CHAPTER 26

# INTEGRATING TECHNOLOGY INTO PEDAGOGICAL CONTENT KNOWLEDGE IN K–12 AND UNIVERSITY PROFESSIONAL DEVELOPMENT

**Kathleen B. Fabrikant**
*Armstrong Atlantic State University*

**Cindy S. York**
*Northern Illinois University*

**Megan E. Morris**
*Armstrong Atlantic State University*

## BACKGROUND

Learners in the current millennium are wired to think digitally and expect instant access to knowledge. The need for educators to integrate new teaching tools is driven by the ever-increasing speed of technological advances

and as a way to engage the newest generation of learners with the ability to gain critical pedagogical content mediated by constant change. Research has shown this is true on a global basis (Doherty, 2010; Florian, 2012; Northcote, Reynaud, & Beamish, 2012; Whitchurch, Skinner, & Lauwerys, 2009).

If professional development is to remain sustainable and able to effectively support developing generations of educators, the authors of this chapter believe one of the most deciding factors is the integration of technology into pedagogical content knowledge supported by professional development efforts. Little (2006) asserted the term "pedagogical content knowledge," currently used by many, was first used by Dewey as he linked educational objectives with experiential activities outside the classroom. "Broadly defined, pedagogical content knowledge is the practical knowledge that enables teachers to transform the content and epistemology of a subject discipline for purposes of teaching" (Little, 2006, p. 7).

There can be many incentives for the development of high quality teacher training. The dizzying speed of available technological teaching tools for classroom use is one of the most obvious. How can educators be taught fast enough, and how can educators teach K-12 students in a world where those learners seem to be born with an innate digital knowledge? A second incentive is driven by the adoption of Common Core State Standards by many states, which requires a new level of pedagogical content knowledge (PCK). PCK has since been expanded to Technological Pedagogical and Content Knowledge (TPACK) (Thompson & Mishra, 2008). "T" signifies Technology. The addition of the "A" was meant to demonstrate that technology, pedagogy, *and* content were equal building blocks for educators to utilize as they used technology to improve their instruction and learning (Thompson & Mishra, 2008).

Van Driel and Berry (2012) renewed the spotlight on the "…importance of forms of professional development for teachers that are built on collaboration, collegial interactions, and the fostering of relationships" (p. 26). They discussed collaboration among educators within their professional environments as an essential part of the creation of high-level professional development. However, Van Driel and Berry warned of the dangers of mandated training sessions that can often have the opposite effect, resulting in a greater lack of communication and collaboration among educators.

## OVERVIEW OF THIS CHAPTER

This chapter discusses how faculty development was used to enhance the quality of content knowledge pedagogy using technological tools. This starts with a discussion about an exploratory research study on the professional development of K-12 teachers in a newly implemented iPad program.

University professional development will then be discussed in terms of best practices. Finally, this chapter concludes with a comparison of professional development in the two different settings and implications for professional development of teachers and faculty.

## Philosophy Driving Professional Development

Studies on professional training have described the tenets of andragogy (Knowles, 1988), which forms the foundation for the teaching of adults (Thompson & Mishra, 2008, Van Driel & Berry, 2012). The principles of andragogy are an integral part of faculty development, which is, in essence, adult education. Brookfield's (2006) core assumptions of skillful teaching included the premise "skillful teaching is whatever helps students learn," "skillful teachers adopt a critically reflective stance towards their practice," and finally, "the most important knowledge skillful teachers need to do good work is a constant awareness of how students are experiencing their learning and perceiving teachers' actions" (pp. 18, 24, 28). These principles are implicit in adult education.

A logical progression of knowledge is that educators first develop their own knowledge, and then implement that knowledge in their classrooms, which can lead to specific learner outcomes. Literature has shown "PCK development is a complex process that is highly specific to the content, situation, and person" (Van Driel & Berry, 2012, p. 27). Therefore, PCK should be aligned with educators' existing practice and they should be given the opportunity to structure this knowledge in their own classroom communities.

## Technology Competencies

Thompson and Mishra (2008) described the tendency to only teach the use of technology in professional development without including the vitally important areas of pedagogy and content knowledge as one reason why the field of education is behind in the effective inclusion of technology as a teaching tool. "Merely introducing technology to the educational process is not enough. The question of *what* teachers need to know in order to appropriately incorporate technology into their teaching has received a great deal of attention recently" (Mishra & Koehler, 2006, p. 1018). Mishra and Koehler (2006) demonstrated the framework of connections "between and among content, pedagogy, and technology," which should be taken together "rather than treating these as separate bodies of knowledge, this model additionally emphasizes the complex interplay of these three bodies of knowledge" (p. 1025).

Harris and Hofer (2009) suggested educators first design a lesson and instructional strategies, then infuse technology into the delivery of those strategies, rather than plan lessons around the use of technology. Mishra and Koehler (2006) agreed with that assessment of the use of technology when they asserted simply because an educator is skilled in the use of technology; it does not follow that the technology will be successfully incorporated into their classroom. Emphasis should be on the *what*, not the *how* (Mishra & Koehler, 2006, p. 1033). According to Mishra and Koehler (2006), "standard checklists of technology skills are very efficient means of listing what teachers need to know, but offer little suggestion on how teachers are to achieve these skills" (pp. 1032–1033). "Merely knowing how to use technology is not the same as knowing how to teach with it" (Mishra & Koehler, 2006, p. 1033).

Merriam and Bierema (2014) discussed how quickly the use of technology has changed the practice of adult education. Although more and more adults are connected through online social media, that does not translate to the effective use of technology and may lead to superficial learning instead of the kind of learning that promotes deep thought and critical thinking. "Technology is changing and challenging the role of adult educators" (Merriam & Bierema, 2014, p. 211).

## Professional Learning Communities

Professional development appears to have shifted away from a "training" concept to one of creating a professional learning community (Vescio, Ross, & Adams, 2008). This places K–12 teachers and higher education faculty into positions of collaborators and planners of professional development, instead of simply the receivers of new updates. As both givers and receivers of instruction through technology, educators at all levels may need to become facilitators, bringing together a diverse and physically separated community of learners. A professional community of learners is most successful when learners are part of their own ongoing professional development, when the topics are relevant and immediately useful, when development is connected to learners' own content pedagogy, when content is organized and to the point, and resources are shared (Barnett, 2004, pp. 12–13).

## THE STUDY

The first two authors of this chapter conducted a three-year study (2010–2013) that chronicled how a small, independent school (St. Andrews) in the southeast (one of the first in the United States to implement one-to-one

iPads) infused the use of technology into teaching practice professional development. The school labeled the project, iDiscover21c, (the school's name of Internet/technologically-based learning, appropriate for the twenty-first century), which was their adaptation of TPACK. In other words, the teachers at the school were learning how to infuse technology into instruction for twenty-first century teaching and learning. The administrators and teachers of the K–12 knew the school was lagging in the area of technology in terms of both equipment and expertise prior to the one-to-one iPad integration.

## History Behind the iPad Project

At the end of the 2009–2010 school year, the administration at St. Andrews made the decision to purchase iPads for each student and teacher and Mac laptops for each teacher. This created an immediate, and rather steep, learning curve for the teachers and administration as iPads were first released in April 2010 and school would start again in August 2010. The teachers were given the laptops and iPads to take home for the summer to get acquainted with them. Apple trainers conducted several iPad training sessions for teachers over the summer and fall semester. Training was also provided to parents and they were encouraged to use the iPads when their children brought them home.

## METHODS

A qualitative, exploratory study was designed to examine how the administrators, teachers, and students perceived the implementation of iPads into instruction school-wide. However, this chapter will only discuss the administrator and teacher perceptions of the iPad integration and subsequent professional development. Institutional Review Board approval was sought and granted from Armstrong Atlantic State University and permission from St. Andrews was also granted to do the study.

## Participants and Setting

St. Andrews on the Marsh school is located on Wilmington Island, Georgia. There were approximately 480 students, five administrators, and 28 teachers. Eight administrators participated in the study over the three years. Of the original five, three left before the end of year two. Their replacements participated (for a total of eight). A total of 36 teachers also

participated in the study, 28 in year one. In year two, eight new teachers participated when others left the school.

## Data Collection

Data collection consisted of surveys, interviews, and focus groups over the three years. Surveys will be described via participant type in the next sections. Instruments were neither validated nor used prior to this study, as the questions were specific to the school and its unique situation. As previously mentioned, this was an exploratory study. In addition, the researchers performed classroom observations and professional development observations. Interviews, focus groups, and professional development observations were all audio and/or video-recorded. Transcripts were done for all interviews and focus groups. All transcripts utilized pseudonyms, as administrator and teacher quotes are all confidential.

### Administrators

Surveys were provided via a secure online survey tool, Qualtrics. Surveys (consisting of 46 questions, both open-ended and Likert-type) for administrators consisted of topics such as: rating how comfortable they and their teachers were with the iPad, technical competency with the iPad both prior to and after the implementation, as well as advice they would provide to other administrators wanting to implement a similar program. Demographic information (14 questions), level of buy-in by stakeholders, impact, technical support, parental support, and level of commitment were also addressed on the survey. During the first year, all five administrators completed the survey. The three new administrators did not complete the online survey because they came to the school two years after the iPad implementation and did not feel qualified to answer questions which focused on the beginning of the process.

Interviews were also conducted with administrator participants. Interviews were semi-structured with open-ended questions. The interview protocol started with 28 questions, but some of the questions were answered by participant responses and were not asked. Interviews lasted about 90 minutes each. Interview questions consisted of topics such as how technology was infused into the school's culture, types of technology support services that were available for teachers using the iPad, types of training that was required for anyone receiving an iPad, curricular issues, technology support issues, and so on.

Eight administrators overall were interviewed across the three years. Of the original five, three left before the end of year two. Their replacements

were interviewed during year two using the same questions to determine if their perceptions were different based on the length of time they had spent as part of the iPad implementation.

### Teachers

Teacher surveys consisted of 17 demographic questions and 61 other questions, both open-ended and Likert-type. Topics included general technology professional development, iPad specific professional development, frequency of technology use in their classrooms for computers and iPads, as well as specific iPad applications and ways they used them. Perceptions of the iPads and their uses in the classroom were also queried using a Likert-type scale. All 28 teachers were surveyed, however 14 started the survey and only 9 completed the survey. This could be due to the long length of the survey.

Teachers were interviewed via focus groups of two and three. Questions for focus groups were semi-structured and open-ended and consisted of 12 questions. Topics consisted of the use of iPads in the classroom and professional development. Eight teachers took part in the focus groups. Focus groups were all conducted by one researcher. Focus groups took between 60 and 120 minutes each.

Four teachers were also observed in their classrooms during the use of iPads in instruction by one researcher. One classroom had two teachers team teaching. Classroom observations were as long as the class periods.

## Study Timeline

Year one of iPad implementation:

- Fall—5 administrators completed surveys
- Spring—5 administrators interviewed
- Spring—3 hour end-of-year technology professional development showcase presented by 24 teachers

Year two of iPad implementation:

- Fall—8 teachers participated in focus groups
- Spring—3 new administrators interviewed

Year three of iPad implementation:

- Spring—classroom observations (Grades K, 1, and 4)
- Spring—3 hour showcase for grades K–5, which showed student research of various topics using iPads as interactive tools

## Data Analysis

Qualitative data analysis procedures were followed. Data was examined for common themes related to professional development and technology integration. Triangulation took place via interviews, focus groups, surveys, and observations of both classrooms and professional development sessions over the three years.

## FINDINGS AND DISCUSSION

The following sections will discuss findings as they pertain to professional development for each of the three years of the project.

### Professional Development Year One

The first professional development meetings focused solely on Internet use, ethics, and the principles of its use by students, teachers, staff, and administration. The subsequent meetings were focused on the use of iPads as a tool for classroom instruction. Each regularly scheduled faculty meeting included a segment of *iPad show and tell* (later called *tech talks* and/or *tech share*), during which teachers demonstrated an instructional use of the iPad in their content area, a new iPad application (App) they had discovered, or in some cases, something they and/or their students had designed and customized for use in their classes.

At the end of the first year, a three-hour teacher-driven professional development seminar was conducted. Teams of teachers comprised of two from each level of the school (lower, middle, and high school) showcased an iPad App used by them in their classrooms. This meant that each team had appropriately customized that App to the level of their learners. Teachers further showed how they tailored the use of each App to meet the needs of each specific age group. This seminar was the culmination of the first year experiences with the iPads. Teachers and administrators worked to create this seminar to showcase how far they had come in just one year of iPad use. This final showcase of teacher professional development was meant to summarize the *tech talks* held during weekly faculty meetings throughout the year and illustrate the value of *teachers teaching other teachers*.

At the end of year one with iPads and Mac laptops in place, the administration wrote a letter targeted toward parents. In it they discussed the progress of the iDiscover21c throughout the school. Becoming a twenty-first century school would mean a shift from teacher-centered to learner-centered classes, which is a fundamental component of the twenty-first century

learning model. "Instead of a clear road map, we have chosen to discover as we go. While this has served us well in this first year, now is the time to create a more definite plan. Essential to creating a plan is a clearer understanding of our goals" (Fabrikant & York, 2011).

The following outcomes were identified as some of the lessons learned from the first year of iPad implementation in the school. These outcomes reflect the principles of collaboration and of andragogy; both among teachers, and in their classrooms, which had become increasingly learner-driven.

- Most of the participants agreed that they had gained a better understanding of twenty-first century teaching and learning.
- Teams modeled this style of teaching, which gave colleagues models for their own teaching.
- The cross-divisional teams strengthened their respect and understand of all parts of the school.
- All teams appeared to enjoy learning together throughout the process.
- Teams discovered new ways to use the iPads and Apps (Fabrikant & York, 2011).

### Professional Development Year Two

During year two, teachers were applying what they learned in year one. By the second year of the iPad implementation, the school had developed a wiki forum, which was used to store their own discoveries and those showcased in the weekly *tech talk* section of their faculty meetings. This proved to be a valuable and lasting resource to which all teachers contributed and from which all could benefit. Teachers at the school now voiced very specific ideas of how they wanted staff development to be implemented. Their perceptions had changed from one of dreading the time and commitment to learn, to one of a desire to explore new teaching strategies using iPads.

Teachers appeared less concerned about the new technology and how to use it, which emerged during the focus group interviews. Teachers now understood how to incorporate it into their school day and felt they were making progress integrating it into their curriculum. Teachers also indicated a strong desire to modify the use of the iPads based on the experiences of their learning new technology to understanding its implications and future uses in their classrooms.

Table 26.1 contains direct quotes from the teachers that were recorded during the teacher focus groups in fall of year two. Only questions that specifically pertained to teacher professional development were included in this table.

**TABLE 26.1 Quotes from Teacher Focus Groups about Professional Development**

1. What types of professional development occurred for the use of iPads?
   - "For the professional development with these (iPads), this past summer we had…three, four days of professional development. So about 15 hours with that and we have had intermediate pieces with that. Aside from the first three days of training, which was great, but was really focused on learning the iWord software."
   - "We fall on our faces and we would get right back up and try again. Do it less poorly than the last time and try to make it work. The training that has come on the iPads is…it has come from other faculty members as faculty have found something to use and found a way to do it. They've stood up at a faculty meeting and said, "Hey, look what I found." So, it's really become internal."
   - "There was a lot of professional development last year for lower school, middle school and high school. Lower school would like to see more professional development specific to their needs."
   - "At this point, we need someone who is better trained to help us incorporate iPads use into the curriculum."
   - "The in-house training from faculty is the best, most useful. The outside sessions were not well done. Apple does some training, but not specific enough to meet our needs."

2. How is this integrated into regular faculty meetings?
   - "Yes, Tech Share at the beginning of meetings."
   - "Tech share at the faculty meetings– faculty shared what they have discovered, or in some cases, what learners have discovered. We need time to explore and/or implement these discoveries."

3. Do you think that professional development opportunities are useful and practical in helping educators use iPads and integrate them into the classroom?
   - "Yes, I would like to see more, at least monthly, driven by our faculty."
   - "Yes, but we would like to see the professional development geared more to our lower school needs."
   - "The high school faculty would like to see a laptop and iPad assigned to each learner. Middle school is happy with the iPads alone, as is the lower school. There has been quite a bit of planning for the future and we will go forward with technology."

4. Other comments
   - "The iPads have not changed the curriculum or pedagogy, iPads are a tool to supplement what they are doing in the classroom."
   - "The future looks like traditional texts will be replaced" (Fabrikant & York, 2011).

## Professional Development Year Three

By the end of year three, the teachers felt the iPad had reinvented the way they learn and teach. Both teachers and staff felt that using the iPad made student learning more creative and engaging and improved students' critical thinking as well as students' collaborative and communication skills. Teachers noted that the students could now take information, synthesize it and make it into a technology piece (Fabrikant & York, 2013).

At the end of year three, the teachers were ready to move on to more specifically designed types of faculty professional development. They were interested in sessions geared toward specific grade levels and skills. The use of iPads as an instructional tool was well established throughout the classrooms and comments from discussions with the teachers being observed pointed toward the development of more specific ways to use iPads in each grade level, especially the K–4 levels. At the end of three years, a teacher-driven model of professional development was the norm at the school.

## UNIVERSITY FACULTY PROFESSIONAL DEVELOPMENT

As a professional development trainer at the university level for faculty who teach pre-service teachers, the third author conducted informal surveys at the end of each professional development training session. The perceptions in the following sections were derived from those surveys and her personal experiences training College of Education faculty at the university level.

One main problem often observed with most faculty development offered at higher education institutions is that it does not appear to be faculty-driven, but instead comes from an administrative level and focuses on what professors should know and be able to do in order to adequately prepare pre-service teacher candidates. Research has elucidated the fact that there are a number of unanswered questions about utilizing information technologies effectively (Bingimlas, 2009; Elsaadani, 2013; Gu, Zhu, & Guo, 2013; Levin & Wadmany, 2008; Schrum, Skeele, & Grant, 2003; Surry & Land, 2000; Tabata & Johnsrud, 2008). Rice and Miller (2001) concluded that with technology advancements, faculty "need to make an effort to understand new technologies and realize the benefit when their institutions invest in information technology" (p. 334). As "faculty will be the individuals most affected by the use of instructional technologies and are the best judges of what they require to effectively use instructional technologies in their courses" (p. 334–335). Thus, faculty are a critical core resource as "studies on teacher attitudes revealed that teacher confidence affects the use of technology more than variables such as access to equipment, administrative support, and time" (Levin & Wadmany, 2008, p. 237; Tabata & Johnsrud, 2008).

When designing technology integration professional development for faculty who teach pre-service teachers, the third author of this chapter started with the single most defining element of learning, which was to ask *what value does this training provide the learner* (Harris, 1997). The value is added through what the learner takes into their environment to maximize not only their potential but also the potential of the environment in which they operate.

It was the goal of the third author's professional development design to promote change and learner transformation, consistent with the theory of life-long learning. Knowles' (1988) principles of andragogy explained that a person's readiness to learn information that would have an impact on their lives has a great deal to do with how well new information is learned. If what is learned is useful and relevant, the adult learner is more likely to be motivated to learn and apply that information. In this particular instance, the focused efforts were on technology integration in the learning environments of the higher education faculty at a small, state university in Savannah, GA. As literature has discussed, adults learn best when training incorporates *learn by doing* strategies, and engaging in authentic learning with direct relevance to their teaching (Doherty, 2010). Faculty must feel a connection to the professional development, find value in the learning, and be able to readily apply it in their normal setting.

The higher education faculty members who participated in the professional development training were involved in the education of pre-service teacher candidates. Thus, their ability to model and support technology integration in various learning environments and content areas had an exponential impact on generations of future educators. To elaborate, "today's students are no longer the people our educational system was designed to teach" (Prensky, 2001, p. 1). "Today's teachers have to learn to communicate in the language and style of their students" (Prensky, 2001, p. 4).

At the university, a professional development setting was created in which learning would engage faculty in progressively more demanding levels, meeting them where they were, challenging them to go beyond their comfort zone, sparking their curiosity into how technology integration would be to their maximum benefit. They were asked to keep in mind throughout all professional development sessions the fundamental question from the work of Judi Harris: "Is it worth it?" (Harris, 1997, p. 14). The professional development training sessions were built to offer more specific training using available resources that encouraged faculty to adapt their pedagogy to fit both their personal preferences and their learners' needs.

To ensure success of the professional development efforts, and to evaluate professional development offerings, feedback was solicited from faculty via an online survey form with questions tailored to the type of instruction received (e.g., device or software specific) of both the college's on-site training and the University System of Georgia's live online webinars. Feedback gathered helped form a new needs assessment evaluation, professional development offerings, and technology purchase recommendations during the following semester. These professional development offerings were proactive, addressing gaps in knowledge regarding available resources. All resources utilized in the professional development sessions were compiled into a web page for those unable to attend, those wanting references to

something learned, or for those faculty who wanted their students to work with the resources with the emphasis being on best practices and classroom modeling.

## University/K–12 Professional Development Comparison

Van Driel and Berry (2012) discussed that the complex nature of PCK for educators' professional knowledge is highly topic, person, and situation specific—essentially ruled by strong personal beliefs regarding what educators view as good teaching. Therefore, grounding professional development training in specific professional contexts is influenced by institutional factors (culture, available time, resources, and leadership support). Additionally, Van Driel and Berry's (2012) research noted that designing professional development using PCK is a complex process, intended for educators to reflect, individually and collectively, on their experiences. It is important to note that educators must be able to adapt newly learned ideas into their practice and make meaningful connections to old ideas as a necessary way to enhance effectiveness when teaching.

Best practices for professional development have been noted in the literature (Barnett, 2004; Brookfield, 2006; Harris & Hofer, 2009; Van Driel & Berry, 2012). Best practices included hands-on training, training required by educators to meet a perceived need in the workplace, speakers who are interesting, who are speaking on a topic of interest to the educators, a prior understanding by educators of the need for the training, presentations by peer educators, training that has an immediate and apparent use, and top-down required sessions. Table 26.2 represents the alignment of reflections from both the K–12 and university settings previously discussed against the list of best practices synthesized from several sources (Barnett, 2004; Brookfield, 2006; Harris & Hofer, 2009; Van Driel & Berry, 2012).

Each best practice listed in column one of Table 26.2 was compared at both settings to see if the opinions of the K–12 teachers aligned with the opinions of the university faculty. It was determined that hands-on training and relevance was important in both settings. If the training was immediately useful, it was viewed as more valuable. Training that was required to meet a need in the workplace was viewed as important if the teachers and faculty had some input into the sessions. Speakers who were interesting as well as presentations by peer educators were perceived as trainings that were targeted toward specific needs in both settings. A prior understanding of the need for training served as a means of motivation for both settings because the teachers and faculty had input into their own needs. Training with an immediate use was seen as helpful because there would be no gap between the training and its application. Top-down required sessions were

**TABLE 26.2  Examples of Best Practices by Setting**

| Best Practice | K–12 Teachers | Higher Education Faculty |
|---|---|---|
| Hands-on training: Sessions where educators can actually produce or complete a project that is useful to them. | This was true at many of the K–12 professional development sessions, where teachers were able to use their iPads during the short "Tech Talk" part of their regular weekly faculty meetings to download and use the newly introduced App. | Faculty were provided with learning challenges (e.g., scavenger hunt) where they had to utilize the skills learned during the training in order to solve a problem or answer a question posed. This not only created an environment for immediate application but also positive reinforcement in the confidence of the skills learned. |
| Training required by educators to meet a perceived need in the workplace. | In the K–12 school, the lower school (grades K–5) teachers were very interested in professional development geared to their students' developing literacy needs. The weekly faculty meetings were also an excellent venue for teachers to communicate their needs and for other teachers to share their own discoveries. | Faculty were informally surveyed at the beginning of each semester using a targeted needs assessment with an emphasis on technology and, following each training session to gather data from which to make adjustments to the focus of the training. |
| Speakers who are interesting, who are speaking on a topic of interest to the educators. | In this regard, the K–12 teachers were most engaged when their colleagues were presenting a new idea. While many did appreciate the Apple training, they also found it very general and designed to learn software, but not how to apply it to their instructional strategies. | Faculty were encouraged to participate in professional development with invited speakers who offered training on educational devices utilized in the contemporary classroom (SmartBoards, iPads, presentation software). |
| A prior understanding by educators of the need for the training (for example: training through a voluntary basis on how to create online courses that are 508 compliant, rigorous, and interactive for students). | The K–12 teachers were well aware of the need for the professional development sessions used to help them learn how to interact with the iPads and Mac laptops. With a very short implementation timeline of 40 days to fully integrate a new platform with both iPads and Mac laptops, teachers were anxious to attend as much professional development as possible. They recognized that this was only the beginning. | Faculty expressed interest in training, not only as a means for maintenance but also for expanding their skill set to include more contemporary tools. Therefore, faculty were seeking training on a voluntary basis. |

**TABLE 26.2  Examples of Best Practices by Setting (continued)**

| Best Practice | K–12 Teachers | Higher Education Faculty |
|---|---|---|
| Presentations by peer educators. | As stated previously, the K–12 teachers used presentations by their colleagues to fill gaps between the technical use of iPads and how to implement the iPad as an instructional tool. As teachers shared Apps and their integration into classroom pedagogy, the weekly faculty meetings became an important part of their learning community. | Presentations were conducted by people at both the college and university level (presentations of various initiatives at college faculty meetings, a faculty showcase hosted by the University Office of Online and Blended Learning where faculty developed courses and components that contribute to overall success). |
| Training that has an immediate and apparent use. | The K–12 teachers' use of weekly meetings to share small amount of TPACK with each other proved to be the most useful vehicle for the timely delivery of immediately useful information. | The goal of the professional development sessions was to enable the faculty to integrate lessons learned into their daily teaching practice. |
| Top down required sessions. | While the K–12 teachers understood the usefulness of the sessions delivered by Apple, they voiced a much greater appreciation of those short professional development sessions given by their own colleagues. By the end of the first year, teachers were also comfortable in voicing exactly what kind of professional development they felt would most benefit them as they moved the use of iPads to a higher level. | Perceptions from professional development training sessions appeared to show that mandated, or top-down, sessions were not as successful as those training sessions initiated or requested by the faculty. |

understood as perhaps necessary, but neither teachers nor faculty reported being motivated by them.

## PROFESSIONAL DEVELOPMENT IMPLICATIONS

There are a number of implications for the professional development of educators as they infuse technology into pedagogical content knowledge. The implications of this chapter combine the principles of adult education

and those of TPACK. Brookfield's (2006) core assumption that "skillful teaching is whatever helps students learn" (p. 17) contains within it principles of andragogy. Adults, including teachers and faculty, who have input into their own training, are motivated to absorb and synthesize that training more successfully, as shown in Table 26.2. Therefore, giving teachers and faculty choices about what professional development they would like is extremely important.

Teachers and faculty in both settings also viewed training that was relevant and immediately useful to be good. Therefore, making sure that professional development ideas and products can be immediately put into use in the classroom is very important. Having the professional development participants bring examples of their current lessons or curriculum with them to the professional development session and then apply the new material to actual classroom lessons, increases its meaning and allows for immediate implementation of the new ideas. Giving participants fictitious examples to use is not as good as having them use authentic examples from their current teaching. As a final thought, when the integration of technology in pedagogical content knowledge is taught through professional development, it is more likely to be better received by teachers and faculty if the professional development best practices are followed.

## CONCLUSION

It is fairly certain that professional development needs will continue to exist, driven by the need for education to stay aligned with the speed of technological innovations. There is a necessity for institutions to support these needs and is vital to educator success. This also includes preparing and maintaining educators' skill sets to teach future generations of evolving learners. Most notably, educators and learners are increasingly diverse and these professional development sessions must be reflective of these new innovations and theoretical ideas about learning (Northcote et al., 2012).

The basic principles of andragogy can, and often are, easily incorporated into the educational needs of adults, teachers and faculty, to learn new technologies to enhance their teaching methods (Knowles, 1988). It is important for administrators and the planners of professional development to use the principles of andragogy as they plan new training sessions for teachers and faculty. To our twenty-first century students, what has become a more common way of learning (iPad) was not yet invented just five years ago. Our teachers and faculty must learn to teach students to prepare for careers that may not even exist yet, and this will be done more successfully if we teach adults the way adults learn best.

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CHAPTER 27

# DEVELOPING A REPERTOIRE OF PRACTICE

## Online Instructor Dispositions and Personalities

**Jeral R. Kirwan**
*Ashford University*

**Elizabeth Ann Roumell**
*North Dakota State University*

### INTRODUCTION

The traditional face-to-face delivery of postsecondary education content has been changing dramatically due to Information and Communications Technologies (ICTs) for the past 20 years, and educational institutions in adult, continuing, and higher education around the globe have been scrambling to adapt. "Harnessing innovative technology in higher education" (King & Griggs, 2006) has been a staple discussion within our field for at least two decades, and has much in common with the scholarship in online learning. The emergence of Internet and Web-based learning and development has significantly impacted how professional learning and development programs have been designed,