualtrics to identify trends and reliability helped with this process. Using NVivo, I reviewed the responses to the interview questions and identified common successes, areas of growth, and trainings that teachers have found beneficial. Using this software, I coded relevant collected evidence with one or more of the following categories:

- Effective professional development

- Ineffective professional development

- Effective teaching practices

- Ineffective teaching practices

- Constructivist approaches to instruction

- Pitfalls and challenges

- Assessing the impact of blended learning

- Memorable quotes

- Skills necessary to implement blended learning

- Training necessary to implement blended learning

The categories were developed in collaboration with my dissertation chair and were designed to answer the two research question posed by the study. Identifying effective teaching practices

and professional development characteristics was critical, as was coding evidence that aligned to the study's conceptual framework. I established the memorable quotes category to capture important comments that did not fall into another category.

After coding the evidence using these categories, I reviewed it by taking margin notes throughout the text, looking for details on common themes that arose. Teachers and administrators provided a wealth of information on what had worked well, what they still needed in order to implement blended learning effectively, and what approaches to teaching and professional development they were considering to improve student learning. Then, I consolidated the notes on a summary page that included the main themes and the page numbers that were found on throughout the document. The summary page revealed the frequency of themes and ideas that came up in the research and assisted in understanding the needs for effective blended learning instruction. The themes on the summary page facilitated the establishment of conclusions for the study, while the detailed qualitative and quantitative data provided support for the conclusions.

CHAPTER FOUR

RESULTS

As discussed in the third chapter, I used NVivo software to code interview data, classroom and professional development observations, and the survey responses using one or more of the following categories:

- Effective professional development

- Ineffective professional development

- Effective teaching practices

- Ineffective teaching practices

- Constructivist approaches to instruction

- Pitfalls and challenges

- Assessing the impact of blended learning

- Memorable quotes

- Skills necessary to implement blended learning

- Training necessary to implement blended learning

The coding system identified common themes in the data. It also helped gather evidence about effective professional development, best practices in the classroom, and areas of growth to support critical elements of this study. Several examples of effective and ineffective professional development practices and topics emerged, as well as examples of instructional practices used in a blended learning classroom and their impact on student learning.

Effective Professional Development

Because one of the questions this research study involved training for blended learning implementation, identifying examples of effective professional development was essential. Professional development varied greatly at each school site: some were led by teachers, some utilized professional learning communities, and others focused heavily on programs that could be incorporated into blended learning classrooms. Feedback from interviews and survey responses helped identify elements of professional development that participants found effective.

Teachers described some professional development sessions that focused on the three-station model. One teacher explained,

> I have received training on how to integrate three stations in the classroom: direct instruction, independent, and collaborative. In each station, computers may be used at the teacher's discretion. However, computers are almost always used in independent to practice skills. In direct, they may use computers to take notes. In collaborative, they may use [computers] to make a collaborative PowerPoints.

Participants mentioned learning from others as effective professional development, with one teacher stating, "I learned about blended learning through independent research and collaboration with my colleagues." Another added:

> I have received a lot of blended learning instruction in professional developments... this has been mostly learned by giving us applications rather than direct teaching of how to integrate the technology. Most of the practice has been through trial and error of blending the technology into the classroom.

Teachers repeatedly mentioned the positive impact of learning from other teachers through discussions and observations. A full 97% of survey participants stated that they "develop a deeper understanding of effective instructional practices by collaborating with colleagues about blended learning." One teacher explained:

> I think the most helpful training that I've received is probably at my site because we have prior teachers and math teachers that have done it before and just using what they've told me and different suggestions that they've given me has been extremely helpful.

Another teacher appreciated learning from others more than district-wide professional development opportunities, stating:

> Usually the only training that I've received . . . [is] from other teachers. Mainly I learned it through trial and error and from other teachers at the school who have done it successfully and they've done like a mini PD on it. Through the district, there hasn't been a lot of support for blended learning in rotation model.

Another teacher praised the administrator for being "great [at] giving us the time to actually go to other places and recommending us to other people to just go under their wing and observe good strategies," and really liked "when I have observers and receive feedback and tell me . . . what can I do to make it better. Not just telling me what I'm doing right, but . . . more of the constructive feedback where you can do this to change it."

Teachers mentioned having opportunities to observe classrooms at other schools as a beneficial learning experience. During one of the observed professional development sessions, teachers were grouped in professional learning communities and discussed what they had learned from their peer observations and what they were inspired to implement as a result. The

discussions were facilitated through a protocol to ensure actionable next steps and equitable sharing. One teacher mentioned that the peer observations should be organic instead of a requirement to meet school compliance requirements, adding:

> Something where teachers are given the time . . . to go into the classrooms, inside or outside of their discipline, to see how a master teacher would teach in the blended learning classrooms [would be beneficial]. I think that's one thing that teachers would [benefit from] – and definitely continue the coaching model. It's really effective.

Some of these opportunities were created through the use of Professional Learning Communities (PLCs). One teacher explained:

> We do a lot of PLCs where . . . some of the other teachers observe classrooms and we see how they're doing [in] collaborative and see what they're doing in independent and maybe seeing any digital tools that are working well with the blended learning. Then we usually discuss it. We take notes about what we saw. What did the students actually say like what were they saying to each other? Then we kind of practice the next steps. What are we going to do next to improve on that?

Another teacher emphasized the importance of modeling instructional practices in professional development sessions and the positive impact it had. This was useful during the summer on-boarding professional development sessions, which prepared teachers for effectively implementing blended learning into their planning. Strategies were shared along with effective practices and resources to get started. New teachers in particular benefited from this. Teachers emphasized the benefits of sharing best practices, especially "in terms of digital tools that teachers have found helpful" and from teachers at other school sites. One teacher named project

ideas, grouping strategies, structures, and the gradual release of responsibilities as topics that had been beneficial to learn about from other school sites.

Some of the strategies teachers learned about during effective school professional development included assessing prior knowledge and identifying misconceptions about blended learning, practicing writing rigorous learning objectives, and integrating technology to facilitate differentiated, individualized instruction and student self- monitoring of learning. Schools implementing effective professional development also focused on what the school described as the key dimensions of blended learning: student ownership of learning, and individualized, differentiated instruction. Another school focused on sharing best practices with other teachers and addressing frustrations such as technology challenges and students being off-task during blended learning lessons. The school also included data analysis of the most recent English language arts benchmark assessment during a professional development session.

Teachers described the benefits of content-specific trainings that incorporated technology, with one teacher explaining:

> My school site has done the majority of the training involving new websites and apps to use in class. The charter network does a lot of content-specific professional development that involves using technology but within the specific content area. Both are helpful in their own way. The charter network develops my ability to plan lessons, with either technology or not. The school site helps me with specific tools that make those lessons stronger. I think I am way better of a teacher than I would be if I did not have these trainings.

One teacher described an effective professional development session in which a blended learning setup was used. She explained:

The organization gave us professional development days [that were] interesting because they actually simulated a blended learning environment so we were in the classroom and there's one group in the front that was direct instruction, one group on the side that was discussing with iPads, and one group in the back that was just doing research and filling out a Google doc on the iPad. We've had different people come in and talk to us about strategies that work or possible ideas.

Several participants also mentioned the benefits of a summer retreat to prepare teachers for blended learning implementation. One of the administrators explained:

In that teacher retreat, one of the first things we tackled was the blended learning piece because it was new to my entire staff. I collaborated with . . . our blended learning coach in creating an introductory PD for my staff that was presented to them during our site PD. From there all teachers had the option of attending two days of summer blended learning training . . . [and] were required to attend at least one.

These examples of effective professional development through observations, modeling, and anticipating challenges together highlight the importance of creating opportunities for educators to learn from each other. With limited established blended learning training available, teachers valued the opportunity to collaborate and experience effective approaches in others' classrooms. For some, this type of learning may be preferred to more traditional trainings in a direct instruction format.

Ineffective Professional Development

Examples of ineffective professional development were also noted to better identify which approaches, strategies, and topics could (and should) be avoided when planning professional development. Teachers expressed dissatisfaction with the generalized approach to professional development and asked for more specific support in lesson planning. One teacher explained:

> We watched videos of different models for two-station, three-station, and more than anything it wasn't like how do you do this because having thee stations or two stations makes sense. It was what are you doing in each group? We never got that instruction or we were never given enough material . . . we didn't know what to put in each group for each day. We didn't know what we should be teaching and then that made it difficult to utilize blended learning once we were actually in the classroom.

Others echoed this concern and demanded more specifics in professional development sessions. One teacher lamented the lack of "explicit training on how to use it, how to best implement it, and how to do groupings with it." Another teacher explained:

> Much of the training has been surface level information (e.g. this is what it looks like, try this program, descriptions, etc.) . . . much of the training is geared towards individuals that don't know what blended learning is or could be, but there needs to be more substance after that initial training, which I feel is lacking. The one-size-fits-all model will not work for everyone.

Yet another teacher said that professional development had not been specific enough to help teachers implement blended learning effectively in the classroom, while another teacher with

technology experience complained about how learning to turn on a computer or setting up a basic webpage were not helpful.

At all school sites, professional development sessions included demonstrations of software such as SoapBox, Socrative, Edmodo, Nearpod, Doctopus, screencasting, Google Drive, and G(math). Teachers could then consider adopting the software applications in their classrooms. However, sharing several online tools without ample time for teachers to investigate and explore was a frequently criticized approach. Participants expressed frustration over receiving professional development that rapidly showcased various tools without ample time to apply, explore, and understand their benefits. Some teachers expressed frustration over professional development they felt was not about growing instructionally but the rapid introduction of tools and resources without opportunities to understand how to effectively utilize them.

An analysis of the research collected through observations, interviews, and surveys revealed two consistent themes regarding ineffective professional development. Generalized professional development that is not differentiated fails to provide specific tools and strategies for teachers at different levels, leaving novice teachers with few concrete next steps and experienced teachers with limited growth opportunities. Second, blended learning professional development that focuses on new programs and websites without weaving them into instructional strategies becomes more of a product showcase than a learning opportunity. In order to be truly effective, blended learning professional development needs to maintain focus on instructional strategies while incorporating blended learning programs and tools at strategic times when they can enhance learning.

Effective Teaching Practices

Identifying the skills that teachers need to effectively implement blended learning instruction aligned with the research questions of this study. Teachers approached blended learning instruction in a variety of ways but the elements that made them effective were found in each classroom. A teacher explained:

> It allows students to master the content or master the standard three different ways so that's pretty effective. It also allows the teacher to get to know the students one-on-one, which I've seen in classroom observations [where] teachers have built this relationship with individual students because they're able to have ten students at a time in direct [instruction] . . . it's really difficult to do that. I've also seen in upper levels how . . . [blended learning programs] have really made the students develop the skills of collaborating so it has been really effective in the way that teachers have developed that skill for them to be working collaboratively and to be on task, to stay on task and to get the work done. It holds them accountable.

In their observations of other classes, teachers praised digital agendas, online classroom agendas that included links to resources, texts, discussion boards, and assessments associated with the day's lesson. Regarding digital agendas, a teacher stated, "One thing that we're really proud of in terms of the kids accessing the digital agenda [is that they] know what they're doing as well as having the links to go to whatever website they need to go to." Another teacher explained, "The digital agenda [evolving] into something that the students are actually interacting with throughout the class period . . . is a strength of ours." They also applauded the positive impact of student ambassadors and stations. Students rotated ambassador duties regularly and were

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responsible for welcoming classroom visitors and sharing information about learning goals and class procedures. Stations were also deemed a critical element of an effective blended learning classroom. Teachers typically used a three-station rotation model that included direct instruction, collaboration, and independent work. While this approach was generally accepted as an effective practice, some teachers were experimenting with a two-station model for certain lessons within a unit. One teacher added:

> When they're collaborating, they're . . . doing something that requires collaboration between the groups. It's a really wonderful way for students to connect the dots . . . so if they don't get it in independent and they don't get it in collaborative, they will get it in direct so they get it in three different ways. It's really effective in making sure those students are really understanding it and getting the in-depth understanding of the content or whatever standard they're on.

Teachers also praised the power of blended learning software to provide students and the teacher instant feedback on student performance and mastery. One teacher explained that blended learning

> makes teaching independent practice a lot easier because you just have to select what skills you want the students to learn and then they can practice those skills on their own and receive feedback. Academically, it helps because students are receiving feedback instantaneously so . . . they solve a problem and are able to kind of incorporate what they're getting wrong and what they're getting right and furthering their skills.

Another teacher stated, "It's effective in giving students instant feedback and differentiated instruction" while another added:

Another thing that . . . has been most successful is being able to provide constant

feedback in general. Using the blended learning model, when they're in direct instruction,

the group is smaller and I can more focus on that group's need for support and where

they need the feedback.

Participants revealed that one of the greatest benefits offered by blended learning was the

ability to differentiate at an individualized level. One teacher stated,

A lot of success that I've seen has been from keeping students constantly engaged and

being able to differentiate . . . since I can give different students different assignments

and not have to worry about individually working with them because they have a

computer to support them in that sense. For example, I use a program . . . which tests

efficiency and I can assign different lessons or a different level of proficiency as their

individual goals. That allows it to be accessible, it's at their level, it's differentiated, and

it's immediate feedback [so] I don't need to necessarily be constantly watching them. . . .

It's adaptive. I definitely feel that [it] is something that helps them grow and since it's in

such small manageable chunks, it motivates them.

Another praised the ability of blended learning programs to facilitate individualized

differentiation, explaining that "simple differentiation really impacts students in terms of

following along." Yet another teacher explained, "Slow learners can take their time. It's kind of

very useful that it differentiates itself in some ways with blended learning instead of trying to

meet every student's need while I'm also teaching the whole class at one time." Classroom

observations documented the application of differentiation: While the class performed exercises

using a video in Physical Education, a handful of students reviewed specific exercises with the

teacher using a card activity. Other classrooms demonstrated differentiation through the programs students were working on in small groups. Several teachers stated that they would recommend blended learning to others because of the advantages of differentiation and instant feedback, with one teacher adding, "It is so easy to differentiate to the individual needs of different types of students." Another teacher praised the impact blended learning had had on differentiation for English learners, explaining:

> [Blended learning] allows me to differentiate and scaffold in a way that is really individualized. I can make like – let's say I make an organizer for an essay like an outline. Maybe for my EL's they might have a whole bunch of sentence frames right? I'll make one and I'll make a copy of it and send it out to those individual students through Edmodo, through Google Docs, however my platform is, but then I can just remove the scaffolding and send it out to each kid. I can have four or five organizers. Every kid has what they need. It's not super public and everybody feels okay with it and they can grow that way. I've seen - I would say in their writing in particular - huge growth because it makes scaffolding and it makes differentiation so much more accessible and because the kids are used to having their own little laptop and they're all doing it, then they're okay with getting all these different things.

Yet another teacher echoed admiration for technology in facilitating differentiation, stating that technology "enhances flexibility in the classroom" and makes it "much easier to push out differentiated assignments to students." In addition to individualized differentiation, some teachers described how blended learning allowed them to group students in differentiated pods based on mastery level to more directly address their needs. They also mentioned that the

readily available and up-to-date data on student performance provided by blended learning facilitated "data-based differentiation" to "better support low performing students and push advanced students."

While teachers expressed concern over classroom management and lesson planning sustainability stemming from a station format, they generally praised the model for its effectiveness in facilitating differentiation, collaboration, and constructivist learning. Some schools allowed more teacher autonomy in how teachers designed stations, while others insisted on consistent, direct instruction, collaborative, and individual stations for every lesson. Teachers who were given flexibility to determine whether one, two, or three stations would be most beneficial to students for a particular lesson had a more positive impression of the station model. One teacher explained:

> I have three stations, but I can order them however I want. Sometimes everybody will start in collaborative and they'll do a collaborative activity and then they'll break into two groups; half will do direct and half will do independent and then they'll switch. Sometimes I'll start with a direct and independent separation and then we'll switch and then everybody will do collaborative together. What I found is that I can make much more connected and rigorous collaborative activities that flow out of direct . . . Then I can facilitate and be there to assist them because the challenge with the three rotation model is [that] in collaborative, they're on their own because you are teaching a direct instruction [station]. I feel like I have a little more accountability built in and I can create things that are more rigorous because I'm there to help them.

Classroom observations revealed a wide variety of station models depending on the lesson. In one classroom, students worked in collaborative, independent, and direct instruction stations. A student representative explained that they used a literacy program in collaborative and independent stations, while students in the direct instruction group with the instructor also had computers and used them to respond to journal entry prompts. Clear expectations and directions were posted for each station. This three-station model offered multiple opportunities for students to demonstrate mastery, helping students with learning modalities to be successful.

In another classroom, 12 out of 25 students were working with the teacher at the direct instruction station while the remaining students read an article and answered questions online. A student explained that each station lasted about half an hour in that class and that once all students experienced both stations, the entire class would work on a collaborative task in table groups. This model was more closely aligned to the traditional classroom approach with differentiated and whole-group instruction.

One classroom utilized a digital agenda that described the goals and directions for each station; in the collaborative station, students were asked to "explore this new concept" before independent work, an approach designed to encourage constructivist learning. Several teachers praised the approach of assigning projects, homework and other information electronically. In addition to logistical benefits such as saving paper, ensuring documents aren't lost, and allowing for digital storage and organization, this approach served a useful instructional function: giving students a choice on the level of support and scaffolding they wanted for a particular assignment. One teacher explained:

Sometimes [I will] send out an assignment out . . . and I'll put three organizers on it and I'll tell them . . . 'Today you need to decide [whether you] want the one that has more support or do [you] want the one that doesn't [have supports]?' . . . For the most part they tend to choose the one you want. They know when they should be pushing themselves and when they might need a little more help.

Another teacher said that the digital agenda allowed directions to be clearer and readily available for review, adding:

Successes for me is [not having] to explain [directions] over and over again. I can record myself giving the instructional piece, the direct instruction piece . . . the explanation one time. Anytime the student comes and asks me that question again I go refer back to here. It frees up a lot of time for me to spend on the things that they need to do and not the management piece . . . That is a huge benefit.

I observed instances in which students chose from different prompts on the teacher's blog. The digital agenda proved to be an effective tool for organizing assignments and instructions and offering supports for differentiation.

Teachers also appreciated the opportunities for collaboration afforded by blended learning classroom setup. Although one teacher admitted that setting up effective collaborative stations could be challenging, another explained, "Students have a chance to practice the material on their own and do procedural kind of steps on their own in the independent [station]. They also learn how to discuss things in the collaborative [station]." The collaborative stations, when planned with rigorous prompts and activities, engaged students in discussions to apply their understandings from the direct and independent stations.

Grouping was also mentioned as an effective teaching practice implemented through blended learning. A teacher explained:

> I tend to see the value in grouping students by like scores at times and then having them participate in the lesson in a specific order based on that data, but I can also see the value in peer-to-peer paring up - student's already demonstrated mastery with a student that might be medium. I think there's value to different groupings.

To maximize instructional time, some teachers included groupings on their websites, and students quickly moved into their groups between activities. In another classroom, students prepared presentations collaboratively in triads using online resources reviewed in the course. Another teacher described how the digital agenda was utilized for effective grouping, explaining:

> When we use a blended learning tool for something such as a "Do Now" then that helps me break the groups up easily and more accurately because it's kind of what they know then and there as opposed to maybe something that I drew from the day before or like the week before. That has worked with setting up homogeneous groups for the day.

Others expressed the importance of grouping using data from the blended learning programs.

Teachers were also pleased with other forms of effective instruction that the blended learning program afforded. One teacher praised the independence and ownership the approach instilled in students, giving them a chance to "go back to listen to the curriculum if they need re-teaching, self-monitoring, especially with that same application as well," while another appreciated that blended learning gave students

> more freedom to do some of their self-directed learning because if I just speak to the whole class for a lot of the time or note taking or some of the traditional forms of

teaching, it doesn't give the opportunity for some of the higher and lower learners to really do work at their level. Some of the more advanced learners - if they're [working] independently - they can go ahead and they can do more things. If it's a slower learner they can have [the program] read to them while they're reading like the online text book for history.

They also praised blended learning through station rotations for giving students multiple, varying methods for demonstrating mastery. One teacher explained:

It allows students to master the content or master the standard three different ways so that's pretty effective. It also allows the teacher to get to know the students one-on-one which I've seen in classroom observations that teachers have built this relationship with individual students because they're able to have ten students at a time indirect and in a traditional classroom, it's really difficult to do that. I've also seen in upper levels how collaborative students have really built or the teachers have really made the students develop the skills of collaborating so it has been really effective . . . It holds them accountable. The independent [station], the way the teachers have it set up holds every single station accountable even though the teacher's not physically there so accountability I think is a big part.

Another teacher praised blended learning's ability to teach students multiple skills through technology. He explained:

The learning that is happening is very multitasked so even though they are learning the content, they are also learning how to navigate through technology, how to become self-monitored learners and [how to] find information that they're looking for. I think that it

has expanded the autonomy and the ownership overall of the learning process because so

much of that is now placed on the student.

The main elements of effective teaching in a blended learning setting—differentiation,

collaborative learning opportunities, student ownership, learning through research, and discovery

through constructivism, mastery-based learning—can transform the way students learn.

Teachers generally agreed on these elements as essential to any successful blended learning

program.

Constructivist Approaches to Instruction

Interviews, survey responses, and classroom observations revealed practices aligned with

constructivist applications to pedagogy. Teachers highlighted the importance of students

learning through discovery as they rotated between direction, collaborative, and independent

stations. Constructivism holds that deep understanding and learning take place when the teacher

serves as the facilitator who guides students through an "effective struggle" as they make

meaning of a concept; the answer is discovered by the student rather than given by the teacher.

A teacher commented on this "effective struggle" to make meaning, stating:

> It allows them to struggle with it on their own and allows them to discover things for
>
> themselves. Some of them come to different conclusions or different patterns that they
>
> observe. They come to interact with each other versus with me so that they can see
>
> different perspectives.

A participant praised the opportunities for the independent critical thinking the station-based

blended learning model created, explaining:

Students from my observation and from my conversations . . . love blended learning. They love the one-on- one in direct [instruction]. They get personalized attention in direct. Teachers are able to get to know them on a deeper level in direct. They get to know their reading and writing levels and they're able to support them in that way and modify assignments for them in direct because they get to know them; their strengths and their weaknesses. Students also work in collaborative because it's sort of independent from the teacher and hands off where students are more accountable for their own work and they're accountable for each other, especially in classrooms where blended learning is happening and it's really happening well.

Another teacher highlighted the flexibility the blended learning approach in stations establishes, giving students multiple opportunities to independently make meaning. Learning through discovery was mentioned by others as well, with one teacher stating:

I've observed the rotation model where some kids are discovering something on their own and some kids are with the teacher and then they switch - so kind of having the kids discover something by themselves without the teacher is where they get the chance to play with it on their own and then when they have the time to discuss it with a teacher, that kind of talk is about what they discovered. That's kind of where it all pieces together.

A principal also described constructivist learning occurring through students' creating their own problems during his classroom observations, explaining:

There was pretty much entirely different lesson experiences that the kids received based on their previous assessment on the topic that was rate. In that sense I think it truly did develop the student's conceptual understanding in math, given the fact that some students

were creating problems based on them already having demonstrated mastery versus another small group of students getting much more targeted one-on-one time with the teacher and then playing more like a card game to develop their conceptual understanding.

Sixty percent of the teachers and administrators surveyed stated that blended learning facilitated students' conceptual understanding more effectively than more traditional approaches to teaching. One teacher explained:

I think the way that [blended learning] best supports conceptual understanding on the material is by giving them more options to work independently and collaboratively and that allows me more options to provide basic materials that give them more of a conceptual introduction to a topic.

A teacher described how blended leaning can be used to develop conceptual understanding in mathematics:

[There's] a math graphing application and that really helps students to have conceptual understanding of graphs because they're able to have sliders and kind of look at how the graph changes when you change certain parts in the equation. So we'll do this cool activity with a little somersault and you can see the parabola change as you change different parts of it so they have that conceptual understanding of how motion relates to a time and distance graph.

Another teacher stated:

The most successful thing to me is this goal for student autonomy and for students to be in charge of their own learning. The level of success in a ninth grade class when it's the

first time that they're exposed is mixed . . . You want a student who's asking questions, who's willing to work on something on their own, who tries to do something independently and can research independently to improve themselves . . . I almost feel like some blended learning becomes more hands off where you're putting more power in the students, more control over what they're doing to the students.

A teacher praised blended learning's ability to transform mastery from a memorizing process to one of application, explaining:

The test has to be complete application which, in my opinion, leads to better learning. No more memorizing stages of mitosis. Instead, Google the stages and explain them based upon your research. So, if a student is to master the content, they cannot just cheat or Google. They have to understand it enough to apply the material. I think it is a wonderful thing.

This approach allows students to make meaning based on their research and to demonstrate deeper understanding of the concept through their explanations. As a result, student responses and approaches to the question posed can vary greatly, leading to more rigorous discussions and opportunities for learning.

Another teacher commented on constructivist learning opportunities created in a blended learning setting, explaining:

I've observed . . . the rotation model where some kids are discovering something on their own and some kids are with the teacher and then they switch . . . so kind of having the kids discover something by themselves without the teacher is where they get the chance to play with it on their own and then when they have the time to discuss it with a teacher,

that kind of talk about what they discovered. That's kind of where it all pieces [come] together so having that separated time were they kind of work on their own like on the iPad and then they get their time to switch.

Another added:

I think it gave students different ways to show their understanding, especially if they had . . . one concept but they had to practice it in different ways. In collaborative stations, it allowed me different ways to say let me check for your understanding this way. Now do you understanding it this way? Do you understand it [that] way? So academically students were able to . . . quickly [learn] within the span of one period, check for their understanding or show mastery.

A participant stated:

They're doing something that requires collaboration between the groups. It's a really wonderful way for students to connect the dots – so if they don't get it in independent and they don't get it in collaborative, they will get it in direct so they get it in three different ways. It's really effective in making sure those students are really understanding it and getting the in-depth understanding of the content or whatever standard they're on.

The research shows that blended learning is a terrific approach to instruction through a constructivist lens. It allows opportunities to research and discover, fosters collaboration and the sharing of ideas, and is designed to facilitate flexible learning styles and timelines. However, these wonderful learning experiences will only be effective if teachers have the skills and training necessary to plan for them and to create classroom systems that foster individualized and collaborative learning.

Pitfalls and Challenges

Participants also identified several pitfalls and challenges when implementing blended learning. Administrators expressed concern over leading schools that utilize blended learning when they had little or no experience using the approach themselves as teachers. One administrator explained, "As an admin coming into this type of environment, I have to learn [quickly] how to provide feedback to teachers so they will be more effective in the classroom and utilizing this model in the classroom to their benefit." This sentiment was shared by a teacher, who added:

> I think part of the professional development necessary is helping administrators who obviously didn't get training in blended learning either in their own credential programs . . . or maybe even their admin programs, [get the] understanding and patience for the fact that there's a learning curve or that teachers need to have that support . . . teachers need lots and lots of support on that, but also if you're going to be an administrator on a site that has blended learning, know what to expect, knowing what authentic support of teachers looks like.

Teachers voiced similar concerns about the lack of experience with blended learning, with one teacher stating:

> Getting used to the technology and having to know what the applications are themselves and how it affects students especially with students with special needs [can be challenging]. I think that it's really hard to anticipate what that's going to look like for them before implementing it because it's such a case by case basis that there's always this trial run that occurs and then a back log of problem solving that occurs after.

Several teachers wondered about the sustainability of planning every evening for a blended learning class, citing the extensive preparation considerations for a three-station rotation model. One teacher explained that lesson planning for three classes actually felt like planning for nine; each class needed planning for direct instruction, collaboration, and independent study. Another teacher cited the same challenge "because you have to create materials for each station," while another said, "Planning is a big, big, big part of blended learning. That's something that teachers have expressed that it is a challenge, especially for new teachers who are new to the model." Yet another lamented, "The planning time we get at work definitely doesn't even come close to the time that's needed in order to implement this with fidelity and have the teachers still have a life-work balance that is actually balanced." This was particularly true for new teachers because "one big thing that's lacking in the new teachers is that they're not able to plan thoroughly for each station and for students to have a better understanding of the stations." Another teacher explained:

> The problem is more when you implement blended learning you need so much preparation beforehand and it seemed like two or three days of potential collaboration on lesson planning isn't enough when you almost need to plan for at least a semester when you're thinking about blended learning. You need to have everything ready far before you're actually going to do it or at least have it available.

In addition to the extensive planning workload, teachers discussed the challenges associated with the stamina required to maintain an effective blended learning classroom. Teachers described the difficulties in managing multiple stations while constantly speaking during different direct instruction rotations. One teacher explained, "Since everybody's doing something different – if

there [are] some students that are working on their own independently, there [are] other students that you're helping at that same time . . . it's hard to talk for that long."

Another difficulty in planning teachers cited was the frequent need to plan effective grouping for each lesson based on student needs. A teacher mentioned "planning for the lessons has been one of my biggest challenges . . . coming up with ways of how to set it up or to distinguish who's going to be in what group." Another teacher explained, "It involves a lot of being on your toes. You're constantly moving around and interacting with the students especially in small groups. You're individually working with them a lot. There's really not a chance . . . to step back."

Challenges with technology were also cited repeatedly by study participants. One teacher explained that not all students are experienced with technology, making technology a distraction during a lesson and requiring instruction to be interrupted. One teacher explained:

Blended learning requires students to be self-driven and disciplined to stay focused on the task at hand. Students have infinitely more distractions with a laptop in front of them than 20th century learners ever faced with paper, pen, and imagination. Ideally, the onus should be on students to self-monitor their own progress and maintain the focus and discipline to complete their work thoughtfully and in a timely manner. However, that requires extraordinary impulse control that exceeds the cognitive development of teenage brains. The students who are able to focus are few and far between. Thus blended learning is a powerful "sometimes tool," but can lead to classroom management problems when blended learning is the everyday reality.

Student accountability was frequently mentioned as another challenge as students often visited other sites and needed to be redirected to the required program or site, leading one teacher to recommend implementing a monitoring system to ensure that students are on-task at all times. One teacher stated:

> I would say in some instances depending on the lesson, technology is a behavior management problem. I'm not sure how [to address this] whole new level of behavior management and social skills that were not there previously, which is scary for a lot of teachers. Using social media and different things or even Google docs, [there is] potential for students to mistreat or misuse technology and people in the classroom.

Teachers also lamented the limited access to technology at home for some students, which prevented some from having access to assignments and resources. One teacher explained:

> Even though the kids have one-to-one technology at school, they don't take their technology home. Since they're very young, a lot of the students don't have any access to technology at home so if I start an activity in class on their iPads I can't assume that they can finish it at home for homework. That's been the biggest frustration logistically is that it is very much blended learning . . . I have to make sure the homework is always on paper so even if it's something like in Pearson . . . I have to make sure that I copy it out of there and then print it out on paper for them to be able to access it at home.

Some teachers voiced concerns over feeling pressure from administration to consistently utilize technology, even if an activity with paper and pencil made sense in a particular lesson. They expressed fear over "getting caught" using traditional tools instead of technology by administration. Of this feeling, one teacher stated, "Can I get away with this? Can I get away

with forty minutes without anybody walking by?" Another teacher questioned whether the school was "using technology for the sake of using technology or . . . using technology to actually enhance learning." Heightened technology use also raised concerns about other skills needed for success being neglected. One teacher exclaimed, "These students have been in blended learning for so many years, I don't have a comparison of what they would have been if they were and what they're learning at this time," while another stated, "They will be using computers every day from a month. They'll be like, 'I just want to use a piece of paper and a textbook.' They beg for the text book now, but they've been using computers for so long."

Teachers also mentioned challenges engaging students when technology was left out, such as on paper and pencil assessments. Their reliance on stimulation with technology—computers, music, videos, and headphones—made silence distracting for some students, with one teacher explaining:

> As teachers it's our job to . . . meet our students where they are . . . so we have to be
> more flexible, but also building in those sort of more traditional study habits that
> ultimately those big high stakes tests come down to. That's a responsibility too.

Some teachers were concerned that blended learning was largely used for procedural exercises as opposed to deep, conceptual understanding, with one teacher stating, "I feel like with blended learning for me it's mostly procedural stuff." Some programs were meant to enhance conceptual understanding with

> a lot of videos, a lot of discussion questions, and it had problems that were scaffold to
> help students. I don't know if that actually like it didn't really fulfill its purpose, but the
> intention of it was to give the students conceptual understanding in math.

Identifying and securing effective blended learning programs was also cited as a challenge. It became clear from the research that programs varied widely in quality in terms of rigor, engagement, reliability, and cost. A teacher lamented the limited effectiveness of certain textbook-based technology, stating:

I would love to have more of an interactive textbook. I would love to have the textbook as adaptive as [some blended learning programs] . . . I feel like we already have adaptive technology. I don't understand why it's not being integrated fully with the textbooks. The other thing I see is that as we're doing integrated math, I'd love to see more resources that combine algebra and geometry, integrating different topics, integrating science and math - sort of horizontal collaboration.

Concerns about Internet connectivity were also repeated. Teachers expressed frustration over having to pause instruction whenever the Internet connection was interrupted. Four participants said that they would not recommend blended learning to another teacher because of the difficulty of effective implementation and because of the potential classroom management challenges.

Several teachers expressed concern about students being off-task during blended learning lessons because of the station-based nature of the classroom setup. One teacher explained, "The other thing is the internet is still huge. There [are] so many things to do on the internet that don't relate to school. They are so incredibly creative finding ways to be distracted on the computers." Another teacher added:

It's hard to know when you're running three stations . . . [if the] collaborative is talking in a way that's focused, but frankly I can't tell because collaborative and direct are

talking, independent really got off task and they are no longer working on what they're

working on. . . It's intense but the level of noise that our kids give themselves. . . I can

see that it's not as foreign to them because they would like [to] have their phone out and

their computer up and also like they can sort of hear what I'm saying.

Teachers also identified technology issues as getting in the way of effective teaching. They

pointed out that they didn't always have a plan when technical issues occurred or when students

were not properly trained to use the technology required for the lesson. One teacher explained:

Am I trying to teach them technology or am I trying to teach them the skill that we're

learning in class and are those the same? . . . If you spend twenty minutes of your class

period trying to teach them how to use Google docs, then was that time well spent?

Another discussed the lack of backup options for learning when technology fails, adding,

"They've gotten a lot better at becoming more patient and waiting. When problems come up,

some of them have even gotten to the point where they will trouble shoot their own problems

which is great." These technical issues could deprive students of precious instructional time,

something no student can afford.

Establishing a classroom environment in which students consistently focus on learning

even when working in independent groups away from the instructor is critical for success. This

practice is a work in progress for many teachers and one that requires additional training: Not all

classroom management techniques transfer directly to a blended learning classroom. Issues with

technology can exacerbate this challenge so a strong understanding of educational technology

and the establishment of systems to allow students to troubleshoot technical issues will be

essential for any successful blended learning teacher.

Assessing the Effectiveness of Blended Learning

When considering evidence showing the impact of blended learning, it is important to revisit the two main research questions of this study: What knowledge and skills do teachers need to provide effective instruction in blended learning classrooms? Secondly, what type of training is needed for teachers to develop these skills? To answer these questions, we must identify what we want the result of blended learning training to be. While assessing the impact of teaching practices can be subjective, the detailed approaches offered by participants show objective methods for measuring success.

Participants described varying approaches to assessing the impact of blended learning in the classroom. One teacher described using online surveys as assessments to check for understanding and then reviewing responses in class, suggesting it

> gives the teacher as well as the students a sense of where we are and how we're going to move forward. I feel like it's a good way to [assess] during class and it gives feedback right away to students and to teachers.

Another teacher explained:

> The first way would be how well students can use technology, especially from an area where a lot of these students haven't used computers very often . . . setting such as a new program or even a new like switching from a laptop or an iPad to a Chrome book and how quickly they're able to use . . . The second way would be how comfortable students feel with their feedback and their responses . . . They don't have to wait. They don't have to fill out a worksheet and then turn it in and then wait for the next week. . .

They can get immediate feedback . . . Then you're seeing a lot more success from the

students.

Another added, "There's a much quicker turnaround for me to have something graded and

measurable and data driven within one class period."

A teacher cited student participation as a great measure, adding, "I think that's the biggest

thing and what goes hand in hand with that is engagement. If students are engaged, I think that's

my most efficient measure." Another suggested, "I think participation. I think that's the biggest

thing and what goes hand-in-hand with that is engagement. If students are engaged, I think that's

my most efficient measure." Teachers also described a variety of ways to assess student

mastery, including the utilization of built-in assessments in several blended learning programs.

One teacher explained:

The great thing about blended learning is, it diversifies the ways teachers can collect data.

In a traditional classroom, all assessments are created and scored by the teacher. Some

content areas have access to learning software . . . with the assessments built in and

instantly scored by the computer.

Another mentioned the use of rubrics without technology to gauge student mastery levels,

explaining that electronic assessments were not always necessary or most appropriate.

Some teachers mentioned different assessment approaches in each station type. One

teacher explained:

I can check their scores on IXL, the math program. I also have a sheet where they keep

track of their own progress that I sign off as they finish each activity. Also, in direct I am

able to easily see what things they're understanding because I see them in a very small

space. I can rotate around the group and see which students are understanding [the content] and which students are not very easily. For collaborative, usually I have something that they work on together that they can turn in and I can see if they've understood that.

Another teacher mentioned the impact of stations on checks for understanding, explaining, "Blended learning lends itself for student centered learning where a teacher can walk around and check for understanding and if there is, he/she can answer or clarify any misconceptions."

Student work was the common factor in all approaches. One teacher described how assessing understanding through student work depended on the type of station the work was developed in. She explained:

Comparing I guess the quality of their work when it's a whole group versus the quality of their work when there's blended learning and there's two groups and seeing that the quality is higher because obviously there's less of them and direct instruction. With the independent group, they're also getting that instant feedback from technology. I think both of those add together with student work in general.

The importance of measuring the success of blended learning programs cannot be overemphasized because it will help establish the body of research necessary to develop best practices. Identifying strategies and tools that are proven to be effective will benefit blended learning professionals throughout the education landscape.

Skills Necessary to Implement Blended Learning

The skills necessary to effectively implement blended learning were included because of their direct connection to the research questions. One participant was quick to point out that

while certain skills were necessary to effectively implement blended learning, success was also determined by teachers' willingness to invest in blended learning and utilize it with fidelity. He explained:

> When it comes down to it, it really has been up to the teacher herself and the level of integration technology has been in the classroom . . . I would say that it has to do with whether or not teachers feel it needs to be in the classroom as well as I think the community of the school plays a huge factor in the amount of technology that is put into the classroom.

Indeed, seeking out resources and supports to implement blended learning are critical as teachers begin to learn about effective implementation.

Several participants mentioned technological fluency as a critical skill for effective blended learning implementation. They cited multitasking with education, understanding education technology, using online curriculum systems, and finding solutions for students who did not have technology at home as essential skills for success. Computer literacy for both instructors and students was referenced, and understanding the difference between PCs and Macs was cited. One participant summed it up, saying, "You need to be tech savvy. This is by far the most important skill set that is needed." It was evident from the research results that a lack of technical proficiency on the part of teachers or students could lead to lost instructional time and can ultimately lead to classroom management challenges.

Effective classroom management was described as "key in a blended classroom because so many students are working independently [away] from teacher instruction. The skills are the same in terms of teaching, especially teaching well." Participants mentioned the importance of

classroom management and "clear-cut discipline" as essential elements of a classroom that incorporated differentiation and "individual attention." One teacher emphasized the importance of classroom management, particularly in a blended learning classroom, by stating:

> I believe a blended classroom does require a higher quality and higher skilled teacher because a poorly run blended classroom, to me, can be less effective than a poorly run traditional classroom. It takes a more observant teacher with higher behavior management skills.

Participants also mentioned the importance of establishing a collaborative culture in the classroom to allow for station-based work and project-based learning. Teachers must be able to train students on working together effectively and professionally both in person and through technology. A teacher explained, "Students learning in a collaborative station versus learning in an independent working station has helped them master concepts with different levels of support." Teachers and school leaders will need training opportunities to master these identified skills in order to impact student success in blended learning classrooms.

Training Necessary to Implement Blended Learning

Identifying the training necessary to implement blended learning was also essential because of the direct connection to the research questions. Effective training may be the most important support for providing teachers with the skills they need to be successful in a blended learning classroom. While 80% of the teachers and administrators surveyed stated that best practices for teaching used in traditional classrooms applied to blended learning classrooms, a full 90% added that effective implementation of blended learning required additional skillsets beyond the traditional classroom model. Eighty percent of survey participants stated that they

would benefit from additional training in blended learning to develop instructional approaches that facilitate conceptual understanding and application. Teachers mentioned the importance of understanding how technology can be incorporated effectively into a blended learning classroom beyond the blended learning programs. One teacher explained:

> I haven't had a lot of training about how to think about technology in regards to the things that you already do in your class. One of the big challenges I think is like let's say you're going to use Google Drive and so how do you organize it because Google Drive is not very well organized in terms of like receiving things from students. I know they have Google classroom now which I don't use because we use that model here but like figuring out those little systems. I think those types of training would be helpful for teachers that are first starting, but we didn't have things like that.

Seventy percent of teachers and administrators surveyed stated that they had not received adequate blended learning training to lead students in rigorous learning activities in their credential programs. This finding was in contrast to the 67% who stated that they had received adequate blended learning at their school sites. This raises questions about the preparedness of administrators who lead their instructional teams in blended learning professional development; while the training they lead at school sites was deemed adequate by nearly two-thirds of the faculty, the administrators claimed to have little adequate training themselves. In many blended learning schools, administrators are leading teachers in programs they never utilized as classroom teachers. This heightens the importance of training school leaders—not just classroom teachers—in effective blended learning implementation. Training needs to be ongoing because of the extensive programs and apps teachers are learning about to enhance their

instruction. One of the challenges is finding time to provide training on effective pedagogy while also introducing and supporting the use of effective programs to be used in a blended learning classroom.

Teachers suggested that observing peers at other school sites so as to be exposed to a wider range of approaches and philosophies is an important element of professional development. One teacher explained:

I think it would help to be able to observe other schools in the organization or even outside our organization to see what blended learning looks like in other places. I honestly have only seen maybe one or two other schools within our organization . . . I . . . want to see [other schools] or just to even see videos or things like how is this effective in these other organizations.

Another teacher added:

I think the best thing - especially for first and second year teachers - would be to give them or allow them the time to go observe other classrooms. That's really big. We do that here. We do peer-to- peer observations, but I think it needs to be done maybe more often or more organically instead of teachers feeling like it's a requirement and they have to do it in order for them to stay incompliance with school policies. Maybe something where teachers are given the time . . . to go into the classrooms, inside or outside of their discipline, to see how a master teacher would teach in the blended learning classrooms.

Several teachers also expressed an interest in adding a technology training component for students and teachers to ensure smooth lesson transitions, minimal student frustration, and effective planning. This includes training for different programs and apps as well as hardware

training for tablets, laptops, and other devices. One teacher explained the importance of learning

about technology through a student lens, explaining:

> As nice as it is to have a professional development where teachers show you the
>
> technology and allow you to play with it, I find that it's lacking the actual student view of
>
> how that technology is being used. How students use the technology and how they're
>
> going to react to it is much different than being in a room of professionals.

He added that observing how an effective teacher utilizes technology in the classroom would be

extremely helpful.

Teachers mentioned a lack of training for adapting blended learning technology into the

curriculum, leading them to adjust their lesson planning to the programs instead of utilizing the

programs in a manner that serves student learning best. A teacher explained:

> A lot of the resources also don't provide enough flexibility for teachers . . . if you're just
>
> incorporating . . . programs as a supplemental part of your curriculum, it seems a little
>
> more difficult to . . . tailor every aspect of the programs involved in blended learning to
>
> fit your schedule. You have to adapt the different resources you're using.

A lack of literature about blended learning theory and its impact on students' conceptual

development was also evident, with only 53% of teachers and administrators stating that this

component was included in professional development. With limited in-person opportunities to

observe blended learning best practices, it would be helpful to learn about best practices from

international practitioners who can share their findings.

Finally, 26% of survey participants stated that they could benefit from classroom

management training for their blended learning classrooms. With new challenges arising from

the blended learning classroom setup involving stations, collaboration, and multitasking, teachers will need training on effective strategies for classroom management and on pitfalls to avoid.

Conclusion

The school site research led to several conclusions regarding successful blended learning implementation. Professional development was considered effective when it included peer observations and collaboration as well as modeling of best practices. Participants also benefited from the integration of blended learning programs with training on instructional practice. They did not benefit from generalized professional development that focused on only introducing resources and did not differentiate based on teacher experience or needs. Participants praised digital agendas in the classroom and the ability to easily assess student mastery using blended learning software. Their practice was also positively impacted by individualized differentiation, constructivist learning opportunities, and strategic grouping. Teachers emphasized the inclusion of self-monitoring and ownership that was facilitated by blended learning.

However, they expressed concern about classroom management issues stemming from the inclusion of technology in the classroom. They also questioned the sustainability of the model because of the expanded lesson planning requirements for effectively implementing the approach. Equitable access to technology, as well as identifying effective blended learning programs, were also concerns voiced by participants.

To address these challenges, participants mentioned the importance of technical proficiency, effective classroom management, and a positive and collaborative classroom culture. They also requested training involving peer observations, more research analysis of effective blended learning practices, and more technical training for teachers to use new

resources and troubleshoot issues. The recommendations in the next chapter address this

feedback in order to inform professional development planning for both school sites and teacher

education programs.

CHAPTER FIVE

IMPLICATIONS AND RECOMMENDATIONS

By answering two questions, this research study develops a better understanding of the knowledge and skills needed to effectively implement blended learning: First, what knowledge and skills do teachers need to provide effective instruction in blended learning classrooms? Secondly, what type of training is needed for teachers to develop these skills? Once the skill set was identified, the study turns to recommendations about how to develop these skills for teachers who are utilizing blended learning models. The research study yielded findings that are actionable and applicable to any blended learning classroom. While the answers to the two research questions may be context-dependent as blended learning becomes more prevalent in school sites, this research study provided detailed responses to both, and clearly shows that specific skills and training are needed to successfully implement blended learning.

The study reveals that blended learning is highly regarded among educators as an effective approach to engage students and make rigorous learning more personalized and accessible. They lauded opportunities for differentiation, mastery-based learning driven by data, collaboration, and organization tools offered through online programs. Furthermore, educators found in blended learning opportunities to engage students with topics that piqued their interests. They spoke with pride about successes in the classroom, excitement about the teaching profession, and enthusiasm for student learning shared with parents. Participants emphasized the positive response to blended learning that they had witnessed in students and parents. A physical

education teacher smiled as he described how parents reacted to their students' learning in physical education, explaining:

> I just feel like the feedback from parents and the students just the conversations I've had with them just randomly they act like they really genuinely enjoy physical education. They bought in. I feel like second semester has been really great for me from the first semester because I incorporated more technology based lessons and instruction. Yeah just feedback from the students. There have been some students that were on the lower end that have raised their grade.

While praising the constructivist learning opportunities created by blended learning, a teacher stated:

> It allows them to struggle with it on their own and allows them to discover things for themselves. Some of them come to different conclusions or different patterns that they observe. They come to interact with each other versus with me so that they can see different perspectives.

Another teacher was happy to see students having more of a say in their education, explaining:

> I think also the biggest success is . . . differentiating for different learning styles and finally giving a voice to a lot of students [through] creative learning modules . . . traditional learning systems didn't give them a voice before. I think that's where the greatest success comes from.

Another participant added, "It provides an opportunity for both low-performing and advanced students to thrive. Blended learning done right, abandons the 'one size fits all approach.'"

One teacher expressed excitement for students' ability to learn more about topics they are interested, stating:

I think the biggest success that comes from the technology in my classroom is the ability for students to expand that learning in their own interests [in a way] that you wouldn't be able to do with one teacher: being able to just research or have the students deal with or answer what they really find interesting about an assignment or topic.

Indeed, many blended learning programs offer students choice in what topic they want to explore while still teaching the content in the lesson plan. For example, they can learn about conjugation using activities involving sports, art, history, or other topics.

A participant summed up the potential of the blended learning approach:

In order for our students to be learners and leaders of the 21st century, I don't think they will get the skills they need outside of a blended learning environment. Blended learning isn't a phase or gimmick. It's the new way of learning for all students. I truly believe it's going to eventually become the norm in all schools.

With demand for individualized, differentiated instruction and the growing accessibility of technology, blended learning is poised to play a larger role in education in the coming years.

While educators endorsed blended learning overall, the study also revealed that implementing blended learning with fidelity is extremely challenging. The multitasked classroom environment can be difficult to plan and manage. Furthermore, technical difficulties can derail wonderful lessons and conceptual understanding achieved through collaboration can be challenging to design. Educators—teachers as well administrators—need substantive training and support to develop the skills necessary to implement blended learning effectively. I contend

that the majority of educators working in blended environments have not received formal training on the approach in their credentialing programs; the burden falls on school sites and districts to lead this work for current teachers.

The data clearly highlight the skills that blended learning teachers need to develop for this pedagogical approach:

- Classroom management specifically for a blended learning classroom;

- Technology implementation, including training students on education software, technical troubleshooting, and effective student data analysis;

- Establishing a collaborative culture of learning;

- Assessing student understanding; and

- Developing students' conceptual understanding.

Teachers need formal opportunities to evaluate models, develop skills, and work through anticipated challenges, including professional development focused on:

- Peer observations in blended learning classrooms;

- Technology integration, including a focus on instruction;

- Research on blended learning theory and effective practices;

- Detailed analysis of effective station models in a blended learning classroom; and

- Sustainability in terms of lesson planning workload and continuous direct instruction in some station models.

This chapter discusses these findings in greater detail and offers recommendations to address the aforementioned need areas. This research guides schools toward meaningful professional development opportunities.

Classroom Management

Study participants revealed considerable discomfort with students having off-topic conversations around the classrooms away from the teacher. While no participant criticized student discussion, several wondered about the degree to which conversations taking place around the room away from the teacher's direct instruction station were on-task. They also acknowledged the increased temptation for off-task behavior when students are given a personal computer with Internet access and limited monitoring. Teachers expressed a genuine desire to maximize instructional time and were hesitant to release students for independent work in stations, fearing their time might be used ineffectively. They were also concerned about losing student engagement when technical difficulties arose, preventing students from progressing with the lesson.

Several steps can be taken to develop instructional skills to address these concerns. Since peer observations were repeatedly mentioned as the most effective form of professional development, teachers can begin by observing station-based classrooms in which students consistently stay focused on the project at hand with minimal behavioral redirection from the teacher. Critical classroom elements contributing to an environment of rigorous learning can be documented, including behavior expectations and the clarity and engagement level of assigned projects.

Second, establishing a positive classroom culture rooted in high expectations and rigor must be established specifically for the blended learning classroom. For many students, the transition to a blended learning environment may be a sudden departure from the classrooms to which they have been accustomed, and thus teachers should share expectations and goals in

order to establish a positive classroom culture. School-wide norms for blended learning classroom culture expectations can be discussed and agreed upon to create continuity for students as they move from one classroom to the next. School leadership must also establish clear expectations for different roles, including classroom ambassadors, technical support advisers, and table leaders. Digital citizenship must also be discussed and reviewed throughout the school as many behavioral issues can stem from unprofessional interactions online.

Third, student technical support teams can be developed to allow students to overcome technical challenges without teacher interventions. A portion of the teacher's website can be devoted to short screencasts on how to access materials, troubleshoot login issues, create accounts, review data, and establish online collaboration groups. Students can visit the page to get help when the teacher is available to assist. The second tier of support can be assigned to student experts in the room who can assist when the self-help page does not resolve the issue.

Fourth, teachers must be prepared with back-up plans in case school-wide technical issues such as Internet connection loss occur. The back-up plan does not necessarily need to be photocopied versions of the lesson materials: online materials can be downloaded in advance for offline use, in-person discussion opportunities can be rearranged within a unit, and sessions for goal-setting and planning can be initiated. Utilizing every minute to advance student learning should be an integral part of the school culture and should be a driving force to ensure teachers are consistently ready with learning opportunities for students who do not have the luxury of a lost instructional period.

Proficiency with Technology

Teachers and administrators also expressed a desire to learn more about the technologies used in a blended learning classroom. Several teachers expressed concerns about being proficient with the educational software often utilized in blended learning classrooms. They are tasked with curriculum design, data analysis pages, and student software training. Training teachers and administrators on software use is not without hurdles. Study participants revealed concerns over the ineffectiveness of school professional development that focused on software introduction rather than instruction. Indeed, the task of the professional development provider becomes more challenging as he/she must lead both instructional and technical sessions.

There are many approaches to addressing the gap in technology proficiency. First, all professional development should be driven by instruction but should incorporate technology tools and programs when applicable. From the research results, sessions that focus solely on technological resource sharing have not proven to be the most effective form of professional development; teachers want to know how the technology can apply to instruction and student learning. Student learning—the ultimate outcome of teacher growth—should drive professional development, with technology serving as a means to improve student learning. The two should always be presented together.

Establishing a Collaborative Culture of Learning

Teachers also expressed a desire to establish a collaborative learning culture in their classrooms. While many had an understanding of what collaboration looked like in a traditional classroom setting, the introduction of blended learning signaled the need to revisit effective collaboration in the classroom. Students can now collaborate both in person and over computers

in the classroom and at home, paving the way for new learning possibilities. It is also important for teachers to consider how collaboration with technology can enhance the learning process instead of simply serving as a substitute for in-person collaboration. As the options for collaborative learning increase with the inclusion of the blended learning model, teachers need the skills to train students to be effective online collaborators. These new collaborative learning formats precede a requirement to develop student understanding of digital citizenship. Not all classroom behavioral expectations translate seamlessly to online learning environments, necessitating the need for additional training.

Teachers require extensive training in preparing students to collaborate in class and online, especially because many students will be experiencing online collaboration for the first time. In addition to technical training, teachers must understand the characteristics of a project that may be taught through an online approach rather than exclusively through an in-person one. They must also teach digital citizenship, preferably using a blended approach to resonate more with students in blended environments. Since these critical understandings are not subject-specific and apply to all blended classrooms, it is essential for these student trainings to be discussed and agreed upon by the entire school and incorporated into the school-wide expectations for students.

Assessing Student Understanding

Assessing student understanding is critical in determining support and enrichment opportunities. Many blended learning programs offer robust data-gathering systems that instantly deliver student results to the instructor. Some go further and assign activities to students based on their areas of growth and keep both the teacher and student informed of

student progress. This student data should be utilized frequently by teachers to adjust

instruction, supports, activities and lessons as necessary to support student learning. Students

should also be trained in assessing data to identify their strengths and areas of growth as part of a

school-wide initiative to promote self-monitoring and student ownership of learning. If students

identify what they know and what they need additional support or practice in, they can continue

their learning long after the school day is over.

For this skillset, schools can consider building a technology workshop for students so

they can become acclimated with various programs, hardware, and expectations. Videos

highlighting the trainings can be posted on a support web page for students to reference when

needed; teachers can refer students to the site to minimize interruptions to learning for technical

challenges. Schools should also consider discussing what type of student mastery data they will

review several times a year in order to inform the student data teachers will review regularly.

This allows teachers and students to assess content mastery throughout the course while

providing school-wide data to guide professional development. Teacher autonomy is preserved

and school leadership develops training informed by teacher needs.

Developing Students' Conceptual Understanding

While the majority of participants praised the impact blended learning had had on

students' conceptual understanding, some teachers did not articulate how conceptual

understanding was nurtured in the classroom. Some participants mentioned the "effective

struggle" that took place with assignments and others described deep understanding

opportunities that arose from having multiple chances for mastery through the station rotation

model. Despite efforts to increase student conceptual understanding, a full 80% of participants

stated that they would benefit from additional training to develop instructional approaches that facilitate conceptual understanding and application. Participants underscored the importance of enhancing student conceptual understanding through the individualized differentiation offered by blended learning—but were not clear on how to reach this goal. The challenge partially stems from how blended learning is being implemented in conjunction with learning activities through research projects. In classrooms where blended learning is used without project-based learning, it may be difficult for students to access opportunities for conceptual understanding unless the blended learning programs are specifically designed to incorporate conceptual understanding. From the observation and interview data, it became clear that most blended learning programs used a worksheet-style approach to build skill mastery but offered limited opportunities for conceptual understanding development.

To address this challenge, professional development should be offered that shows how blended learning can be integrated with collaborative research projects to enhance conceptual understanding. Collaborative projects can give students opportunities to bring those skills to the group to discuss, apply, and draw conclusions. Students should be able to articulate justifications for their conceptual learnings and apply them to the project goals to ensure deep understanding. By working in conjunction with conceptual learning opportunities, blended learning programs can foster rigorous student learning.

Peer Observations in Blended Learning Classrooms

Of all the training and support gaps mentioned by participants, none was as prevalent as the opportunity to observe other teachers in blended learning classrooms. Teachers expressed concern over struggles with blended learning implementation because they had not observed

effective models in action. Most of their trainings and learning opportunities focused on instructional theory, and teachers repeatedly lamented the lack of specific examples and supports to facilitate classroom implementation. The relatively recent introduction of blended learning is partially responsible for the lack of proven, specific instructional practices. As a result, teachers and administrators are eager to observe effective practices so they can improve instruction and provide better feedback and professional development, respectively. Teachers mentioned a need for opportunities to observe classrooms both in and out of their organizations to see different models in practice and to analyze the benefits and drawbacks of each. Since there is no single established approach to blended instruction, participants viewed their growth as blended learning educators as an evolution influenced by experimentation with observational data and research. Newer teachers in particular asked for opportunities to learn from their more experienced peers but acknowledged that even the most seasoned blended learning instructor would only have a few more years' worth of experience. For administrators, observing other classrooms to learn more about blended learning best practices helped inform their professional development planning and observation focus areas, especially because most administrators did not experience blended learning when they were classroom instructors. School administrators are in the challenging position of serving as instructional leaders without having directly experienced the type of instruction they are supporting, which means they must continually learn about effective blended learning to support teachers. More classroom instructors experienced with blended learning will become administrators in time, but the gap between teacher and administrator experience levels is currently wide.

Schools need to plan both learning goals and logistics around peer observations to ensure they are impactful. Specific learning goals that align to school goals should be discussed, keeping in mind that blended learning serves as an approach to delivering content and not the content itself. Establishing context before observations can emphasize this approach and lead to more impactful learning. Teachers should have considerable autonomy in determining how the learnings will impact their classroom instruction while staying true to the school-wide goals.

The school schedule might be reworked to create opportunities for observation, and a system must be in place for identifying which classrooms to observe and for what purpose. Logistics such as classroom coverage must be arranged and videotaping options discussed to support simplified logistics. A system to organize and house observed best practices with justifications can be helpful.

Technology Integration, Including a Focus on Instruction

Some participants explained that they were adjusting their lesson planning to the programs instead of utilizing the programs in a manner that served student learning. It is important to remember that blended learning is an approach to learning and not the learning itself; blended learning must serve as a support to help convey understandings instead of being the end result. Part of this challenge stems from how blended learning professional development is implemented at school sites. Professional development involving blended learning often showcased several online programs and offered time for teachers to interact with them; however, some of these sessions did not provide detailed instructional context. As a result, teachers incorporated programs to their lessons without a clear understanding of how the program could support instruction.

To address this challenge, professional development should focus on effective instructional practices and lesson planning, with blended learning programs incorporated throughout. Professional development topics for instructional practice must be based on data that assesses teacher needs. This data can be gathered from teacher observations and from blended learning programs. Doing so will ensure that professional development supports the greatest areas of growth and blended learning programs support students' highest needs.

Blended Learning Research

With the relatively recent introduction of the blended learning approach in nationwide K–12 schools, on-site experts may not be readily available at every school site, and best practices may be difficult to identify. Over half of teachers and administrators surveyed in this study stated that research is missing from professional development—a concerning trend considering the limited blended learning experience on most campuses. Research on effective blended learning implementation should be accessed when identifying best practices, and should align with findings from classroom observations.

Research should be a part of every professional development session, and instructional practices discussed should be aligned to the research. Research can also guide classroom observations in order to directly connect the observation focus to professional development planning. Sources should also be readily available to faculty to encourage growth.

Detailed Analysis of Effective Models

The relatively recent introduction of the blended learning model has left many schools and districts looking for effective implementation examples they can observe and learn from. Principals with limited experience teaching with a blended learning model are looking for

resources and practices to support their teachers, through both observations and school-wide professional development. The participants in this research study frequently mentioned experimenting with various practices and programs, and expressed a strong desire to learn from others through observations and research analysis. They were eager to improve their blended learning instruction in order to positively impact student learning but needed additional support and training.

To support their growth as effective blended learning instructors, schools need to identify models and analyze what makes them effective. School leaders can lead this work as part of their own growth as instructional leaders, but the process should build investment through teacher collaboration. The evaluation process can be a great way to unify the school as everyone works together toward a common goal. Schools can begin by identifying schools that utilize blended learning. Some can be found on growing databases focused on blended learning, such as the ones developed by the Christensen Institute. They can also identify research on effective blended learning practices from think tanks focusing on this topic, such as the International Association for K-12 Online Learning (iNACOL). Observations and feedback from instructors can inform the focus of the analysis to ensure the greatest possible impact on instruction. Feedback from students and parents, a critical element often missed in identifying instructional areas of growth, should also be sought before identifying areas of focus for school-wide professional development. By building a collaborative learning network, schools can rapidly improve blended learning instruction and contribute to the body of research for other schools to benefit from.

Sustainability

Teachers also expressed concern over the implementation of the station model, for several reasons, including the extensive planning required and the questionable sustainability of leading direct instruction for an entire period. While the station model affords students the opportunity to discover a concept through different learning modalities in the direct, collaborative, and independent stations, the teacher usually remains at the direct-instruction station. This demands extended periods of speaking by the instructor in addition to limiting his or her ability to interact with students at the other stations. The individualized nature of blended learning—while very beneficial for students—often requires individualized direction, which can be difficult for teachers in large classrooms. There must be a plan to give teachers flexibility to spend time with students individually or in small groups when needed.

Furthermore, teachers explained how difficult it was to plan three lessons for every period. Both in terms of lesson planning and lesson implementation, the station model raises questions about sustainability. The benefits of the station model—such as differentiation, learning through discovery, and support for multiple learning modalities—warrants a close look to see how this model can be preserved.

One option is the introduction of video into direct instruction. Teachers can record portions of their direction instruction messaging and can support students at the station while having more opportunities to interact with the other groups. The short videos can also be posted online on the teacher's website to allow access at home and in the future. The videos can be used to help students catch up if they are absent and can refer to various blended learning programs, demonstrations, and collaborative projects that are going to be used in the lesson.

Videos might allow greater flexibility to meet with students or answer questions. The videos are not a substitute for teacher instruction; rather, they complement the work of the teacher at the direct instruction station by giving students opportunities to receive the help they need while alleviating the need for an instructor to repeat certain information each period.

Collaborating on lesson planning can also lessen the burden of having to plan multiple lessons for each class in addition to creating opportunities for more interdisciplinary learning experiences for students. When students need particular math skills for a science lesson, teachers can work together to share the planning workload. The resulting lesson will be easier to plan, as well as more rigorous because of the interdisciplinary nature of the lesson.

Closing Remarks

At the start of this research study, I set out to identify the skills and training teachers and school leaders need to effectively implement blended learning after I experienced firsthand the challenges faced by an administrator leading a blended learning school. The findings revealed that I was not alone in the struggle to identify best practices for teachers to use in their classrooms. Participants in this research study demonstrated an immense passion for instruction and student learning, but also sought supports that are largely not readily available to most school sites—the chief being proven best practices. They asked for opportunities to observe effective blended learning and for professional development that incorporated it seamlessly into instructional strategies. They also asked for ideas on how to make the blended learning model sustainable for teachers, especially in terms of lesson planning and supporting individual students in the station rotation model. They wanted research proving the effectiveness of various practices and examples of how they have been successful in classrooms. The feedback from

each school site—regardless of grade level, leadership style, or size—was closely aligned, making the needs apparent. Much work must be done to ensure that blended learning impacts student learning the way it was designed to.

These findings apply to any school considering blended learning and should be considered when planning implementation. Thoughtful discussions about professional development, program selection, station model, sustainability, common pitfalls, and lesson planning using the findings from this research study can further successful implementation. Districts can use the findings to plan supports for schools and can develop systems to efficiently share best practices. Researchers can use the findings to investigate specific skills and trainings discussed to establish more detailed outlines that can benefit schools.

The findings should also inform teacher education programs, as the majority of participants in this research study stated that they had received little to no training in blended learning from their credentialing programs. This led to a considerable discrepancy between the blended learning skills teachers need to be successful and the preparation they received to lead a blended learning classroom in their credentialing programs. The onus to complete this training has fallen on schools, but school leaders need support and experience to lead the blended learning trainings effectively. While teacher growth through professional development and observational feedback should be ongoing, teachers must be adequately trained to implement blended learning when they enter a blended learning classroom. It is essential for teacher education programs to fulfill this need, and this research study can inform their program development.

If it can be implemented effectively, the blended learning model holds immense promise for individualized and constructivist student learning. It fosters critical thinking and individualized learning for all students and can help close the achievement gap by supporting rigorous learning for students in low socioeconomic areas. Blended learning can help students in urban areas connect with students and content experts throughout the world to enhance their learning and shape their approach towards leadership. It is my hope that the findings in this research study extend the conversation about the impact of blended learning on social justice and about what teaching education should look like in the 21st-century classroom, both in teacher education programs and in school professional development sessions.

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APPENDIX A

PARTICIPANT LISTING

Staff Member Name*	Gender	Age range (pick from 22 or below, 23 – 26, 27 – 30, 31 – 34, 35 – 40, 41 – 45, 46–50, 51+)	Years of experience	Subject(s)	Grade level(s) taught	Check if participated in interview
Kids First High School*						
Principal Anders	F	35–40	8	English / psychology	9 & 12	X
Counselor Banuelos	M	31 – 34	6	PPS Credential / academic counselor	college counselor	
Ms. Carter	F	31–34	9	English/ELD	9	
Mr. Davis	M	23–26	1–2	English / College-ready seminar	9	X
Mr. Elie	M	35–40	8	health / PE	9	X
Ms. Ferguson	F	23–26	Less than a year	biology	9	X
Ms. Gardner	F	23–26	Less than a year	Integrated Math 1	9	X
Ms. Harris	F	23–26	Less than a year	Integrated Math 1	9	X
Ms. Newton	F	23–26	1–2	Special Education	9	X

Students First High School*						
Principal Iglesias	F	41–45	20	Principal (Grades 3–11, History)	9–11	
Assistant Principal Jefferson	M	31–34	10	Assistant Principal (Spanish)	9–11	
Assistant Principal Kaan	F	31–34	8	Assistant Principal (History)	9–11	X
Ms. Lehman	F	27–30	3	Counseling	9–11	
Mr. Masterson	M	35–40	6	Common Core ELA 10 and CAHSEE Support	10	
Ms. Newman	F	23–26	4	mathematics	9–11	X
Ms. Oppenheimer	F	23–26	3	English 9 and creative writing	9	
Mr. Pacheco	M	23–26	2	World History and AP World History	10	
Ms. Quinones	F	22 or below	0	chemistry	11	
Ms. Randall	F	27 – 30	3	English, AP English Language, creative writing	11	X
Ms. Smith	F	35 –40	10	Spanish	9–11	

Mr. Tucker	M	23–26	1	Business Entrepreneurship environmental science	9, 11	X
Ms. Uribe	F	27–30	3	Health, PE	9	
Ms. Veracruz	F	22 or below	0	biology, anatomy and physiology	9, 10	
Mr. Wilson	M	31–34	4	Counselor	9–11	
Ms. Xavier	F	35–40	13	AP US History, US History, creative writing	9, 11	X
Ms. Yeltsin	F	23–26	1	RSP	9–11	
Ms. Zaccaria	F	27–30	6	Math	9–11	X
Mr. Allen	M	35–40	1	RSP	9–11	
Mr. Benedict	M	41–45	20	AP Spanish Literature and Language	9–11	
Ms. Caruso	F	23–26	0	math	10	X
Mr. Dunbar	M	51+	0	math	9–10	
Blended Lab School*						
Principal Earl	F	31–34	As admin: 3 As teacher: 13	science	6, 7, 8, 9, 10, 12	X
Mr. Franklin	M	35–40	1	PE	6	X
Mr. Garrett	M	27–30	0	history	6	X

Ms. Humboldt	F	31–34	5	Special Education	6, 9–12	X
Ms. Ibrahim	F	35–40	13	English	6, 9–12	X
Ms. Jett	F	31–34	10	science	6, 9–12	X
Ms. Kross	F	27–30	0	science	6	X
Ms. Love	F	31–34	10	math	6	X

*Note. *Names have been changed to preserve anonymity*

APPENDIX B

GENDER OF PARTICIPANTS

Gender	Number	Percentage	Number of Interviewees	Percentages for Interviewees
F	26	66%	17	77%
M	13	34%	5	23%
	39	**100%**	**22**	**100%**

APPENDIX C

AGE RANGE OF PARTICIPANTS

Age Range of Participants	Number	Percentage	Number of Interviewees	Percentages for Interviewees
22 or below	2	5%	0	0%
23 – 26	11	28%	8	36%
27 – 30	6	15%	4	18%
31 – 34	9	23%	5	23%
35 – 40	8	21%	5	23%
41 – 45	2	5%	0	0%
46–50	0	0%	0	0%
51+	1	3%	0	0%
	39	**100%**	**22**	**100%**

APPENDIX D

YEARS OF EXPERIENCE OF PARTICIPANTS

Years of Experience	Number	Percentage	Number of Interviewees	Percentages for Interviewees
0–2	16	41%	10	45%
3–4	6	15%	2	9%
5–7	4	10%	2	9%
8–11	8	21%	5	23%
12–15	3	8%	3	14%
15+	2	5%	0	0%
	39	**100%**	**22**	**100%**

APPENDIX E

SUBJECT(S) TAUGHT OF PARTICIPANTS

Subjects Taught	Number	Percentage	Number of Interviewees	Percentages for Interviewees
science	6	15%	4	18%
PE/Health	3	8%	2	9%
history	3	8%	2	9%
Special Education	4	10%	2	9%
English	7	18%	3	14%
math	7	18%	6	27%
foreign lang	2	5%	0	0%
Counselor	2	5%	0	0%
Admin	5	13%	3	14%
	39	**100%**	**22**	**100%**

APPENDIX F

GRADE LEVEL(S) TAUGHT OF PARTICIPANTS

Grade Levels Taught	Number	Percentage	Number of Interviewees	Percentages for Interviewees
6	4	10%	4	18%
7	0	0%	0	0%
8	0	0%	0	0%
9	9	23%	6	27%
10	3	8%	1	5%
11	2	5%	0	0%
12	0	0%	0	0%
Multiple	14	36%	8	36%
Administrator	5	13%	3	14%
Counselor	2	5%	0	0%
	39	**100%**	**22**	**100%**

SURVEY

Survey Questions

This research study seeks to determine what skills teachers need to effectively implement blended learning in their classrooms. With this information, training will be developed to address these skills.

The target population of this survey is K–12 educators who utilize some form of blended learning in their instruction and instructional leaders supporting their work. Survey participants will provide demographic information, explain how blended learning is utilized in classrooms, identify training on blended learning that has been offered and skills and resources educators need to effectively utilize blended learning.   The survey should take no more than twenty minutes to complete.

Questions 1–6 ask for participant background information. Select your answer(s) from the choices provided.

1. Select the gender you identify with.
    - Female
    - Male
2. What is the primary subject you teach? If you are a counselor or administrator, please make that selection from the list.
    - English Language Arts
    - Mathematics
    - Science
    - Social Science
    - Foreign Language
    - PE / Health
    - Special Education
    - Counselor
    - Administrator
    - Other: _____
3. What is your age range?
    - 22 or below
    - 23–26
    - 27–30
    - 31–34

- 35–40
- 41–45
- 46–50
- 51 or over

4. How many years of teaching experience do you have?
   - 0–2
   - 3–4
   - 5–7
   - 8–11
   - 12–15
   - Over 15 years

5. Which grade levels do you currently teach? Please select all that apply.
   - 6th
   - 7th
   - 8th
   - 9th
   - 10th
   - 11th
   - 12th

6. Identify up to five courses in which you utilize blended learning. Please use the complete course name (i.e. "Algebra I" instead of "Alg. I"). Use a comma to separate course names.
   - OPEN RESPONSE

Questions 7 – 18 use a Likert scale using the following answer choices: Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree.

Instruction

7. Blended learning improves how my students develop their own understanding of concepts in the classroom.
8. I feel confident with implementing blended learning as an approach to guide students to take ownership of their learning.
9. I develop a deeper understanding of effective instructional practices by collaborating with colleagues about blended learning.
10. Blended learning facilitates students' conceptual understanding more effectively than more traditional approaches to teaching.

11. The instructional best practices used in traditional classroom models apply to blended learning classrooms.
12. Student engagement and reflection in my classroom improves because of blended learning.

Professional Development

13. In my credentialing program, I received adequate blended learning training to lead students in rigorous learning activities.
14. At my school site, I receive adequate blended learning training to lead students in rigorous learning activities.
15. My school site's professional development has included literature about blended learning theory and its impact on students' conceptual development.
16. I would benefit from additional training in blended learning to develop instructional approaches that facilitate conceptual understanding and application.
17. I learned more about implementing blended learning at my school site than in my credentialing program.
18. Effective implementation of blended learning requires additional skillsets beyond the traditional classroom model.

Questions 19–25 are open-ended questions about your experience implementing blended learning. Please provide as much detail as possible in your responses.

19. Describe the training you have received in blended learning and how it has impacted your instruction.
20. Which elements of your blended learning training have you found most beneficial? Please explain.
21. If you had further opportunities for blended learning training, which specific topics would you like it to address (examples include the four blended learning frameworks, classroom management, and assessment in a blended learning setting)? Please explain.
22. Compare and contrast the skills required to effectively implement blended learning with the skills required for effective instruction in a traditional classroom model.
23. What are the most important skills in a blended learning classroom to help students develop conceptual mastery of the content?
24. Would you recommend blended learning to a new teacher? Why or why not?
25. What observations do you have about assessing understanding in a blended learning classroom?

APPENDIX H

INTERVIEW QUESTIONS

Instruction

1) How long have you been utilizing blended learning in your classroom?
2) What inspired you to adopt this approach?
3) Describe any models for blended learning you have observed that facilitate students' conceptual understanding.
4) What have been some successes (both academic and logistical) with blended learning implementation?
5) How do you measure the impact of blended learning in your instruction?
6) What have been some of your greatest challenges (both academic and logistical) in implementing blended learning?

Professional Development

7) Describe the training you have received so far in order to effectively implement blended learning.
8) What additional training do you think you would benefit from to effectively implement blended learning?
9) Describe your students' experience and response to blended learning in your classroom.

BILL OF RIGHTS

LOYOLA MARYMOUNT UNIVERSITY

Experimental Subjects Bill of Rights

Pursuant to California Health and Safety Code §24172, I understand that I have the following

rights as a participant in a research study:

1. I will be informed of the nature and purpose of the experiment.

2. I will be given an explanation of the procedures to be followed in the medical experiment, and any drug or device to be utilized.

3. I will be given a description of any attendant discomforts and risks to be reasonably expected from the study.

4. I will be given an explanation of any benefits to be expected from the study, if applicable.

5. I will be given a disclosure of any appropriate alternative procedures, drugs or devices that might be advantageous and their relative risks and benefits.

6. I will be informed of the avenues of medical treatment, if any, available after the study is completed if complications should arise.

7. I will be given an opportunity to ask any questions concerning the study or the procedures involved.

8. I will be instructed that consent to participate in the research study may be withdrawn at any time and that I may discontinue participation in the study without prejudice to me.

9. I will be given a copy of the signed and dated written consent form.

10. I will be given the opportunity to decide to consent or not to consent to the study without the intervention of any element of force, fraud, deceit, duress, coercion, or undue influence on my decision.