Transforming Classroom Practice: Technology Professional Development that Works!

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Abstract

Technology professional development workshops primarily focus on technical skill training, and these skills are often taught out of context and seem remote from classroom practice. How can educators learn how to teach with technology in a variety of disciplinary areas, so that their professional learning experiences are considered valuable and are readily integrated into their teaching practice? This paper presents a professional development workshop model called the *TPACK-based Professional Learning Design Model (PLDM)*. The model offers a practical and efficient method for engaging teachers and teacher candidates in the development of tech-enhanced teaching practice. The workshop model uses four specific types of professional development experiences to promote teaching with technology, rather than teaching **the** technology, with the goal that teachers leave the workshop being able to understand how to integrate one tech-enhanced activity into their own daily instructional practices.

Introduction

Teacher professional development about teaching with technology has traditionally been in the form of one-session workshops, in which teachers are introduced to specific technology tools and shown how to use them – the focus is usually on teaching the technical skills. For example, teachers attend workshop sessions that demonstrate how to use SMART Notebook software, how to build a PowerPoint presentation, or how to use the apps on an iPad. Such an approach to professional development is referred to as techno-centric (Papert, 1987), because these experiences focus on the teaching of technical skills. Within techno-centric workshops, technical skills are often presented out of the teaching context, which, research shows, makes it difficult for teachers to transfer the knowledge learned in the workshops about technical skills,

into teaching with the tools in their daily instructional practices with their students (Angeli & Valanides, 2009; Figg & Jaipal, 2012; McKenzie, 2001; Schrum, 1999).

Currently, there is a perceptible shift from technocentric approaches to content-centric approaches, in which professional development experiences focus on learning how to use the technology to teach specific content (Fisher, Dwyer, & Yokum, 1996; Harris, 2005; Harris, Mishra, & Koehler, 2007, 2009; McKenzie, 2001; Means & Olson, 1997; Roblyer, Edwards, & Havriluk, 1997). The knowledge teachers need to teach with technology involves knowing “the rich connections between technology, the subject matter (content), and the means of teaching it (the pedagogy),” and how they interact and overlap (Koehler & Mishra, 2005, p. 95). This knowledge is referred to as Technological Pedagogical and Content Knowledge (TPACK) (Mishra & Koehler, 2006). Neiss (2011) suggests that building TPACK knowledge requires professional learning opportunities that focus on “teachers’ strategic thinking and actions with respect to integrating technologies as learning tools” (p. 300). Additionally, she suggests that professional learning opportunities should answer questions such as, “What experiences and preparation are essential for developing the teacher knowledge for guiding learning in the various subject areas with new and more powerful digital technologies?” (p. 300). Effective technology professional development workshops are characterized by content-centric approaches that focus on the development of TPACK knowledge (Figg & Jaipal, 2013; Jaipal Jamani & Figg, in press; Harris & Hofer, 2011; Harris, Mishra, & Koehler, 2007, 2009).

Specifically, effective technology workshops provide key experiences that allow teachers to develop understanding of how the technology is situated in a teaching context, promote teachers’ strategic thinking around pedagogical issues, highlight relevant technical skills, and provide practice in applying the new technology in a subject area (Figg & Jaipal, 2012; Neiss, 2011; Jaipal Jamani & Figg, in press). This approach to technology professional development provides guidance to school board educational technology consultants and teacher technology specialists, for helping classroom teachers learn how to teach with technology.

The TPACK-based Professional Learning Design Model (PLDM)

Most technology teacher educators are familiar with delivering professional development workshops that build technical skills, or the traditional techno-centric workshop. This type of workshop promotes the mastering of a large set of skills required for the workshop participant to

personally use a specific tool. Technology teacher educators are also familiar with the informational workshop, which demonstrates various tools to the workshop audience and provides information about newer technologies, and illustrates to participants how the newest and most cutting-edge technologies can be used in classroom teaching. Although both of these types of workshops have a purpose in building knowledge about teaching with technology, research has indicated that these types of experiences do not transform teacher classroom practice (Angeli & Valanides, 2009; Becker, 1994; Figg & Jaipal, 2012; Hadley & Sheingold, 1993; McKenzie, 2001; Schrum, 1999). In an effort to shift the focus toward helping teachers build pedagogical knowledge about teaching with technology, a technology professional development workshop model that provides experiential opportunities to build TPACK knowledge, called the *TPACK-based Professional Learning Design Model (PLDM)* was proposed (Figg & Jaipal Jamani, 2013). The TPACK-based *PLDM Workshop* model consists of four stages: (a) modeling a technology enhanced activity type (learning with the tool) to set the context and purpose for tool use, (b) integrating ‘pedagogical dialogue’ in a modeled lesson, (c) developing activity-specific technical skills through short tool demonstrations, and (d) applying TPACK knowledge to the design of an activity adapted to their own teaching context. Engaging in these four stages – or experiences – during a workshop has been shown to support knowledge building around teaching with technology, so that teachers are able to transfer what they learn in the workshop, and adapt it for their own teaching situations and student learning needs (Angeli & Valanides, 2009; Figg & Jaipal, 2012; Neiss, 2011; Jaipal Jamani & Figg, in press).

Stage 1: Modeling a Tech-Enhanced Learning Activity

The initial experience in a typical *PLDM Workshop* builds knowledge for tech-enhanced teaching, by providing participants with an authentic subject matter context to show how the tool supports learning in classroom instruction (see Figure 1). In this phase of the workshop, participants take part in a tech-enhanced learning activity, so they can visualize how learners would learn specific content with the tools. In other words, the facilitator models tech-enhanced teaching by serving as the ‘teacher’ and ‘teaching’ a subject matter learning goal to the participants, using the technology enhanced learning activity featured in the workshop.

For example, a workshop that features QR Codes (or barcodes that link to online resources) and iPads, would begin with the facilitator modeling to workshop participants how to

use the QR Code Reader to complete an Internet-based quest, which is a series of questions related to a specific content topic. Participants complete the hands-on activity as learners and use the QR Codes Reader on the iPad to locate information that answers the questions on the Quest. The participants report back their findings to the whole group – in exactly the same way students would participate in the activity in the classroom. In another example, participants in a workshop called “Media-rich, Interactive Presentations: Engaging Learners with Prezi,” begin their workshop by answering a set of questions by reviewing the information presented in a Prezi, including watching and listening to the embedded videos and podcasts. Prezis can be constructed to present information around many topics, and, for workshop purposes, sharing a Prezi related to historical topics works well, as this type of presentation clearly illustrates how video, audio, animated text, and graphics can be combined to describe the characteristics of historical figures, heroes, and immigrants’ voyages to Canada, which may be familiar to the audience.

Figure 1: Stage 1 Workshop Activity: Modeling Technology Enhanced Learning Activity

Stage 2: The Pedagogical Dialogue

Following the modeling experience, the facilitator engages participants in a pedagogical dialogue. This discussion provides participants with time to process metacognitively how the pedagogy, content, and technology work together in instruction. As well, this discussion

enhances the effectiveness of the modeled activity (Angeli, 2005), by providing participants with time to build their TPACK knowledge about how the tool is seamlessly integrated into instruction, and how to adapt the activity for use within their own teaching contexts (see Figure 2). This conversation enlightens novice teachers about the connections between the modeled activity, and the decisions teachers make in designing and implementing tech-enhanced activities. Without this conversation, teachers are merely participating in the tech-enhanced activity, and not making connections between technology, pedagogy, and content.

Specifically, the workshop facilitator engages participants through small group discussions to answer the following questions:

- What is the structure of the activity? What tools are appropriate for this activity? In what types of lessons (e.g., Direct Instruction, Inquiry, Project-based, Problem-based, Collaborative Grouping Jigsaw) will this type of activity be most effective?
- How would this activity be adapted for content areas? What other tools could be used for this activity?
- What implementation strategies work most effectively for this activity? What does the teacher need to plan/prepare ahead of time? What classroom management issues need to be addressed?

Figure 2: Stage 2 Workshop Activity: Pedagogical Dialogue

Stage 3: Tool Demonstration and Online Resources

The next stage of the workshop, the tool demonstration stage, introduces only the technical skills a teacher needs to effectively use the tech-enhanced learning activity in instruction (see Figure 3). Often, there are no more than five key technical skills needed to create or implement the learning activity. Further skills are introduced in subsequent workshops that model more complex tech-enhanced learning activities. Research indicates that short, frequent training sessions that are sustained over time are most effective for development of teachers who competently integrate technology into their instruction (Carlson, 2002; Gavrin, Porter, Desimone, Birman, & Yoon, 2001; Grunwald & Associates, 2010; McKenzie, 2001; Rosen, 2005); hence, every workshop introduces minimal, but relevant, skill instruction, while keeping the focus on learning content. The tool demonstration provides specific technical instructions and guides participants through the creation process, the set up process, or other technical skills needed to implement the tech-enhanced activity. The workshop facilitator may provide participants with a print version of the steps for purposes of taking notes during the workshop, or to peruse after the conclusion of the workshop. For example, in the QR Codes workshop, participants would be taught: 1) how to access and activate the QR Code Reader on the iPad; 2) how to position the code scanner to read the code; 3) how to access an online code generator to create a code; and 4) how to create a QR Code using the code generator. In the Prezi workshop, participants are taught: 1) how to set up a Prezi with frames; 2) how to insert and animate text; 3) how to insert video and audio; 4) how to create transitions; and 5) how to share the Prezi with others. A print tutorial would be provided to the audience that lists all steps, including screen shots as needed. The workshop facilitator also provides examples for how the tech-enhanced activity could be used in different teaching contexts and content areas, through an online web resource page that provides links to quality videos, other tutorials, and examples (see example of a resource page for a QR Code Quest activity at <http://www.handy4class.com/h4c2011/activitytypes/qr-code-quest/>).

Figure 3: Stage 3 Workshop Activity: The Tool Demonstration

Stage 4: Applying TPACK Knowledge to the Design of Their Own Task

The last stage of the workshop engages participants in the design of an independent task that is similar to the one modeled in the featured activity in Stage 1 of the workshop. Although it is common for facilitators in technology related workshops to provide ample time for participants to practice, question, and apply new skills, if this part of the workshop is not structured, it is also common for workshop participants to leave the workshop – believing they can do this on their own, at home, or finish at a later time. In our model, we ensure that participants practice their newly acquired knowledge, by providing them with a suggested task that will reinforce their learning. For example, participants are asked to create a set of specific QR Codes for a specific Quest, or Prezi workshop participants would be asked to create a Prezi using provided materials. Based upon the learning needs and comfort level of the participants, the presenter may encourage participants to complete a task more useful in their own teaching, than the independent practice task provided. Thereafter, all participants will engage in a

debriefing, or sharing session, within small groups, which concludes the workshop and allows participants to see how others visualize using the practice task.

Figure 3: Stage 4 Workshop Activity: The Practice Task

Lessons Learned Promoting Successful PDLM Workshops

While piloting the *PDLM Workshop* model with various audiences of teachers and teacher candidates, several ‘best practices’ emerged as significantly influencing success of the workshops, to build teacher knowledge about tech-enhanced teaching. Four of these ‘best practices’ relate to the design of an individual PDLM Workshop and include the following:

1) Selection of a tech-enhanced learning activity to feature in the workshop. Teachers develop a personal knowledge repertoire of learning activity frameworks that they feel work well with their instructional styles, and combine these activity frameworks to create lessons, units, or learning opportunities (Joyce, Weil, & Calhoun, 2004). The *PDLM Workshops* are designed to feature one tech-enhanced learning activity, and only the technical skills needed to implement the learning activity. The focus of the workshop is on the pedagogy behind how to use the

featured learning activity within an instructional setting, and how to adapt the activity for many different teaching contexts and technology tools. Therefore, selection of the learning activity to be featured in the workshop is an important design consideration. Examples of topics and an appropriate title for technology workshops that work well are shown in Table 1.

Table 1
Possible PDLM Workshop feature activities and tool

Tech-enhanced Learning Activity	Appropriate Technology Tools	Possible <i>PDLM Workshop</i> Title
Brainstorming	Popplet; Bubbl.us; Inspiration; SmartIdeas	Engaging Learners with Brainstorming Activities (Featuring Inspiration)
Visual Stories	Prezi; Animoto; KidPix	Using Visual Stories and Animoto to Enhance Learning Comprehension
Surveys, Polls	Socrative; Clickers;	Using Surveys & Polls to Engage Learners in Classroom Discussions
Presentations	Prezi; PhotoPeach	Using Interactive Presentations to Engage Learners
Collaborative Writing	Google Drive Documents	Enhancing Collaboration & Writing with Google Apps in Education

Harris and Hofer (2009) also provide a list of various learning activities, and the tools that can be used to enhance that learning activity with technology on the Learning Activity Types wiki (at <http://activitytypes.wmwikis.net/>).

2) Provide quality resources for follow up and reinforcement. Learning about how to use and teach with technologies requires the individual to build knowledge about content, pedagogy, and the technology; therefore, the workshop participants will need additional resources to expand and build upon the knowledge presented within the *PDLM Workshop*. Quality resources should be prepared and provided to participants that provide follow-up information and activities, tutorials to reinforce their learning, and links to information about how to apply to other contexts/other examples/exemplars. These resources work best when presented in an online format (participants cannot lose the resources if they are online and

searchable!), as well as providing print copies of the step-by-step instructions for completing technical skills. An example of a quality online resource page for a Pinterest workshop is available at <http://www.handy4class.com/h4c2011/activitytypes/pinterest/>.

3) Keep the length of the workshop to 1 ½ hours. Workshops that keep the focus tightly on learning the content through the tech-enhanced activity need to be short and limited in breadth. Successive workshops can be presented to build incremental knowledge.

4) BYOL (Bring Your Own Laptop) unless using specific installed software. Having participants bring their own laptops means that they will leave the workshop with the ability to use the technology on their own equipment! Ideally, these workshops should also be held in a lab so that all have access in the event of personal computer issues.

Conclusions

Students of today are digital learners, who are immersed in the use of technologies from the time they get up in the morning until they go to sleep at night. The gap between how students learn informally through technology, and how they are taught at school with little or no technology, is exacerbated when teachers do not have the skills and confidence to use technology effectively in their daily classroom instructional practices. Therefore, now more than ever, it is essential to build teacher knowledge about how to use technology to enhance instruction, and engage learners with technology tools common to their informal learning practices.

Providing the traditional professional development workshops that teach technical skills is not sufficient to develop teaching competence with technology (Angeli & Valanides, 2009; Figg & Burson, 2011; Fisher, Dwyer, & Yokum, 1996; Harris, 2005; Harris, Mishra, & Koehler, 2007, 2009; McKenzie, 2001; Jaipal & Figg, 2010; Means & Olson, 1997; Roblyer, Edwards, & Havriluk, 1997). The focus should instead be on building TPACK knowledge. The *TPACK-based Professional Learning Design Model (PLDM)* approach is an effective way to build TPACK knowledge, and allows teachers to leave professional development workshops with the knowledge to be able to teach WITH the technology, rather than just be able to use the technology. The *PLDM Workshop* approach facilitates transfer of knowledge learned in workshops into teacher actions in practice.

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