Chapter 2
New Technologies, New Horizons:
Graduate Student Views on Creating Their Technological Pedagogical Content Knowledge (TPACK)

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ABSTRACT

The purpose of this chapter is to present graduate students' views of their Technological Pedagogical Content Knowledge (TPACK) development. These graduate students are also teachers. Data was collected using a mixed method approach founded on the TPACK Framework and social network analysis. Koehler and Mishra (2006) claim that effective teaching with technology requires TPACK, or an ability to integrate content, pedagogy and technology flexibly during the act of teaching. As part of a graduate course on new literacies and media, participants were required to design and implement lessons that incorporated a range of technologies, produce written reflections about their experiences, and engage in online interactions with participants in the class. Qualitative results from participants' written reflections revealed four themes relative to TPACK. Additionally, a social network analysis demonstrated a positive relationship between participants' views on their TPACK development and their interaction patterns within the online learning environment. This study shows that the TPACK framework can be a useful tool, giving educators a productive way to think about technology integration as they navigate the rapid changes prompted by emerging technologies.

INTRODUCTION

The Internet is undoubtedly the most important technology of this generation. In an era where it is possible to "Facebook" and "Skype" friends as well as "Google" just about any topic imaginable, the Internet offers both challenges and profound promise for education. There is an increasing trend in Internet usage, particularly among children and adolescents. In fact, in the United States the National Center for Educational Statistics (2009) reports that instructional classrooms with access to the Internet and web-based learning tools has increased from 51% in 1998 to 94% in 2005. On average 8-18 year olds spend a total of 10 hours and 45 minutes in a typical day using various media forms (e.g., movies, video games, music, audio) (Kaiser Family Foundation, 2010). In most cases out-of-school technology use is outpacing in-school technology use (National School Boards Association, 2007). These statistics suggest that students are becoming increasingly dependent on the Web as a primary resource for information gathering in and out of school settings (Lawless & Schrader, 2008).

In a recent survey conducted in the US with 4000 middle grade students who were in a North Carolina statewide after-school program (Spires, Lee, Turner & Johnson, 2008), students reported high frequency usage of video and online games, music services as well as email, instant messaging, and cell phone services out of school. The main distinctions that emerged between in and out of school technology use related to the intent of the technology use and the actual devices being used. Outside of school, students were using technologies for communication and entertainment purposes. They also were more likely to use smaller handheld and gaming devices outside of school. Inside school students were using desktop computers for web-based research, word-processing and other productivity purposes. The surveys suggested that students' technology use inside school is often less creative and meaning-

ful than their technology use outside of school. Interestingly, research suggests that while they are frequent users of technology tools, students typically lack information literacy skills and their critical thinking skills are often weak (Oblinger & Oblinger, 2005). Contemporary students may be "digital natives" (Prensky 2007), but they do not necessarily understand how their use of technologies affects their ways of learning.

As technological change transpires at a phenomenal rate, American teachers are under increasing pressure to integrate new technologies into their instruction (National Educational Technology Plan, 2010). It is important for teachers in the United States of America (USA) to use the technologies not only because students expect it, but also because educational systems have to stay abreast of the changes in online research, communication, and social media in order for students to be prepared for 21st century work and citizenship (Trilling, & Fadel, 2009). New teachers entering the field often are more adept at using technologies since they have grown up with them; although new teachers still have the challenge of using technologies in meaningful ways that enhance learning; teachers who have been in the field for some time confront the dual challenge of acquiring a disposition that accommodates ongoing change as well as "re-learning" how to teach using contemporary technologies (Darling-Hammond, 2010).

This chapter presents student voices on learning to use technologies during a graduate education course as part of a "New Literacies & Global Learning" master's degree program at North Carolina State University (2009) in the USA. Students in the course were teachers who were acquiring a master's degree while simultaneously teaching in a K-12 classroom. To frame the learning experiences for the students, the course focused on new literacies (e.g., online search and comprehension skills, use of Web 2.0 tools and participatory media) and the development of technological pedagogical content knowledge

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