

Examining High Quality Online Teacher Professional Development: Teachers' Voices

Linda J. Collins

The University of Akron, USA

Xin Liang

The University of Akron, USA

Funded by Race to the Top, a federal education initiative, the Department of Education of a Midwestern state in the U.S. launched statewide implementation of online teacher professional development (OTPD) to apply formative instructional practices (FIP) to enhance classroom instruction. Central to the design and implementation of OTPD was the need to carefully consider the quality of the professional development program. This study aimed to look into this by asking, "Which features of high quality online professional development were noted by participating educators in a statewide online teacher professional development program?" A survey was used to collect educators' voices in this FIP professional development (PD) program. Eight hundred ninety-five educators participating in the FIP OTPD program responded to a survey. Descriptive analysis was conducted with frequencies and percentages of 21 Likert scale items. Inductive analysis and thematic coding were applied for open-ended comments from the survey. Results suggested many inconsistencies between: (a) the high quality online professional development that theories suggest, and (b) what was designed, delivered, and implemented. The study identified specific aspects of this FIP OTPD program that will inform future online professional development in order to improve quality in other large scale or statewide school improvement initiatives.

Key words: Online professional development, high quality features, formative instructional practices, transformational learning

Introduction

Ongoing learning is an essential component of continuous improvement for teachers (Barber & Mourshed, 2007), and is closely associated to student learning. Revisions to the Interstate Teacher Assessment and Support Consortium (InTASC) standards speak to a need for teachers to learn to approach their practice in new ways (Hill, Stumbo, Paliokas, Hansen, & McWalters, 2010). For example, an increasingly diverse student population requires teachers to learn new ways to personalize instruction. To do so, teachers need opportunities and support to become skilled at using new forms of assessment data to address the unique needs of individuals and implement appropriate instructional practices. Unfortunately, too many professional development programs are disconnected from teachers' actual practice and are not designed with attention to the needs of adult learners (Croft, Coggshall, Dolan, & Powers, 2010), resulting in teachers' frequent dissatisfaction with their mandated professional development. In a survey conducted for The Teaching Commission (Peter D. Hart Research Associates & Harris Interactive, 2004), 42% of teachers indicated that professional development either leaves something to be desired or is a waste of time.

In an attempt to reach teachers in meaningful ways, recent austere economic times have led, in many instances, to online training as a "high-quality, cost-effective solution" to providing

professional development (Geiman, 2011, p. 15). However, the quality of online teacher professional development (OTPD) must be under close scrutiny. What high quality OTPD features were voiced by participants regarding a large scale online teacher professional development program for formative instructional practice (FIP)? The purpose of this study was to address this question by focusing upon identified features of quality OTPD in this FIP program and examining these features from the perspectives of educators participating in the OTPD program.

Background on Formative Instructional Practices (FIP) Online Teacher Professional Development Project

Funded by Race to the Top, a federally funded education initiative, the Department of Education of a Midwestern state in the U.S. launched statewide implementation of online teacher professional development. The goal was to engage school leaders and teaching staff in utilizing e-learning and professional learning teams in applying formative instructional practices to enhance the quality of instruction in PreK-12 classes in more than 300 local educational agencies (LEAs).

Formative instructional practice is an instructional model originated from “assessment for learning” theory (Stiggins, 2008). Central to the model of FIP are: (a) clear learning targets; (b) ongoing collection of evidence of student learning; (c) providing effective feedback; and (d) fostering the ability of students to take ownership of their learning. The statewide FIP OTPD program sought to improve the ability of PreK-12 teachers to implement formative instructional practices in their classrooms by supporting educators through a period of change in practice until they were able to see differences in student behaviors or achievement. Five online modules were designed to deliver theoretical and practical information about FIP. A national educational publisher provided the content and framework for five online learning modules emphasizing FIP concepts. A local national nonprofit organization that promotes practices for improving educator effectiveness provided technology and structure to support the delivery of FIP OTPD. Statewide FIP training followed a train the trainers sequence with national publisher experts training regional specialists who prepared local facilitators to guide other educators in their LEAs. Educators received an overview of the program from the local facilitator, then worked through the online FIP modules independently or small groups, according to their local implementation plans, while collaborating with others electronically and face-to-face. FIP OTPD preparation and support were intended to deliver

- online guidance for launching FIP OTPD local training,
- consultation and facilitation from regional specialists,
- training for local FIP facilitators for in-house professional development,
- online resources to implement and sustain formative instructional practices, and
- online and face-to-face professional interactions and collaboration.

Since teachers have such a strong effect on student performance (Darling-Hammond, 2010), an online teacher professional development program to promote understanding and implementation of formative instructional practices (FIP) was one of the state Department of Education’s efforts for enhancing professional development, and ultimately, student learning.

Working from evidence that when teachers have access to high quality, results-driven, content-specific staff development, their students' academic achievement increases (National Staff Development Council, 2001), the current study examined which features of high quality OTPD teachers in this online FIP professional development program noted and compared their views to the FIP OTPD high quality professional development features identified in the literature.

Research That Guides High Quality Online Teacher Professional Development

Archibald, Coggshall, Croft, and Geo (2011) defined high quality professional development as the kind that produces change in teaching practice and student outcomes. The online environment offered an appealing option for statewide implementation of a program that providers believed to be high quality. Learning in an online professional development setting can be described as "an environment in which the learner's interactions with learning materials, peers, and/or instructor are mediated through advanced information technology" (Alavi & Leidner, 2001, p. 2). High quality online teacher professional development is built upon features of quality professional development in general, and additionally it takes advantage of benefits of technology to deeply engage learners (Bonk & Cummings, 1998). OTPD designers and FIP professional development (PD) program providers and external evaluators were in consensus regarding the importance of making certain that the FIP OTPD clearly exhibited high quality professional development features and high quality online PD features.

OTPD parallels traditional face-to-face professional development models (Brown & Green, 2003), with additional essential elements. Koehler and Mishra (2008) further explained that achieving a high quality online learning environment requires developing sensitivity to the dynamic relationship among critical features of technology, pedagogy, and content knowledge, often referred to as TPCK. Online examples of components reflecting such a relationship include features such as carefully structured time and authentic tasks with personal feedback (Koehler & Mishra, 2005) as well as unique resources offered through using technology (Knowles, 1975; Yang & Liu, 2004).

OTPD must incorporate essential elements from research-based teacher education, adult learning, and online learning. Adult learner principles acknowledge that participants are self-directed, bring a foundation of experience, are goal-oriented, seek relevant and practical content, and like respect (Knowles, Holton & Swanson, 2011). Participants require accurate, current, and substantial content, including in-depth dialogue among learners about content meaning, classroom application, and work implications (King, 2002). PD must incorporate enhancement of content and pedagogical knowledge, include frequent sessions and follow-up, incorporate shared tasks, and provide feedback (Guskey, 2003), while honoring adult learner principles. Additionally, the online learning environment incorporates many technology-based tools and resources, builds learning communities, and allows for modeling and coaching (Yang & Liu, 2004).

While maintaining transparent technology and building learning communities, online opportunities must also incorporate personalization and flexible, convenient, and self-directed activities (Brown & Green, 2003). It must integrate collaborative inquiry and multiple zones of proximal development as well (King, 2002). OTPD should also enhance technological knowledge as it boosts content and pedagogical knowledge (Koehler & Mishra, 2005).

This FIP online teacher professional development program appeared to offer many benefits and was an appealing option for a statewide program for formative instructional

practices. Yet high participation and quality were essential in order for the program to be effective. Although the technology for robust online teacher professional development is at our fingertips (and ubiquitous), far less is known about how to use it to advance teachers' thinking, reasoning, and instructional skill through professional development (McCombs & Vakili, 2005). Further, different configurations of OTPD including elements such as length of training and instructional methods used in the training can have different impacts on learners (Sitzmann, Kraiger, Stewart, & Wisher, 2006).

Based upon constructs of high quality OTPD, the purpose of this study was to determine how research-based characteristics of high quality online teacher professional development compared to specific features of this statewide formative instructional practices program as voiced by participating teachers by answering the question, "What high quality OTPD features were voiced by participants regarding a large scale online teacher professional development program for formative instructional practice?" Using the identified major features of high quality OTPD in theory, researchers identified five basic indicators: (1) content relevancy, (2) online features and delivery quality, (3) online participation and duration, (4) transformational learning for instructional practices, and (5) adult learning theory.

Method

Survey research method was applied in this study with 21 Likert scale items supplemented by 8 open-ended responses. The data collection tool was an online survey developed by FIP program external evaluators based on major features of online teacher PD theories. Each Likert scale item contained five choices: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree. Eight open-ended questions probed for details about participants' online experience and the quality of the online modules. The survey was administered online via Google Forms. The external evaluators emailed survey links to FIP coordinators/administrators in the participating LEAs, who in turn shared the link with school staff members. Eight hundred ninety-five FIP PD participants responded to the survey over thirty days, a 14.0% response rate. The majority of the respondents (68.1%) were classroom teachers. The other 31.2% were administrators and educational support staff. Descriptive analyses were conducted for Likert scale online questions. Frequency and percentages were calculated to determine the participants' opinions regarding key indicators of quality of OTPD.

Participating educators also responded to eight open-ended questions related to their FIP OTPD experiences. Thematic coding and reflective analysis approaches were applied to analyze open-ended survey questions. Inductive process was applied to organize the response patterns. Initially, responses were organized by each question, with segments and similar responses grouped together as potential themes. Nineteen possible codes were identified and regrouped by content and high quality OTPD literature. The nineteen codes covered a wide spectrum, including: (1) FIP content knowledge, (2) feedback and multiple zones of proximal development (3) transparent technology, (4) pedagogy, (5) time availability and frequency, (6) collaboration, (7) overlap with other professional development initiatives, (8) individual needs, (9) information load, (10) accessibility and delivery mode, (11) face-to-face interaction, (12) independent learning, (13) building learning communities (14) setting up goals, (15) professional feedback, (16) structured discussion, (17) roles of teachers, facilitators, and district specialists, (18) school climate, and (19) learning new knowledge and skills. In the end, five major themes emerged from the comparison and inductive process. These five themes were: (1) content relevance, (2)

online features and delivery quality, (3) online participation and duration, (4) transformational learning for instructional practice, and (5) honoring characteristics of adult learners

Results

Participants' voices related to the twenty-one Likert scale items on high quality features of OTPD expressed mixed views. Twenty-one items were designed to measure four aspects of high quality features of OTPD: (1) content relevancy (four items), (2) online features and delivery quality (eight items), (3) online participation and duration (five items), and (4) transformational learning for instructional practices (4 items). Participants' qualitative extended responses provided further explanations for the research questions, as thematic coding of extended responses revealed some features of high quality OTPD design not directly expressed through Likert scale items. Participants' comments supported and clarified quantitative response themes.

Content of the FIP online modules was relevant to enhance knowledge and skills for effective instruction according to more than half of respondents, but less than half found it readily adaptable to their practice despite videos and downloadable handouts. Feedback on different aspects of technology reported mixed views. For content relevancy in terms of items of FIP online modules, even though 58% of participants agreed that they would use the information in the future, only 42% reported that the modules showed or described application activities that they can readily implement in the classroom, and only 47% said that the online modules answered their professional questions and concerns.

Regarding issues of online features and delivery quality, participants reported few benefits of OTPD regarding the delivery mode. Sixty-one percent indicated that online learning fits their schedule better than meeting face to face, while 68% percent indicated that navigating the modules was clear and simple. However, no respondent referenced any specific advantages that technology offered beyond its availability to be accessed at will and paced individually. Twenty-five percent reported online FIP PD training to be an engaging way to present the content.

Reporting on online participation duration indicated that only 14% spent more than four hours working on the online module, and 30% reported that they felt it was difficult to stay motivated to navigate through the online content. One frequently cited benefit to online PD cited in the literature was using advantages of technology to engage participants, yet 12% of respondents reported that it was overwhelming to complete the modules by themselves. Participants noted an interactive module design with balance among text, videos and activities, and even more reported ease of navigation. While many found content easy to learn online, participants did not like text-heavy screens or dense academic language which caused high cognitive demand. Eighteen percent reported that the modules were boring, and 73% indicated that they experienced a degree of information overload while working through the online modules.

Four items measured participants' voices regarding transformational learning for instructional change. Even though 76% indicated that they had set up personal goals to implement FIP in instruction, less than a quarter of the participants indicated that they learned to use new technology in this OTPD. While 37% indicated they had learned a lot of practical information for teaching as a result of the FIP project, less than half indicated that they would adopt FIP into their instruction. Table 1 presents details of respondents' perspectives on features

in the FIP PD program that reflect characteristics of high quality OTPD. Figures represent numbers of participants who agreed or strongly agreed with each statement. Selected representative comments from open-ended questions are included at the end of each descriptive analysis theme, for clarification.

Table 1. Participants' Perceptions of FIP OTPD Quality Features.

Statement	Frequency	Percent
Content Relevance		
1. The modules show or describe application activities that I can readily implement in my classroom	379	42%
2. The online modules provided me information I will use in the future.	484	58%
3. The modules have answered some professional questions or concerns I have.	387	47%
4. The online modules provided good theory, but I am not sure how they apply to my work.	80	10%

Comments:

- “We have been advocates for formative instructional practices for quite a while so this is nothing new to new to us.”
- “Module #2 was VERY helpful in teaching me more about clear learning goals.”
- “There was no new information.”
- “I would rather have face-to-face sessions because I have experienced several online problems and problems with my computer at school that has [sic] not been resolved.”
- “I feel like what we've learned in our FIP modules was just in time and very useful with our new state evaluation system.”
- “With all of the other pressures that we are under, rarely is any of this information is useful to me.”

Online Features and Delivery Quality

1. The online learning fits my schedule better than meeting face to face.	490	61%
2. The online format offers content delivery advantages over face-to-face delivery.	222	28%
3. The online part of the training was more work than I expected.	216	24%
4. The modules are boring.	147	18%
5. It was difficult to stay motivated as I worked through the module.	264	30%
6. The modules have a good balance in their text, video, and interactive tasks.	563	63%
7. Navigating the modules was a clear and simple process.	612	68%
8. As I worked through the online modules, I felt as though I was on information overload.	371	72.6%

Comments:

- “The modules are basically an electronic textbook”
- “You cannot print out any information to be able to look at it later.”
- “Online is not enough of an example or explanation for me.”
- “NOT ENOUGH HIGH SCHOOL EXAMPLES IN MODULES.”
- “Need concrete examples of how to collect this data and implement specific strategies.”
- “It offers advantages over the time face-to-face PD requires, but the format was disengaging and didn't apply directly to high school instruction.”
- “I thought the modules were good and it was convenient that they were online, but I still like face-to-face sessions in order to clarify and collaborate.”
- “The modules ARE engaging however we need time to collaborate face to face to discuss the modules and strategies to use in our classroom.”
- “It is convenient, but technology problems are a hindrance.”
- “I would have gotten through more modules if I was not handwriting notes that today's technology could have made readily accessible.”

Online Participation and Duration

1. I spent 4 hours or less viewing the FIP online modules.	670	76%
2. I viewed the modules by myself from home.	241	27%
3. I viewed the modules by myself at school.	223	25%
4. I viewed the modules along with one or two colleagues.	137	15%
5. I viewed the modules as part of a whole group.	164	18%

Comments:

- “I had questions on how I could implement certain things in my content area and this is when it would have been helpful to have someone face to face.”
- “I don't like training sessions that have a lot of information thrown at me at once.”
- “It is hard for me to sit and watch online presentations but do so because it is required.”
- “There is no way to look at one particular topic without doing the entire module again. Very poor presentation method in my opinion.”
- “I think the online modules are very low-tech and not engaging”
- “I can do the modules on my own time and when I want and spend the time I need to reread.”
- “It allows me to skip through most of the information I have heard over and over again so that I can move on to something else.”
- “I can work at my own pace and review material if I am confused.”
- “I like online learning, but this was so overwhelming...it was difficult to digest all at one time. I felt as if there were pieces of information missing in my understanding.”
- “There is simply no way to individualize the learning unless you are sitting across from a real person and can ask clarifying questions.”
- “We share our ideas and practices daily. My colleagues give feedback in the direction I need to go.”
- “Allows you the opportunity to focus on areas where you are struggling without having to listen to problems of others that may be unrelated”
- “It is convenient, but technology problems are a hindrance.”
- “We struggle with the language used in the online modules. Can it be simplified and understandable without juggling between lines for multiple times to figure out what exact was [sic] talking about?”

Transformational Learning for Instructional Practices

1. I have set goals for myself regarding the implementation of formative instruction.	571	74%
2. The content in the modules is easily adaptable to my classroom instruction.	375	43%
3. I learned a great deal of practical information for my teaching as a result of the FIP project.	415	37%
4. As I worked through the modules, I used technology skills that were new for me.	162	21.8%

Comments:

- “No opportunity to discuss or clarify topics through a module.”
- “Sharing information, attending trainings, and emailing support.”
- “I like to learn on my own and not in large group.”
- “We are sharing strategies, lesson plans, writing ‘I Can’ statements together, deciding on what makes up our deconstructed elements, and implementing them equally.”
- “Our learning team continues to give each other examples of how we can utilize different strategies to achieve the implementation of FIP.”
- “We meet every week but we do not always talk about FIP.”
- “Teachers are overwhelmed with ‘things to do in your spare time.’ Spare time doesn't exist anymore.”
- “Teachers are free to do the module on their own time (within certain timeframes).”
- “I haven't changed too many of my ways yet. I need to know more about this and get a better buy in to make the changes.”
- “I have been doing this—setting goals, students evaluating their learning level in light of the goals, adjusting instruction—for a long time.”
- “I completely rewrote my homework assignments to be more narrowly focused on learning targets and redeveloped my homework policy to serve the function of formative assessment—allowing students to receive timely and specific feedback and adjusting instruction accordingly.”

Participants indicated that they had full access to the online modules. The online learning structure provided a flexible learning platform for educators to engage in interactive learning, information sharing, and community of practitioners and learners. However, relevant content and an available online delivery platform did not ensure that interaction and information sharing happened. Online PD is not equivalent to simply posting content online. “Information is not collaboration,” mentioned one participant. The current online structure in the FIP PD showed inadequate design to encourage and foster online professional interaction, learning communities, and information sharing, which participants noted in their feedback on the modules and online structure.

In addition to supporting quantitative response themes of content, online participation and delivery, quality and duration, and change in behavior, thematic coding of extended responses revealed a separate important feature of high quality OTPD design not directly expressed

through Likert scale items, to honor characteristics of adult learners. Participants' comments reflected some of the key characteristics of adult learners such as autonomy and self-direction, acknowledgement of a foundation of experience, goal orientation, relevance, practical content, and respect for learners. Representative comments are in Table 2.

Table 2. Features that honor characteristics of adult learners with quotes from FIP PD participants.

Autonomy and Self-direction
<ul style="list-style-type: none">• “Completion of modules on own schedule and own pace.”• “The online format allows you to stop, review, and reflect when needed. It also gives you the opportunity to go back and review as a resource.”
Acknowledgement of a Foundation of Experience
<ul style="list-style-type: none">• “The modules are time away from my colleagues which I value more.”• “We have been advocates for formative instructional practices for quite a while so this is nothing new to new to us.”
Goal Orientation
<ul style="list-style-type: none">• “Discussion has been the biggest support. We spend more time discussing lessons, targets, data, and student goals/achievement.”• “I am actually in the process of creating learning targets and altering my lessons to incorporate formative practices.”
Relevance
<ul style="list-style-type: none">• “They are theoretical but not relevant to everyday teaching.”• “Too much of the information was not applicable to my students.”
Practical Content
<ul style="list-style-type: none">• “I had questions on how I could implement certain things in my content area and this is when it would have been helpful to have someone face to face.”• “Some of the FIP ideas are not practical but I found my own ways to use FIP that works for my classroom.”• “Face-to-face conversation would be more helpful for practical application.”• “I have personally gone out and found practical subject specific examples to share with teachers.”
Respect for Learners
<ul style="list-style-type: none">• “They are demeaning and insulting to experienced educators.”• “Respect for those us of who have these skills has not happened.”

Discussion

Successful OTPD must reflect overall features of quality professional development as it incorporates essential high quality e-learning features. Online PD plans must specifically provide for and explicitly address characteristics that reflect high quality online PD indicators to yield instructional change and school improvement. Likert scale survey items and open-ended survey responses indicated that participants' perceptions varied widely. On paper, the original FIP PD plan showed many of the features of quality OTPD, yet responses from participants did not reflect that they experienced these aspects as planned.

Themes from qualitative responses supported and clarified results from Likert scale items. The FIP PD plan showed many of the features of quality OTPD, such as enhancing content and pedagogical knowledge (but not technology skills for most participants), providing resources to implement and sustain formative instructional practices, designing professional collaboration experiences, offering multiple zones of proximal development, as well as modeling, feedback, and professional networking opportunities. Yet responses from participants did not reflect that they experienced these aspects as planned. Although a high number of participants had set goals for themselves, many did not find relevance, new information, practicality, modeling, feedback, peer interaction, engagement over time, or other features of high quality professional development. A closer feature-by-feature look at specific aspects identified in the literature as essential to quality was compared to teachers' perceptions of the FIP OTPD.

Content Relevance

There was an apparent discrepancy between the vision of FIP PD providers and the participants regarding knowledge enhancement. The FIP OTPD plan proposed that the modules would present relevant content and pedagogy regarding formative instructional practices along with technology experiences, all from experts (Guskey, 2003; Koehler & Mishra, 2005; Mishra & Koehler, 2006), to enhance participants' knowledge in each of those areas. Information was presented primarily as onscreen text, with some videos and interactive activities interspersed, but most participants did not perceive their work with the modules as enhancing content, pedagogy or technology knowledge. Their comments and satisfaction responses did not report that they encountered accurate, current, and substantial content in the modules (King, 2002). Slightly over a third (37%) learned information that would be useful in the classroom, and only about a fifth (21.8%) used new technology skills as they worked through the modules.

Online Features and Delivery Quality

While the modules appeared to be well accepted by many who indicated that they made learning easier, a number of individuals expressed they did not find OTPD as effective or meaningful as traditional face-to-face protocols. Technology offers many advantages that can deeply engage learners (Bonk & Cummings, 1998), yet hardly anyone mentioned the online environment as engaging or encouraging participation through support or collaboration. A high number explicitly expressed that interaction was lacking when using the modules, and often sorely missed. Many reported that even though they appreciated online delivery and its accessibility and the balance of text, video, and interactive tasks, they still missed the dialogue and collaboration of face-to-face PD. Those who reported satisfaction in interacting with colleagues reported to have accomplished this in their face-to-face learning groups, not through

electronic communications. Nearly three quarters (72.6%) felt they were on information overload as they worked through the modules. In fact, the most reported benefits of OTPD cited by participants were the options in time and pacing afforded by technology, but participants did not cite personalization, coaching, modeling, high engagement (Yang & Liu, 2004; Brown & Green, 2003) or other advantages of technology, such as deep engagement (Bonk & Cummings, 1998) or varied tools or resources (Yang & Liu, 2004). A high number requested additional modeling of formative instructional practices.

Transparent technology that makes learning more likely, another feature of quality OTPD (Brown & Green, 2003), was at times not characteristic of the online module design. A number of participants (68%) noted ease of navigation through the modules, while many others (72.6%) commented on information overload. Few used new technology skills through the FIP PD series, and many commented on various technology problems they experienced.

Online Participation and Duration

A high number reported spending 4 hours or less interacting with the online modules, far less time than the 30 hours or more in programs having positive effects (Guskey & Yoon, 2009). Many respondents reported feeling overwhelmed with the number of statewide initiatives being introduced simultaneously throughout the state, which may have colored their perceptions of the FIP PD program quality and usefulness as well as their levels of participation. Promoting fewer initiatives at the same time or explicitly highlighting how different programs connected might have resulted in a more successful FIP PD program. A different or better instructional design might also have encouraged higher participation levels and brought about deeper engagement.

A more comprehensive, interactive design might also have prevented participants from feeling isolated as they navigated the modules. A number commented they would have benefitted from being able to discuss questions, concerns, or ideas that came up during the PD experience, similar to discussions and interactions in face-to-face PD sessions.

Transformational Learning for Instructional Change

Opportunities for and approaches to information sharing were encouraged by PD providers, primarily by directing participants to use site-based professional teams to discuss FIP in their buildings. Based upon participants' comments, it appeared that PD providers did not recommend specific topics for discussion. Participants' follow-through on collaboration and information sharing, however, varied widely, with no apparent accountability to PD providers. For example, professional learning team meetings (a cornerstone of the FIP PD plan) varied from not yet formed through meeting on a regular daily or weekly schedule. Some references to organized online opportunities were made, but were vague. This lack of structured follow-up (Guskey, 2003), although outlined in the FIP PD plan, was another feature of quality PD that was apparently missing. More structured follow-up may have encouraged further reflective consideration of FIP module content and ultimately ensured higher levels of implementation of formative practices in instruction.

Inconsistencies in or lack of follow-up may also have contributed to a number of participants feeling that FIP content was not readily adaptable to their work. Participant comments and satisfaction responses did not report in-depth dialogue among learners about content meaning, classroom application and work implications (King, 2002) as prominent features of the FIP PD. Additionally, a high number cited the need for more modeling of FIP

techniques relevant to their grades or subjects. Such limited modeling and coaching may have also inhibited classroom implementation.

Characteristics of Adult Learning Theory

Another important characteristic of OTPD is to honor adult learning theory, which was particularly salient in participants' comments. PD providers incorporated a number of features of adult learning theory into their overall FIP plan, acknowledging participants as adult members of a professional development cohort. Ultimately, however, participants did not note some of the basic characteristics of adult learning theory. For example, although a considerable number of participants noted and valued the flexibility or autonomy (Knowles, 1975) offered through the online modules, many expressed that FIP PD was neither offering new, relevant or substantial information (King, 2002; Knowles, 1975), nor enhancing content, pedagogical (Guskey, 2003) nor technological knowledge (Koehler & Mishra, 2005).

These views might have been the basis for teachers' perceptions of the quality of the program. Participants' prior knowledge and experiences were important in their views of project usefulness (Knowles, 1975) and these were not taken into consideration in this one-size-fits-all online implementation. Some even expressed a sense of having their prior experience insulted by the content of the program.

Likert scale responses presented a picture of the quality in this FIP OTPD, and probing questions clarified the perceptions participants held regarding the program. Many comments helped to explain why some participants were not eager to engage fully with the online modules and activities as outlined by FIP PD program developers and planners. Providers of FIP PD could have considered that this initiative might have benefitted from beginning small scale to explore its quality and effectiveness, and then proceeded full scale. In order to increase school improvement, future study needs to address factors that increase or emphasize high quality in online PD programs.

Implications

Recent research regarding online design and learning is moving the field forward (Koehler & Mishra, 2005; Mishra & Koehler, 2006). Studies indicate that numerous factors affect quality of OTPD programs, including the providers, instructional design, program participants, and the environment in which it occurs. The TPCK (Technological, Pedagogical, and Content Knowledge) framework helps to clarify the complex relationships among content, pedagogy, technology knowledge, and how these domains intersect to create the new kinds of knowledge needed to support OTPD (Koehler & Mishra, 2008; Mishra & Koehler, 2006). Technological knowledge by itself is not sufficient for providers being able to effectively introduce OTPD. Bringing together technological, pedagogical, and content knowledge can guide high quality PD design. Effective online design requires negotiating and combining these three forms of knowledge (Koehler & Mishra, 2008; Mishra & Koehler, 2006). Factors identified in this study indicated that critical features related to program quality must be clearly provided and specified and required during program implementation to ensure quality and ongoing participation are maintained, which was echoed by participants.

The current study suggested how a framework like TPCK could be used to enhance OTPD. Harris (2008) has proposed considerations for OTPD to support educators in developing their combined knowledge bases. He noted that TPCK-related professional development should

promote autonomous as well as collaborative instructional decision-making while simultaneously encouraging consideration of specific instructional methods, tools, and resources, which may be new to participants. Online activities should provide flexible scaffolding and authenticity of purpose for teachers' "TPCK-related learning—a balance of helpful, non-constraining structure/scaffolding for new implementation ideas while acknowledging experienced teachers' agency and expertise in the classroom" (Harris, 2008, p. 267).

Clear communication of program goals and careful backward planning are key elements in successful PD and working with adult learners (Guskey, 2014; Knowles, 1975). While most participants felt they understood what the modules were telling them to do, FIP PD planners could have been more explicit in outlining the planned roles of all participants in this multi-layered OTPD program since organizational support is also crucial to effective PD (Guskey, 2014). Closer consideration of characteristics of online high quality professional development during the planning and implementation of this program might have resulted in more explicit learning goals, deliberate learning activities, and subsequently a larger learning gain. Such factors have practical implications to guide OTPD design, delivery, and implementation (Guskey, 1999, 2002). Though far more research is still needed, this study identified specific aspects of this FIP PD program that may contribute to improving quality and warrant consideration from the perspective of participants in a large scale or statewide school improvement initiative

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