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Teacher Educators' Professional Development in the 21st Century: Practicing What We Preach

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Abstract: As teacher educators encourage teacher education candidates to incorporate new technologies into teaching, there is a need for them to serve as technology integration role models. To move beyond a paper and pencil approach, teacher educators should advance their own technological knowledge and apply it in their teaching. The focus of this brief paper is on the steps taken to encourage teacher educators at a Midwest institution to incorporate new technologies into their teaching. This professional development is still a work in progress, as teacher education faculty work in collaboration with an instructional technology professional for training and practical applications in their courses.

Introduction

Cherup and Snyder (2003) have stated that there are several elements that need to be in place to integrate technology effectively in teacher education programs. According to the authors, some necessary "conditions" include "administrative support, access to current hardware and software, a willing education faculty, and professional and technical assistance" (p. 51). It could be argued that all these elements are essential to develop Technological Pedagogical Content Knowledge (TPACK). The TPACK framework developed by Mathew J. Kohler and Punya Mishra (2006, 2009) builds upon the concept of Pedagogical Content Knowledge (Shulman, 1986) to explore what type of technology knowledge is needed to effectively integrate it with content and pedagogy during instruction. The International Society for Technology in Education (ISTE), National Educational Technology Standards for Teachers (NETS-T), emphasize the importance of modeling as part of learning about technology. Therefore, teacher educators need to be willing to develop their own TPACK in order to create a 21st Century learning environment in their teacher education programs. Taking into consideration the context, the TPACK framework is adapted to the goals of the individual and their teacher education department. As teacher educators continue their professional development in the area of technology, they will be confident and comfortable to model effective technology integration in their instruction. With the modeling and guidance of teacher educators, teacher candidates will be able to emulate these practices in their future classrooms.

Background

In the fall of 2011, the College of Education moved into a new building on campus. The newly remodeled building had 15 SMART boards, four laptop carts, and one iPad cart. In addition, all faculty members in the College of Education were given dual-boot, MacBook Pro laptops. This high-tech environment changed the preparation of teacher candidates and raised the standards of instruction. Teacher educators were expected to integrate technology in the classroom. This expectation also trickled-down to teacher candidates as they were required to incorporate technology tools in their course assessments. As a result, the candidates depended on the teacher educators to teach

them how to incorporate technology through modeling and guidance. These new developments required the teacher educators (TE) to quickly develop their own *technology knowledge* (TK) to prepare teacher candidates for the future technologies they will encounter during their teaching experiences. Some TE had more confidence in this area than others, and the move to the new building made these differences apparent. Each TE was on a professional development journey as they were learning how to integrate technology into their coursework.

Therefore, technology was a focus during the College of Education's strategic planning process. One of the strategic goals is to "Identify and implement alternative course design and delivery approaches that reflect evidence based best practices" (UNO College of Education Strategic Plan, n.d.). The Teacher Education Department (TED) has implemented a formal plan of action to integrate new technologies into classes, which includes teacher educators modeling and coordinating the use of technology throughout the program. The Instructional Technology Professional (ITP) was given the charge to coordinate the necessary professional development in order to accomplish the goals of this plan. Once this is accomplished, teacher candidates will experience a cohesive, structured exposure to educational technology.

Preparing Teacher Educators to Integrate Technology

In an effort to prepare educators for the 21st century classroom, there is a push to integrate technology into teacher education programs (Project Tomorrow & Blackboard K-12, 2013). However, this integration cannot occur without providing professional development for teacher educators. The College of Education's strategic goal to integrate technology throughout their academic programs made technology professional development a priority. This is why the ITP developed the *Elementary Research Team* and the *Secondary Teaching Circle*. These professional development groups consist of TE in the elementary and secondary education programs. Participation in these groups is optional and consists of 12 faculty members (five in the Secondary Teaching Circle, six in the Elementary Research Team) and one ITP. These groups meet monthly and the ITP facilitates the meetings. The two groups meet separately because of the varying topics and needs of the teacher candidates in the respective programs. These monthly meetings create a collaborative professional development environment in which TE learn and apply technology in context. This has created a culture in which the development of individual teacher educator's TPACK is at the forefront.

The goal of the small group meetings is to provide TE with a time and place for technology discussion, reflection, and innovation. The ITP is intentional with the integration of technology during the meetings. She models technologies at varying levels of difficulties to meet the range of abilities in the group. Through the use of a group wiki, created on Google Sites, TE can experience how a wiki can be used as a learning management and communication tool. Meeting agendas and resources are uploaded to the wiki and the comment function is enabled for discussion. Participants are also in a virtual group on the social bookmarking site, diigo.com, in which the ITP and the TE share current research on educational technology.

The ITP uses Pearson and Gallagher's (1983) Gradual Release of Responsibility (GRR) method of instruction to design technology professional development for faculty (see figure 1). This method of instruction gradually releases the new learning from the teacher to the students and it is often described as the, *"I do, we do, you do"* process. Through the use of the GRR model to scaffold the TEs' experience with new tools, the ITP has provided TE with a safe environment to use and reflect on the effectiveness of specific technologies. Since TE are strong in their pedagogy and content knowledge (PCK), their awareness of the use of this instructional model is imperative in order for them to replicate this scaffolding of technology instruction with their candidates in the classroom.

Using GRR during the first meeting, the ITP facilitated an experience where participants collaboratively interacted with a document using Google Docs. The ITP introduced Google Docs and showed examples of how she has used it in her courses (I do). She then shared a document with the TE to virtually comment on the same document together (We do). After completing this activity, the participants reflected on the synchronous discussion of the document and how Google Docs can be used to facilitate an asynchronous discussion on a text that supports their current courses (You do). The document that was used during the Google Docs synchronous discussion was the International Society for Technology in Education (ISTE) NETS-S standards for teachers (NETS•T). These are the standards for "evaluating the skills and knowledge educators need to teach, work, and learn in an increasingly

connected global and digital society" (ISTE, 2008). These standards will be used as the groups align and continually evaluate the technology integration in both programs. The ITP was able to model the use of technology in the context of the group goals by using these standards in the discussion.
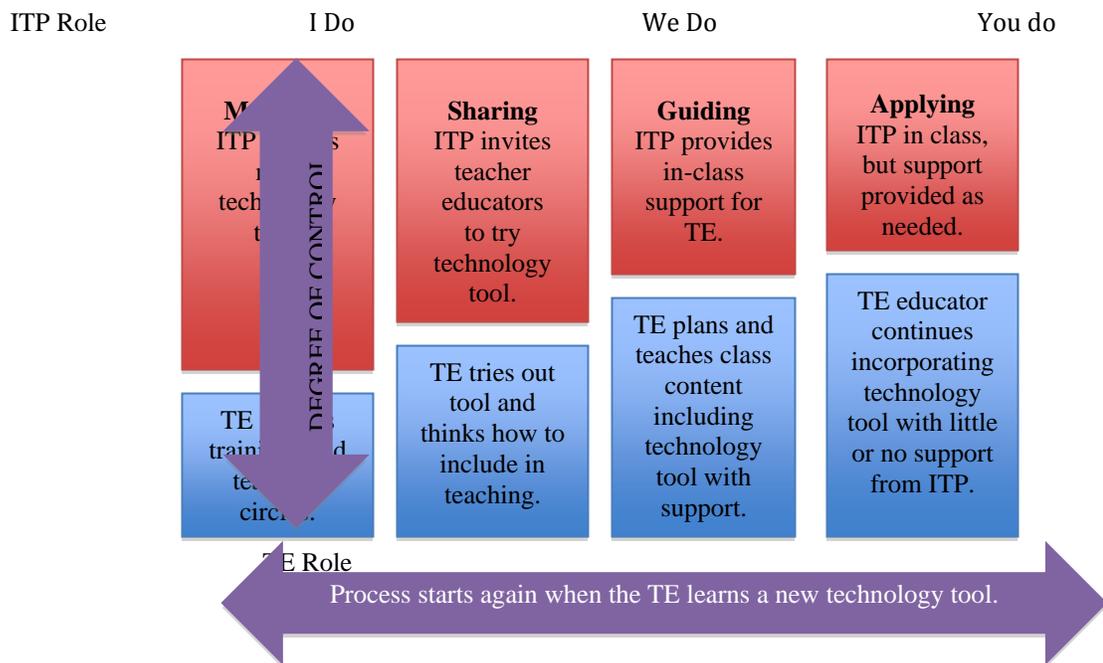
ITP Role   I Do   We Do   You do

| **M**... ITP...s ...technolo...y t... | **Sharing** ITP invites teacher educators to try technology tool. | **Guiding** ITP provides in-class support for TE. | **Applying** ITP in class, but support provided as needed. |
| TE... train...d te... circ... | TE tries out tool and thinks how to include in teaching. | TE plans and teaches class content including technology tool with support. | TE educator continues incorporating technology tool with little or no support from ITP. |

DEGREE OF CONTROL

TE Role

Process starts again when the TE learns a new technology tool.

Figure 1. Gradual Release of Responsibility: Technology integration model for teacher educators

Another example of explicit modeling of technology in context is when the ITP linked a Google Doc to the group wiki for participants to reflect on the current technology used in their courses. The template on a Google Doc (see Table 1) required TE to consider how technology is currently being used and/or where it could potentially fit into a course. The ITP reflected on her own course as an example (I do). Then she led the TE through one row of reflection using their own courses (We do), and they completed the template on their own (You do). Upon completion, these reflections will be shared with the group, and the alignment of technology skills can begin. This sharing will help TE realize that they don't have to "do it all" in their course in regards to technology and will lead to a more fluid experience of technology instruction for teacher candidates.

Table 1
Course Technology Integration Reflection

Course Assessment (informal/formal)	Technology used? **Yes or No**	**If Yes**, what technology and briefly describe.	**If No**, brainstorm possibilities.

Modeling and reflecting on educational technologies during these meetings has led to trusting, collaborative relationships between the ITP and TE. For example, after the first meeting, the ITP met with a participant who was interested in replicating the Google Doc discussion experience in her undergraduate elementary education course. The next week, the ITP guest lectured and facilitated a Google Docs discussion with this TE's class. The TE provided the article and content, and the ITP provided the technology instruction and support. Through this collaboration, the ITP used her Technology Knowledge (TK) and the TE used her Pedagogical and Content Knowledge (PCK) to create an educational experience for candidates using an adapted version of TPACK. This partnership modeled professional collaboration for the teacher candidates and demonstrated that it takes trust in order to take risks to create experiences. Unexpectedly, the learning has extended beyond the meetings- as TE have paired up on their own time to collaborate on a new technology or have met with the ITP for a training session on a

new tool. This collaborative culture of learning is necessary in order for technology professional development to be successful (Pierson & Borthwick, 2010; Colbert, et. al; 2008; Harwell, 2003). Establishing this culture gives TE the opportunity to share their expertise and take ownership of their learning to ensure their efficacy in the area of technology integration. These extra-curricular technology discussions were proof that the collaborative culture was embedded in this group.

In addition to the monthly small group meetings, the ITP met with each member of these groups to discuss their individual technology goals and priorities. These meetings helped the ITP understand each TE's personal level of comfort with technology and establish trust. This trust was necessary in order for faculty to take risks with new technology. Borthwick and Risberg (2008) acknowledge that creating a "climate of trust, collaboration, and professionalism" is necessary when "technology-related risk taking" is an expectation (p. 39). The ITP has followed through after these goal-setting meetings with one-on-one training sessions to work with faculty on meeting specific goals. Throughout the semester, she has regularly checked with faculty on their progress towards meeting these goals and will continue to do so. This follow through has helped to keep TE on track and provide them with support. In turn, the TE can model technology integration and provide guidance to their teacher candidates, with the purpose of them applying this knowledge in their future classrooms. This demonstrates the impact of effective technology professional development and how it extends beyond the teacher education program.

Teacher Educators Teaching with Technology

A new generation of teacher candidates is entering teacher education programs; these "digital natives" are changing how teacher education programs prepare future educators. O'Brien, Aguinaha, Hines, and Hartshorne (2011) expose how "engaging these media hungry students while continuing to offer the highest quality education and teacher education relevant in a digital age is a challenge faced by colleges of education everywhere" (p. 33). This challenge and the College of Education's strategic goals have served as a motivation for one of our teacher educators to gradually increase the use of technology in her classes. The TE started attending various technology trainings at the college and campus level, but it was not until she began to receive direct support from the ITP through attending the Secondary Teaching Circle and one-on-one trainings that she actually integrated various technology tools into her teaching.

On her individual meeting with the ITP, the TE examined her goal of integrating technology tools that actively engage teacher candidates in the learning process. The TE was also curious about *Prezi* (www.prezi.com) after attending a professional development session in which the ITP demonstrated how to use it. She wanted to utilize this tool, but was concerned that preparing such a presentation would be time consuming. During this meeting, the ITP alleviated this concern by showing her how to import an existing Power Point presentation into Prezi. Together, they created a Prezi presentation in less time than she had originally anticipated. This *sharing* phase of GRR was instrumental to convince the TE that Prezi was a technology tool she could easily integrate in her courses. At another one-on-one training session, the ITP showed the TE how to use *Prezi Meeting* as a collaboration tool to prepare group presentations. This allows up to 10 participants to edit the same presentation. Together, the TE and the ITP created a new presentation to outline major sections of reading assignments for the candidates to add their notes to the Prezi. Without knowing it, the TE had moved to the *guiding* phase of learning Prezi, and with the support of one of the ITP's graduate assistants, they were able to guide the teacher candidates on how to use Prezi Meeting during class. The candidates participated fully in the process and enjoyed seeing the final product they had created as a group. Some candidates had prior experience with Prezi, but none had utilized this collaborative feature. The TE replicated this activity in another class, and it was also a success. At this point, the TE noticed that she was *applying* the knowledge acquired in her trainings. During her second attempt with Prezi Meeting, she had the support of a graduate assistant, but she was the one who provided answers to all of her candidates' questions.

Even though learning and incorporating Prezi has been an exciting process, it has come with some challenges. Due to the fact that only ten participants can edit a presentation at one time, working with Prezi Meeting in a large class had its limitations. This created the opportunity for candidates to work in groups. To ensure that all candidates were engaged in the activity, the TE assigned tasks to all group members (ex. summarizer, reporter, task manager). Group work proved to be advantageous because some candidates didn't know how to use Prezi at all. She made sure all groups had a participant with knowledge of the program, who could also show group members how to use it. This heterogeneous ability grouping provided a supportive learning environment for members of the

group who were not comfortable with the tool. During this lesson, the TE applied the GRR model to expose candidates to a new tool by *guiding* them through the process in small groups. It is important to note when introducing a new technology in the classroom, the TE cannot assume that candidates already have knowledge of this technology.

By following the continuum of the GRR model (see figure 1), the TE became more comfortable using Prezi as she moved towards independence or the "you do" phase of this process. The TE has repeated this GRR process when learning how to use new technologies, such as the SMART Board, diigo.com, and Nearpod. Once she is able to incorporate these tools into her teaching, her goal is to keep adding other applications that actively engage candidates in the learning process.

Suggestions for Teacher Educators

Teacher educators "are facing technology advances that challenge our ability to keep pace, while simultaneously working with a new generation of learners" (O'Brien, Aguinaga, Hines, & Hartshorne, p. 33). This challenge should not deter teacher educators from learning more about technology advances. It is important that TE learn new technology gradually and identify which tools will meet their course objectives. For instance, last semester the TE focused her learning on Prezi and using the SMART Board. This semester she has started using diigo.com and plans to incorporate Glogster and Nearpod as she gets more familiar with these tools. The best way to approach technology integration is to encourage TE to "integrate technology into their current course content rather than attempt to add technology and change the course design" (Cherup & Snyder, 2003, p. 44).

An important element to make the integration of technology into teacher education courses a success is to have the support of education technology experts who understand the tools and will encourage teacher educators every step of the way. The TE realized that practicing Prezi with the ITP helped her to understand the tool in such a way that she was able to implement it right away. The ITP was able to guide the TE through the basics of the Prezi without overwhelming her with the special features until the TE was comfortable with the program. In addition, the TE discovered that she shouldn't be afraid of telling her teacher candidates that she was still learning how to use the new technology. They appreciated that she was taking a risk, and some of the digital natives even helped her out. It is extremely important that teacher educators keep learning how to incorporate technology tools because, as Albion (2008) suggested, "the best way for teachers to learn *about* Web 2.0 may be through learning *with* Web 2.0 as authentic practice that can inform their planning and implementation of learning activities" (p. 195, author's emphasis). Teacher candidates are expected to use technology in their future teaching. Therefore, TE need to provide authentic practice that will guide them to do so before they enter the teaching profession.

Conclusions

The Teacher Education Department leadership and the participants in this project realize that professional development is a process, not an event (Harwell, 2003; Fullan, 2007). As demonstrated in figure 1, the authors understand that learning how to integrate technology is an ongoing process through which participants continue to take risks with technology, measure effectiveness, and make changes. This requires the TE to think as "researchers constantly ask(ing) questions of their teaching…and collaborate with one another to feed ongoing findings into tomorrow's teaching plans" (Pierson & Borthwick, 2010, p. 129). However, the product of this will extend far beyond *tomorrow's teaching plans*. It will shape the learning of the teacher candidates and the learning of the future students of these candidates. Pierson and Borthwick (2010) identify higher education faculty as "ideal partners to facilitate a participant research professional development model" (p. 129). It is the authors' hopes that this is the case as they proceed with this plan.

The College of Education's strategic goals made technology integration a priority, and the Teacher Education Department's leadership has supported this initiative. Pierson and Borthwick (2010) emphasize that the type of environment in which teacher growth and change can be sustained is one with organizational support. The ITP has been able to capitalize on this support through acknowledging the individual learners involved (TE) and moving the individuals forward as a group to meet the organization's goals. Overall, the collaborative nature of

learning new technology skills and the relationships that are being developed throughout this technology integration process is what makes it unique. The role of an instructional technology professional is often seen in K-12 education environments. The authors' experience leads them to question why not include this role in teacher education programs to ensure the development of TPACK in both teacher educators and teacher candidates?

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