What is Technological Pedagogical Reasoning? What influences its development?

Purpose

This project seeks to understand how teachers’ reason with Information Communication and Technology (ICT) and what influences them to use ICT in their teaching. The purpose of this study is designed to reveal the voices of teachers, at multiple career points, to determine how they develop Technological Pedagogical Reasoning throughout their teaching careers. To understand the differences in career early career, accomplished and lead will be used. This project is being completed for the award of Doctor of Philosophy.

The Project

Technology is an important part of the policy agendas of OECD countries, with profound implications for education, both because technology can facilitate new forms of learning and because it has become important for young people to master technology in preparation for adult life (OECD, 2005a). The 2008 Melbourne Declaration (Ministerial Council for Education Early Childhood Development and Youth Affairs (MCECYDA), 2008) define that ICT in schools needs to be effective in order to prepare students to live in a digital world. As part of the Digital Education Revolution (DER), many schools have made large investments in ICT for their teachers and students.

In Australia there is a parallel push for teacher quality. This push includes a move from state to national based professional standards, with one focus area on teachers’ professional knowledge. With this interest in improving teachers’ professional knowledge the question is how is this knowledge impacted by technology? As a start to help graduate teachers, The Australian Institute for Teaching and School Leadership (AITSL) have provided ICT specific statements and annotated examples as part of the Teaching Teachers for the Future (TTF) project (AITSL, 2012).

So how do teachers take this technological leap and develop their professional knowledge? Some researchers (Mishra and Koehler, 2006) have extended Shulman’s (1986, 1987) Pedagogical Content Knowledge framework to include Technology as Technological Pedagogical Content Knowledge or TPACK. Though, in using this framework they have glossed over Shulman’s (1986, 1987) original discussion on Pedagogical Reasoning. Shulman suggested a Model of Pedagogical Reasoning which provides a frame for this research. From Shulman’s original work there has been little research looking into the impact of technology. Some (Webb 2002, 2004, 2011; Yng and Hew 2005; Hadjerrouit 2009; Beaudin and Hadden 2005) have suggested that technology does have an impact on pedagogical reasoning but there has been little research presented to support their ideas.

In response to this, this study is designed to understand teachers’ reasoning in deciding to incorporate ICT in their teaching practices and understand what influences teachers in developing their technological pedagogical reasoning. This study will use multiple teachers at different career stages, to understand how Technological Pedagogical Reasoning is developed across these career stages. This leads to the key research question of this study being:

In what ways do teachers develop technological pedagogical reasoning across career stages and what influences teachers in developing technological pedagogical reasoning?

The Approach

Using a qualitative approach, a case study methodology has been used with each teacher forming a case. Semi-structured interviews with video-stimulated recall and think aloud concept mapping techniques have been used to document the voice of teachers. Teachers have also allowed access to their digital portfolio either prepared as part of teacher education or the Smart Classrooms Professional Development Framework (SCPDF). These SCPDF digital portfolios provide rich descriptions of the beliefs, attitudes and actions of teachers using ICT.

The Teachers

Teachers have been purposely sampled and invited to participate in this project. Fifteen teachers have volunteered from eight schools in South East Queensland (nine cases will be discussed in the thesis). Teachers from all career stages are involved: from graduates; to those who have recently moved from provisional to full teachers registration; teachers that have been teaching for many years; and those teachers now leading others.

Included in the group are early childhood, primary and secondary classroom teachers, teachers that deliver distance education programs and teachers delivering vocational studies. There are teachers using a variety of ICT including 1to1 laptops, iPads, interactive whiteboards, video conferencing tools.

This project provides an opportunity to see what teachers are using in the classroom today.

Conclusion

This research has the potential to make the following contributions to practice and scholarship. These contributions include:

a) to provide a definition of Technological Pedagogical Reasoning and expand the current knowledge on pedagogical reasoning with technology;
b) to provide an understanding as to what influences the development of Technological Pedagogical Reasoning;
c) to add to the knowledge base on Technological Pedagogical Content Knowledge (TPACK) proposed by Mishra and Koehler (2006); and
d) to make an original contribution on how Technological Pedagogical Reasoning skills are developed over a teaching career.