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Examining Blended Professional Development in the Aftermath of the COVID-19 Pandemic: An Action Research Study

LORI HERNANDEZ
Newport-Mesa Unified School District

LEANNA ARCHAMBAULT
Arizona State University

LAUREN MCARTHUR HARRIS
Arizona State University

Although interest in blended learning for students has grown within elementary and secondary school contexts, limited research exists on the implementation of blended professional development (PD) for teachers. The current mixed-method action research study examined teacher participation in blended learning PD in a large California district, offered in response to the challenges during the COVID-19 pandemic. Using a survey and interviews, the authors examined teacher self-efficacy and the reported influence of the PD on their practice. Findings suggest that the blended PD provided participants with the perceived self-efficacy needed to implement new instructional practices. In addition, collaboration among teachers was essential, teachers were able to learn through different pathways and at different rates, and ongoing support from a qualified PD instructor was necessary. This study sheds light on the implementation of blended PD for K-12 teachers, shares insights on practical considerations for planning and application, and suggests areas for future research.

Keywords: blended learning, professional development, teacher self-efficacy, instructional practices

The COVID-19 pandemic necessitated months of emergency remote teaching (ERT) for K–12 schools in the United States, resulting in drastic shifts in how technology was used by teachers (Hodges et al., 2020). During this time, classroom instruction for many schools took place synchronously online, often through videoconferencing platforms such as Zoom and Google Meet. With the challenges posed by the pandemic, professional development (PD) opportunities for teachers also occurred in the same way. As a result, teachers attended webinars and watched instructional videos in place of attending in-person PD sessions. Eventually, as the risk from the pandemic waned, these online components were combined with in-person instruction. While the need for flexible learning options for teachers has been documented (see for example Hartshorne et al., 2020), and online PD opportunities have grown and have begun to be examined (Bragg et al., 2021), few studies have examined how districts have blended online and in-person components as part of a district-level blended PD (Owston et al., 2008).

This action research study examined a blended learning approach to teacher PD in a large Southern California district in the spring of 2021, approximately one year after the onset of the pandemic. Teachers in the state had only recently returned to full-time, in-person schooling after almost a year of ERT. The first author, the Director of Teaching and Learning in the district, implemented the Blended Professional Development (BPD) program in order to increase teachers' application of new instructional strategies by providing a more complete, collaborative, and supportive online PD experience. Blended learning in this context involved teachers engaging in some aspects of PD asynchronously with control of time, place, and/or pace, and some aspects synchronously in a supervised setting. Research has shown that benefits of blended learning include the ability for learners to work at their own pace, personalized learning based on needs and interests, and increased access and flexibility by extending learning experiences beyond the classroom (Graham et al., 2019; Tucker et al., 2017).

The current study was guided by the following research questions:

1. How did teachers perceive their self-efficacy to implement new instructional practices in their classrooms after participating in the BPD program intervention?
2. Which aspects of the BPD program most influenced teachers' learning and why?
3. What were teachers' perceptions of the BPD program as compared to a traditional, in-person PD model?

RELEVANT LITERATURE

To design the BPD intervention, we drew on recommendations for effective professional development and research on blended learning as discussed in the following sections.

Effective Professional Development

A significant amount of research has been dedicated to studying and making recommendations about PD for teachers (Hill & Papay, 2022). Well-designed PD can lead to better teaching and learning; however, many practices in school districts have not produced these outcomes (Darling-Hammond et al., 2017). A recent meta-analysis indicated that PD is more effective (i.e., can lead to increased student outcomes) when it (a) helps teachers gain new insights, (b) sets goals, (c) focuses on teaching techniques including modeling, offering feedback, and providing social support, and (d) includes embedded practice with action planning, self-monitoring, and context-specific repetition (Sims et al., 2021). Scholars have recommended that school districts shift away from one-day "drive-by" sessions and toward extensive PD that is active, collaborative, relevant, and ongoing (Garet et al., 2001; Darling-Hammond et al., 2017). "Active" refers to a move away from a lecture-style environment to the incorporation of engagement strategies, collaboration, and reflection. Giving teachers a chance to learn with the same interaction strategies they are encouraged to use with students has become a popular strategy in PD sessions (Darling-Hammond et al., 2017).

According to the International Literacy Association (ILA), recommendations include making PD collaborative and content specific, incorporating active learning, and providing follow-up support (ILA, 2019). The association advocates for a balanced PD plan that incorporates professional learning communities, coaching, and collaborative cycles of inquiry. It also recommends ongoing and rigorous training in the most updated literacy instructional practices (ILA, 2019). Table 1 summarizes traits of effective professional development supported by recent literature.

Table 1
Traits of Effective PD as Supported by Recent Literature

Trait	Supporting Literature
Takes place over time	Blank & Alas, 2009; Cordingley et al., 2015; Darling-Hammond et al., 2017; Desimone, 2009; Dunst et al., 2015; Garet et al., 2001, Timperley et al., 2007; Walter & Briggs, 2012; Wei et al., 2009; Yurtseven Avci et al., 2019
Is "active" and collaborative in nature	Cordingley et al., 2015; Darling-Hammond et al., 2017; Desimone, 2009; Dunst et al., 2015; Timperley et al., 2007; Walter & Briggs, 2012; Wei et al., 2009; Yurtseven Avci et al., 2019
Garners teacher buy-in/ Purposes and benefits are made clear	Cordingley et al., 2015; Dunst et al., 2015; Timperley et al., 2007; Walter & Briggs, 2012
Includes focus on content knowledge	Blank & Alas, 2009; Cordingley et al., 2015; Desimone, 2009; Dunst et al., 2015; Wei et al., 2009; Yurtseven Avci et al., 2019
Uses external expertise	Desimone, 2009; Timperley et al., 2007; Walter & Briggs, 2012; Wei et al., 2009
Involves opportunities to implement skills that have been learned	Blank & Alas, 2009; Cordingley et al., 2015; Desimone, 2009; Dunst et al., 2015; Timperley et al., 2007; Walter & Briggs, 2012; Wei et al., 2009, Yurtseven Avci et al., 2019

Note. The source for the categories and some of the literature in this table is Sims, S., & Fletcher-Wood, H. (2021). Identifying the characteristics of effective teacher professional development: a critical review. *School Effectiveness and School Improvement, 32*(1), 47-63. https://doi.org/10.1080/09243453.2020.1772841

Using Blended Learning with Educators

In addition to literature on effective PD, research on blended learning also influenced the BPD program. Blended learning involves a structure in which learning occurs partly online and partly in person in a classroom setting (Acree et al., 2017; Tucker et al., 2017). There are several ways to implement blended learning experiences for educators, but they all provide a combination of technology-based and in-person learning experiences. Some examples of these variations include whole group rotations, playlist models, enriched virtual models, and rotation models, which include variations such as station rotations and flipped classrooms (Acree et al., 2017; Tucker et al., 2017).

An effective blended learning approach should provide choice and personalization while also providing structure that enables learners (in this case, teachers) to collaborate around common content (Graham et al., 2019). The flexibility exists in the learning activities and not necessarily in the goals or standards that must be met. Playlists or choice boards may be organized intentionally to set learners on a particular learning path, providing both choice and intentional differentiation (Graham et al., 2019). Teachers might choose their collaboration group by interest or be placed in a group by a facilitator. In a flipped model of blended learning, the transfer of new information occurs online rather than in a lecture or presentation in a classroom, freeing up in-person classroom time for creative practice and application (Tucker et al., 2017). Teachers can be provided with the opportunity to pace their learning, which could mean rewinding or rewatching a video, taking breaks to process new information, looking up related information or unfamiliar terms, or reflecting individually. Ideally, then, they arrive at the in-person session with the knowledge gained through the independent online learning and ready to collaborate and apply, with the support of others and the instructor (Tucker et al., 2017).

Few studies have examined implementation of blended PD approaches, especially since the COVID-19 pandemic. One study in 2022 examined an international program that used blended PD to prepare teachers in gifted education and found that participants were highly satisfied with the model (Jen & Hoogeveen, 2022). Prior to the pandemic, Holmes et al. (2005) described a blended PD program for elementary teachers designed to help with technology integration. In another study, Voogt et al. (2005) investigated how blended learning could assist teachers with incorporating technology into their classrooms and found that the approach could enhance teachers' comprehension and application of technology in teaching, helping them to customize resources for their specific contexts. Finally, Owston et al. (2008) found that using a blended learning approach for middle school math and science educators had a positive impact on teachers' attitudes and understanding of content areas which helped with changing their teaching methods and fostered more favorable student attitudes toward learning. Adding to this small body of research, the current study examined teachers' perceptions of self-efficacy after participating in blended PD, the aspects of the blended PD that most influenced them, and their perceptions of blended PD compared to more traditional models.

THEORETICAL FRAMEWORK

In studying the teachers' engagement with the blended learning PD intervention, we considered that self-efficacy can affect teachers' abilities to implement new instructional practices. When a learner is taught a new skill,

their belief in their capacity to do what was taught is called *self-efficacy.* Self-efficacy, or self-belief, varies across activities and contexts and is not static (Bandura, 2011). Bandura (2011) asserted that a person's self-efficacy will significantly influence their motivation to take action, ability to persevere through challenges, outcome expectations, and level of optimism. Self-efficacy for a certain context is developed through mastery experiences, social modeling, social persuasion, and reduced anxiety (Bandura, 2011). In order for PD to lead to improved instructional practices, teachers must have self-efficacy at the conclusion of the learning experience.

Self-efficacy has been widely studied for its effects on teachers. For example, Holzberger et al.'s (2013) study of 155 math teachers confirmed the relationship between self-efficacy and instructional quality, showing that teachers with higher self-efficacy also had higher instructional quality. The study also concluded that teachers' positive experiences in the classroom increased self-efficacy and that implementing new instructional practices with success had a lasting effect one year later. Additionally, the study confirmed Bandura's (2011) theory that teachers develop self-efficacy through mastery experiences in the classroom.

Teachers' self-efficacy has also been studied for its relationship to factors such as student motivation and teacher job satisfaction. Zee and Koomen (2016) synthesized available research on teacher self-efficacy and found that self-efficacy had consistently positive effects on teachers' commitment, psychological well-being, classroom quality, and academic achievement. As it relates to the current study, Zee and Koomen (2016) found that higher self-efficacy correlated to an increased willingness to try new instructional practices. Efficacious teachers are more likely to collaborate with other teachers to improve practice.

METHOD

The first author conducted action research in her professional setting using a deductive approach. At the time of the study she was responsible for coordinating all PD activities for elementary and middle school teachers in her district; however, she did not have a supervisory role over the participants. Action research is a dynamic process that tests new ideas, encourages collaboration, and leads to the application of new learning (Creswell & Guetterman, 2019). Through research and reflection, this study aimed to improve PD for teachers in Cedarwood Public School District (a pseudonym). The first author engaged in previous cycles of action research prior to the COVID-19 pandemic, which included interviewing teachers about their experiences with PD, conducting a needs assessment, and analyzing district data from previous sessions of PD. The current study involved the implementation of the BPD program intervention and data collection through surveys, and interviews.

Intervention

The BPD program intervention provided a structure for PD that combined synchronous, self-paced, and collaborative learning activities. It was designed to apply best practices in blended learning to improve PD for teachers (Acree et al., 2017; Graham et al., 2019; Moore et al., 2017; Tucker et al., 2017). The BPD intervention provided teachers with access to a variety of learning activities that included attendance at a synchronous webinar (choice of four subtopics), participation in an online self-paced course, and participation in two synchronous (i.e., via Zoom) collaboration sessions. Teachers were also provided with access to an optional online "playlist" where they could interact with content including social media pages, blogs, a gallery of student examples, other self-paced courses, and print materials. Figure 1 describes elements of the BPD and the literature that guided each component.

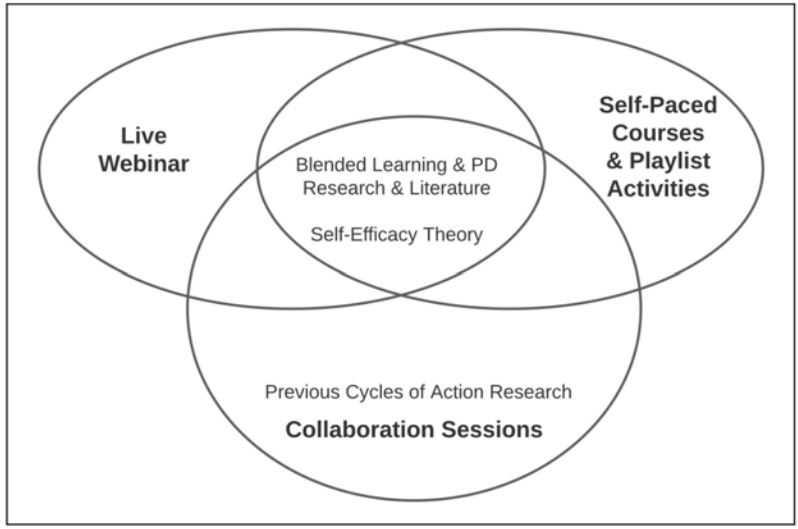

Figure 1. Guiding Theory and Literature Informing Each Component of BPD

Prior to the pandemic, PD in the district was primarily in-person sessions on school days using substitute teachers to release teachers to attend. In the BPD program, participants had synchronous and asynchronous opportunities to learn and practice. Because blended learning is typically a hybrid of online and in-person activities, the initial BPD program design included in-person collaboration sessions. However, due to pandemic restrictions in 2021, the collaboration sessions were conducted via Zoom after school.

Based on a flipped classroom model (Graham et al., 2019; Tucker et al., 2017), as part of the BPD program, teachers first selected and attended one of four possible synchronous webinar topics (see Figure 2). These webinars were facilitated by an instructor who was extensively trained in the content. Teachers then engaged with self-paced courses at times that were convenient for them. Finally, they participated in structured planning during collaboration sessions with the instructor and peers engaged in the same learning topic. The instructor was available to answer questions or guide the group as needed.

The content of the BPD centered around "Thinking Maps," which are visual patterns used across the curriculum for students to organize content (Thinking Maps, 2021). All participating teachers (described in the following section) had received initial training on Thinking Maps prior to the commencement of this study. The BPD intervention provided teachers with the opportunity to further develop their expertise in one of four webinar subtopics related to Thinking Maps (see Figure 2).

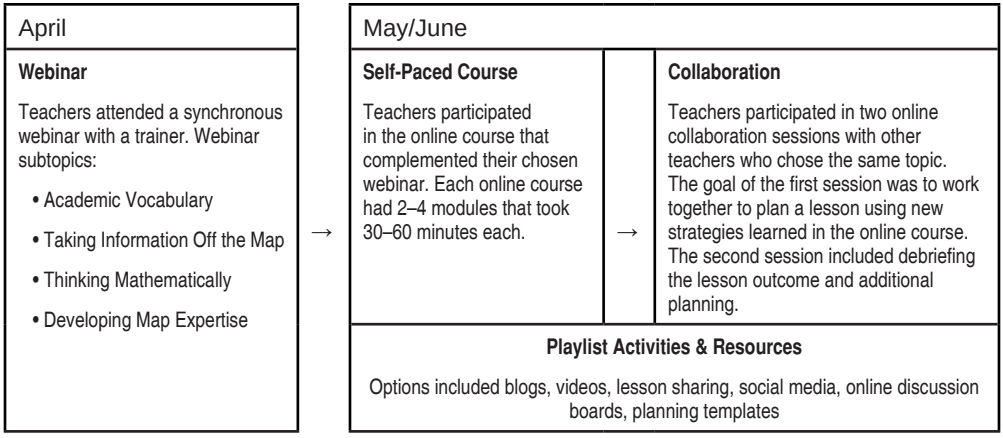

Figure 2. BPD Program Timeline of Activities.

Participants

This study was situated in the PK-8 Cedarwood Public School District, which contains 13 elementary schools and three middle schools. At the time of the study, the district employed approximately 450 teachers who held multiple-subject, single-subject, and/or special education credentials.

Seventy-two teachers engaged in the BPD intervention by selecting and attending one of the four initial webinars. Participation in the program was optional, like all other after-hours PD in the district. Seventy-two teachers attended the initial webinar, which was the first component of the PD; however, only 45 of those teachers completed all components of the modules (webinar, self-paced course, two collaboration sessions). Teachers who did not complete all components cited challenges such as scheduling conflicts, end-of-school-year responsibilities, and illness. Only those teachers who completed all components were eligible to participate in the study. Twenty-six teachers consented to take the survey, and 12 teachers consented to participate in an interview. Survey participation was anonymous; therefore, we do not know if the teachers interviewed also took the survey. Table 2 displays participant demographics.

Table 2
Participant Demographics

Method	Survey	Interview
	n	*n*
Number of participants	26	12
Gender		
Male	1	1
Female	25	11
Grade level		
PK–1	5	4
Grades 2–3	7	2
Grades 4–5	8	3
Grade 6–8	6	2
Years of experience		
0–5 years	1	1
6–10 years	2	1
11–15 years	1	0
16–20 years	9	5
21+ years	13	5

Data Collection

This was an explanatory sequential mixed-method action research (MMAR) study where surveys were followed by qualitative interviews (Creswell & Guetterman, 2019). The interview data elaborated on the survey data and gave more depth and explanation to fully answer the research questions (Creswell & Guetterman, 2019). Table 3 includes a timeline of the data collection activities conducted between April and October 2021.

Table 3
Timeline for Data Collection

Timeframe	Actions
April 2021	Recruited teachers for the intervention via email invitations
April–May 2021	Implemented BPD intervention: 72 teachers participated in at least one element
May–June 2021	Emailed 45 teachers who completed the entire BPD program and invited them to complete the survey
	Analyzed survey data and recruited for interviews
June 2021	Interviewed 12 Teachers

Survey items assessed self-efficacy, rated the components of the BPD experience, and asked a variety of questions about the experience (see Table 4). These survey items were informed by and adapted from the Ohio State Teacher Efficacy Scale (OSTES), a measure of teacher efficacy developed as an improvement from prior work on efficacy such as the Rand measure, Gusky's Responsibility for Student Achievement (RSA), the Teacher Locus of Control (TLC), and the Webb Efficacy Scale (Tschannen-Moran & Hoy, 2001). The construct validity of the OSTES was demonstrated through positive correlations with other measures for teacher self-efficacy (Tschannen-Moran & Hoy, 2001). The survey also included questions about the BPD program experience and open-ended response opportunities.

Table 4
Sample Survey Items

Question/prompt	Response type	Research question addressed
I am confident in my ability to try new strategies in my classroom after attending professional development.	6-point Likert scale: Strongly disagree, disagree, slightly disagree, slightly agree, agree, strongly agree	RQ1
Which component of the Blended Professional Development most prepared you to implement something new right away in your classroom?	Multiple Choice: Webinar with instructor Self-paced online videos Collaboration session(s) None of the components prepared me to implement something right away	RQ1, 2

Semi-structured interviews were used to gather details about teachers' reactions to the BPD intervention and the rationale for those reactions, including which aspects were perceived to be most and least effective and how the BPD model compared with their past experiences in PD. The interviews included several types of questions, including introductory questions that were scripted and served as conversation starters, followed by clarifying, specifying, or probing questions, which depended upon the answers to the introductory questions (Brinkmann & Kvale, 2015). Sample questions include:

1. In which part of your Blended Professional Development experience did you learn the most? Why?

   Possible probing question: Can you give more specifics about why?

   Possible specifying question: How did you behave during or after that experience?

2. How was this experience different from past professional development experiences?

The first author conducted the interviews on Zoom in the month of June. Interviews lasted between 15 and 30 minutes. Interviews were recorded by Zoom and were transcribed by the first author.

Data Analysis

Two types of qualitative data were analyzed: interview transcripts from 12 interviews and open-ended survey item responses from 26 participants. The survey included two opportunities for written explanations of multiple-choice items and one open-ended question about how the BPD experience affected participants' ability to implement something new. Inductive analysis was used to organize qualitative data from surveys and interviews into themes and categories so they could be described and interpreted (Brinkmann & Kvale, 2015; Mertler, 2017; Saldaña, 2021). Coding occurred in three stages (Saldaña, 2021)—each with multiple methods (see Figure 3).

Figure 3. Stages of Coding.

During the pre-coding phase, the first author reviewed the data multiple times to identify emerging themes as they related to the research questions. After pre-coding, she transitioned to in vivo coding, where she highlighted actual phrases said by participants that connected to my research questions (Saldaña, 2021). Concurrently, certain types of phrases or responses were counted, a process called magnitude coding (Saldaña, 2021). For example, 11 out of 12 interview participants made positive comments about collaboration. Throughout in vivo and magnitude coding, the first author wrote short journal entries about thoughts and trends identified from the data (Saldaña, 2021).

During second cycle coding, the first author grouped in vivo and magnitude codes into six categories, or codes: *collaboration, choice, trainer quality, ongoing, implemented something new, flexibility.* She also created a top 10 list of the most representative phrases or sentences said by participants (Saldaña, 2021). Analyzing phrases that most represented the data helped toward forming key assertions to answer the research questions.

Quantitative data were used to triangulate the qualitative findings. Descriptive statistics from quantitative survey items were examined to support the assertions found through qualitative analysis. The reliability of the items on the survey instrument was established through internal consistency measures, such as examining participants' responses across the instrument for consistency and ensuring items were unambiguous. Following administration of the survey, Cronbach's alpha reliability coefficient was calculated to help ensure reliability. To establish content validity, the first author also tested items and invited feedback from non-participants before administering the survey to participants to ensure items were clear and were interpreted consistently.

FINDINGS

In what follows, findings from the study are presented by research question and then by theme (see Table 5). Each theme is followed by an assertion that is supported through qualitative and quantitative data.

Table 5
Themes by Research Question

Research questions	Themes
RQ1: How do teachers perceive their self-efficacy to implement new instructional practices in their classrooms after participating in Blended Professional Development?	• Readiness to change instructional practices
RQ2: Which aspects of the Blended Professional Development model most influenced teachers' learning and why?	• Collaboration • PD Instructor quality
RQ3: What are teachers' perceptions of Blended Professional Development as it compares with a traditional professional development model?	• Ongoing support • Choice and flexibility

Perceptions of Self-Efficacy

Readiness to Change Instructional Practices

Self-efficacy is the learners' own belief in their capacity to do what was taught (Bandura, 2011). Self-efficacy is an important consideration because the goal of PD is improved instructional practices. We found that teachers perceived themselves to have high self-efficacy to implement what they learned in the BPD intervention. Evidence to support this assertion was

found in the qualitative and quantitative data through responses that indicated confidence and/or a change in practice.

During interviews and in open-ended survey items, several teachers demonstrated self-efficacy by discussing their readiness to change instructional practices. Terms participants used during interviews and on the survey such as "right away," "make it my own," "try it," "pretty immediate," "the next day," and "dipped my foot in" all provided evidence that teachers felt confident enough to attempt something they learned in the training shortly after the training. Teachers also spoke about individual components of the BPD such as the self-paced courses and how those components supported their ability to implement something. For instance, one teacher said:

> I did [implement something new] pretty early, I mean once I watched a couple of, well, the first webinar was concluded with instructions to watch one of the videos and learn more that way, and so I went ahead and did that, and then the next day implemented some Thinking Maps, and so I would say it was pretty immediate.

Additionally, teachers indicated their perceived self-efficacy by commenting about confidence. One survey respondent wrote, "I feel so much more confident in implementing [Thinking Maps]." Similarly, an interview participant said, "It helped my confidence in using Thinking Maps for more topics." These teachers expressed confidence in their abilities after the BPD intervention, meaning they perceived a high level of self-efficacy. Substantial quantitative evidence follows to affirm these outcomes.

Six survey items assessed teachers' perceptions of self-efficacy: Items 1, 2, 3, 7, 11, and 18. These items asked questions about teachers' readiness to change practice, perceived ability to meet students' needs, and perceived ability to implement something new after their BPD experience. Likert responses were converted to numbers for the purpose of calculating descriptive statistics (1 = *strongly disagree* to 6 = s*trongly agree*). The exception to this numbering was Item 7, which was numbered in reverse due to the negative wording of the questions: I still need more support before being able to implement new strategies I learned in the Blended Professional Development series.

The mean of the responses to the six self-efficacy items (152 responses) was 5.0, which correlated to agree on the Likert scale. This evidence validates the qualitative finding that teachers perceived high self-efficacy to implement what they learned in the BPD intervention. Descriptive statistics by item also confirmed this assertion. Table 6 provides the mean, median, and standard deviation for the six self-efficacy items. Each of the six items

individually has a mean of 3.5 or greater, indicating that, on average, participants agreed with each item asking about their perceived self-efficacy. Five of the six items had a mean of 5 or higher.

Table 6
Descriptive Statistics for Survey Items About Self-Efficacy

Measure	Item 1	Item 2	Item 3	Item 7	Item 11	Item 18
n	26	26	26	24	24	26
M	5.50	5.08	5.00	3.50	5.50	5.35
SD	0.510	1.055	0.980	1.615	0.590	0.797

Although all items assessed teacher self-efficacy, three items (1, 7, and 18) asked participants directly about their confidence and perceived ability to implement and continue to use new strategies. Table 7 provides another view of the data for these three items. When asked specifically about confidence, 100% of participants reported confidence in trying new strategies and 95.8% reported confidence in continuing to use new strategies.

Table 7
Item Analysis for Self-Efficacy Survey Items 1, 7, and 18 (*N* = 26)

Item	Participants who strongly agree or agree	
	n	%
1. I am confident in my ability to try new strategies in my classroom after attending professional development.	26	100
7. I could implement new strategies right away after attending professional development.	21	80.8
18. I feel confident in my ability to continue using the strategies learned in this training series.	23	95.8

Cronbach's alpha reliability coefficient was used to determine the reliability of the survey items focused on self-efficacy. The reliability of these self-efficacy items was .74, demonstrating sufficient reliability. The qualitative and quantitative data consistently demonstrated that teachers perceived high self-efficacy to improve instructional practices after participating in the intervention. Participants reported that the intervention led to confidence,

and all participants reported trying something new with Thinking Maps because of the BPD training—in some cases, right after the initial webinar. As one teacher proudly stated, "I just kind of went for it." Others implemented an improvement after the self-paced courses or collaboration. Even though learners reached mastery at different points in the BPD intervention, the findings suggested that the intervention did provide participants with the perceived self-efficacy needed to implement new instructional practices.

Blended Professional Development Components

Collaboration

Participants perceived time for collaboration to be a component of the BPD program that positively contributed to their learning. The data overwhelmingly supported the idea that teachers value collaboration in relation to their own learning. One participant commented during an interview, "We're social creatures, if the pandemic has taught us anything."

The interviews revealed the positive impact of the collaboration teachers experienced as they participated in the BPD intervention. During interviews, 11 of the 12 participants (91.7%) spoke positively about collaboration in some way. In particular, participants discussed the benefits of three aspects of collaboration: learning from others' ideas, receiving feedback from others, and getting their questions answered. In response to the interview prompt "Describe your experience in the collaboration sessions," 11 interview participants made comments about one or more of these three aspects of collaboration. Seven participants made comments about getting ideas from others or sharing ideas, four spoke about receiving feedback using phrases such as "bouncing ideas off each other," and four mentioned getting questions answered or clarifying information.

The ability to learn through collaboration was evident in remarks such as the following from one teacher: "I had very knowledgeable, very experienced teachers that were willing to share things. After the session we still continued to email each other. We were able to clarify things for each other." Collaboration and its impact were embedded throughout the interview transcripts. Other examples of teachers' statements about collaboration from interview participants included, "we had a lot of rich conversations," and "when you have a chance to bounce ideas off of a peer, that's always good." Nearly all participants mentioned the value of having time provided to discuss ideas with colleagues.

Open-ended survey items provided additional insight into teachers' ideas about collaboration. These survey items asked participants to explain their answers to multiple choice questions, for example, in which they were asked to choose which component of the BPD intervention most prepared them to implement new practices. One teacher wrote, "I made connections

and collaborated with teachers that are not at my site. We continued to share materials and support each other." Another teacher wrote, "The instructor session was invaluable, but the collaboration gave me an opportunity to talk the learning through and hear ideas from others." These written explanations give insight into the reasons why teachers like to collaborate.

Teachers also spoke about the impact collaboration has on learning. A teacher wrote, "I tend to process information when I discuss/work through material with another person. Additionally, I am able to get new ideas or a different perspective from others." Teachers valued collaboration as they learned from peers' ideas, received feedback from peers, and received clarification and answers to their questions.

The quantitative data complemented the extensive qualitative evidence. Multiple choice survey items elicited specific information about the BPD components. One question asked, "Which component of the Blended Professional Development was most engaging?" In response to this item, 35% of survey participants chose *collaboration session(s)*.

Additionally, eight survey participants (31%) chose collaboration session(s) when asked after which component they were ready to implement something new. This meant that almost a third of survey respondents were not ready to implement something new until they had collaborated with colleagues. Collaboration was an important learning activity for these teachers.

PD Instructor Quality

A second theme that emerged from the data to address RQ2 was the importance of PD instructor quality. There were two instructors (also referred to by participants as trainers) who worked as full-time consultants for Thinking Maps. They were contracted by the district to provide these PD sessions. The data showed that the live webinars with these instructors were an impactful component of the intervention. Analysis of surveys and interview transcripts led to the following assertion: Teachers perceive the instructor quality, including the instructor's expertise on the topic, ability to use engagement strategies, and personality, to be a significant factor in their learning. One teacher represented this assertion when she said, "The trainer really matters."

Several interview participants commented about the quality of the instructors who delivered the live webinars. Positive comments about the instructors generally fell into three categories: the instructor's willingness to help or provide examples, approachability and/or personality, and the instructional strategies used during the sessions. One teacher said the instructor "was very positive and was there to help." Many teachers elaborated on reasons why they liked the instructor. For example:

> She kept my attention the entire time and she was constantly asking us questions. We had to be on our toes, and she was constantly asking us to think about what we're teaching and relating it to something that we were doing right then and there. So it was easy to pay attention and to learn.

Nine interview participants (75%) said they felt ready to implement a change right away after the webinar with one of the two instructors. Additional descriptive phrases about the instructors included, "knowledgeable," "really personable," "there to help," and "took an interest in our thoughts." These phrases demonstrate the influence that the instructors had on participants' experiences in the BPD intervention. There were no negative comments about the instructors.

Additional qualitative data to support instructor quality appeared in responses to the open-ended survey items. These items asked participants to elaborate on answers to multiple choice questions. One of the participants who selected webinar with the instructor as the component that most helped her implement new practices wrote, "The instructor's knowledge in Thinking Maps was exceptional. She shared her own ideas but also facilitated in others to share out their knowledge." Other participants wrote, "the instructor was very supportive and gave 100% to making sure we were all understanding the concepts being taught," and "[she] is always so engaging." These survey responses were consistent with the interview data indicating that the webinars were high quality due to the engagement strategies, embedded collaboration, and support offered by the instructors. Based on these data, the instructor did play a role in teachers' attitudes about the training and the learning that takes place.

Multiple choice survey items triangulated findings about instructor quality. When participants were asked to choose which component had the highest engagement and learning (items 14 and 15), the majority of participants on both items chose Webinar with instructor. The Webinar with instructor was the initial session in which participants learned in real time from one of the two instructors. Fourteen teachers (53.8%) chose the webinar as the most engaging part of the experience, and 15 teachers (57.7%) chose the webinar as the component in which they learned the most. These responses corroborated the qualitative data regarding instructor quality.

RQ3: Comparisons With a Traditional PD Model

Ongoing Support

Improving teacher PD was the goal for the study; therefore, RQ3 was essential to understanding how the intervention compares with teachers' prior PD experiences. The qualitative and quantitative data supported the conclusion that BPD was perceived to be better than traditional PD because it was ongoing and had multiple components.

The data overwhelmingly supported the idea that teachers were satisfied with their experience. Ten of the 12 interview participants (83%) said they preferred a blended model of PD to a full in-person model. Eight (67%) spoke positively about the training being ongoing, unlike traditional PD, which is often a one-time event. No participants spoke negatively about the design of the modules.

Open-ended survey items provided an explanation of the impact of the multiple components. One teacher wrote, "I found that all 3 components gave me what I needed equally. I could not separate them." Interview participants provided similar explanations. Four participants (33%) explained that it was the combination of the components that made the difference and that they were equally important. One participant commented, "The ideal professional development would be ongoing support, so it's not just one and done and it's chunked into bite sized pieces." Several other participants indicated that it was the combination of experiences that made it effective, with comments such as, "all of that was a real mixture that was, I think, very valuable."

Strong quantitative evidence supports the assertion that the BPD was an effective model for teachers. Five survey items asked questions about the satisfaction, quality, and effectiveness of the BPD experience. Descriptive statistics were used to analyze responses, and findings demonstrated a high level of satisfaction. For these five items, the mean of all responses for items in this group was 5.20. This demonstrates that on average, participants agreed or strongly agreed with the positive statements about their BPD experience. In response to the statement "I learned more in the BPD model than in other PD experiences," 73% of teachers agreed to some degree (strongly agree/agree/slightly agree). Individual item analysis showed that a majority of teachers chose strongly agree on these items, and there was low standard deviation (see Table 8). Teachers consistently reported a positive experience with the BPD.

Table 8
Descriptive Statistics for Survey Items About Teachers' Satisfaction With the BPD Experience

Measure	Item 4	Item 5	Item 6	Item 8	Item 10
n	26	26	26	26	24
M	5.35	5.46	5.08	5.50	4.58
Mode	6	6	6	6	5
SD	0.797	0.647	1.055	0.860	1.176

Choice and Flexibility

The qualitative data indicated that choice and flexibility in what, when, and how teachers learn had a positive impact on their perceptions of PD. Participating teachers valued choice for a variety of reasons, such as ensuring training is at their level and feeling respected as professionals. When teachers signed up for BPD, they were given a choice of four subtopics. Teachers also saw benefits in the flexibility of the BPD design, with components that could be completed any time and in any place, namely, the self-paced courses and the playlist of resources.

During interviews, five teachers mentioned choice when asked for their opinions on the characteristics of the ideal PD experience. Teachers said that having options made them feel like professionals and enabled them to receive the training they needed. One teacher shared, "I think that teachers want to be recognized for their experience and their professional voice and choice on what they get to focus on." For another teacher, choice was important to get the right level of training on the topic: "Your choice, you know picking your choice, kind of like your level or where you are in it."

Flexibility was also important to several teachers, especially when it came to pace and place. They indicated that they liked being able to engage with the PD "at my own pace," "pick and choose times," and in the "privacy of my own home." These sentiments illustrate the benefit of blended learning, namely that some components can be done at each learner's pace and at a convenient time. The asynchronous opportunities allowed for greater flexibility (Graham et al., 2019; Tucker et al., 2017). One teacher made a statement that demonstrates the value of this flexibility: "I liked the blended because it opened up free time for working moms so that you could kind of pick and choose times that work best for you." Another teacher commented, "I just felt more present in the virtual environment, and flexibility, comfort being at home, you know after working all day you're tired." Blended learning offers the ability for learning to be flexible, at least in part, due to the asynchronous components.

Teachers preferred the BPD experience to the types of PD they had previously experienced, such as stand-alone webinars and fully in-person sessions. A teacher summed it up by saying, "It was one of the better PDs that I've been to, so I really did enjoy it. It didn't feel like a chore." In comparison with other PD sessions, another teacher shared, "I would say blended, this was the best one . . . it was the best one I've had, like for a very long time." Teachers perceived this experience to be a positive one that contributed to their professional growth.

DISCUSSION

The BPD intervention at the heart of this study was designed based on literature on effective teacher PD; therefore, it is not surprising that the findings were consistent with related studies on PD. For example, the value of collaboration as a professional learning activity is consistent with the literature on teacher PD (Darling-Hammond et al., 2017). In addition, several studies have confirmed that collaboration with colleagues has positive outcomes for teachers' learning (Allen & Green, 2015; Graham, 2007; Yurtseven, 2017). In the current study, collaboration was noted as a valuable component of the complete BPD learning experience. It complemented other learning opportunities to provide clarification, support, and extended learning for participants. Providing time for teachers to collaborate is a consistent challenge in elementary education, but the BPD design addressed this challenge by moving the direct instruction to asynchronous formats.

Best practices in blended learning applied to this study were choice, flexibility in time and place, a combination of learning activities that complemented one another, and collaboration following independent online activities (Acree et al., 2017; Tucker et al., 2017). Teachers in the study valued these characteristics and commented that they would prefer to see this type of design in the future in lieu of the traditional PD designs they experienced pre-pandemic. Teachers were able to engage in PD outside the traditional school day, at their own pace, and with options to supplement the PD that took place in real time. The BPD intervention offered independent self-paced videos and other resources that teachers could use in a variety of ways. Findings indicated that teachers saw this flexibility as a benefit. The BPD design allowed for multiple chances for support, in a variety of ways, on the topic.

Research on blended learning (e.g., Graham et al., 2019) has identified choice and personalization as key benefits. Choice and personalization should also provide a structure for learners to collaborate around common content at various points in their learning, which is something the BPD intervention offered participants using a flipped classroom model. In a flipped

classroom model of blended learning, time together can be spent on collaborating and applying new learning because learners have already received new content on their own using online tools such as videos or web-based learning software (Tucker et al., 2017). This is exactly what the BPD offered participants. They had a choice of subtopic and completed learning on their subtopic. Then they were grouped based on their subtopic choice to collaborate with others who studied the same content. Several participants made specific comments about the benefits of choice and personalization and how they felt valued as learners because their voice was heard.

Limitations

Action research studies are intended to focus on a specific context personal to the researcher (Mertler, 2017). For this reason, the most significant limitation of this study was the specific context of Cedarwood Public School District and the inability to generalize findings. Another limitation was that the study took place during the COVID-19 pandemic, which had effects on teaching and learning in the district. The study was situated during an unprecedented time. Teachers faced challenges, constant change, uncertainty, and trauma. At the time of the study, teachers had recently returned to full-time, in-person schooling after almost a year online. It is unclear how these events affected teachers' attitudes, beliefs, and participation. Additionally, it makes the findings difficult to generalize to PD in future years.

Another limitation of the study was that participation was voluntary. Convenience sampling was used to recruit participants. However, only teachers who were available and chose to fully complete the professional development (10% of district teachers) were included as part of the study. Also, since participation in the BPD was not required, it may have inadvertently attracted teachers who already had positive opinions about PD and/or blended learning. A future study could implement the BPD intervention as a required PD experience to ensure the entire population of the district's teachers is included.

Lastly, it is possible that participants may have not been forthcoming with negative feedback in their interviews due to the first author's positional authority in the school district. Although the first author did not have a direct supervisory role over the participants, she was in a district leadership position. However, triangulation with anonymous survey data helped to mitigate this limitation.

Implications

Despite these limitations, findings from the current study suggest implications for practice and areas for future research. Most immediately, the first author, in her role as a director of teaching and learning for a large school district, has already used the outcomes of this study in four ways: (a) designing PD experiences that include built-in collaboration, (b) hiring high-quality PD instructors, (c) valuing teachers' choices in what and how they learn, and (d) continuing to offer online PD experiences post-pandemic that apply blended learning strategies.

The findings from the current study indicate that collaboration is valued highly by teachers. The first author continues to prioritize teacher collaboration, in what limited time exists for PD in her district. In the BPD intervention, collaboration was purposefully integrated after direct instruction to help the learners process and gain confidence with the material. This format continues to be used in online and in-person PD. A second implication for practice is selecting high-quality instructors to lead teacher PD. As one participant said, "The trainer really matters." It is important that instructors of PD are engaging, supportive, and knowledgeable. Districts should work to ensure that facilitators have experience with online and blended PD formats and that they offer opportunities for teachers to collaborate and connect with one another. Teachers in the study provided positive comments in relation to having choice in PD. While it is not always possible to allow for complete choice due to required district and state initiatives, the first author finds ways to allow choice within those requirements and to offer a wide variety of offerings that includes both required and choice PD at beginning and advanced levels.

Using blended learning in PD is the final implication for practice. Blended learning gave participants in this study the opportunity to learn in a variety of ways, making it a more accessible learning experience. The first author found that while some teachers want to return to in-person PD post-pandemic, many still prefer an online or blended model. The value of offering a variety of learning experiences in a blended learning format is that it meets more teachers' needs than a traditional PD experience.

The BPD intervention designed for this action research study is a starting point for a new way of supporting and developing in-service teachers post-pandemic. This study validated the ideas that collaboration is essential, teachers can learn through different pathways and at different rates, and that ongoing support from a qualified PD instructor is necessary. Prior to the pandemic, online teacher PD was not used in the district under study. When schools shut down for in-person instruction in March 2020, educators were

thrown into a system of emergency remote teaching and learning, including when it came to their own professional learning. This study represents a rare examination of blended PD during the immediate aftermath of the COVID-19 school shutdowns. It is imperative we learn from our experiences with ERT and online learning to move forward and do better. We can take the best parts of in-person PD and combine those elements with the best parts of online PD to create a more supportive and accessible teacher PD system.

DECLARATIONS

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