Did the impact of imposed course structure change lead to positive outcomes for lecturers and students?

Ann McGrath and Donna Morrow
College of Education
University of Canterbury

Dissatisfaction with an ICT (Information and Communication Technology) course for secondary pre-service teachers was the catalyst for this research study. Problems identified included the tension present while striving to meet the skills' needs of pre-service teachers with varying ability and time spent (or lack of it) on developing pedagogical understanding of their curriculum. Reflection and discussion on the question led to a major change in our teaching methodology, which was to include *technological pedagogical content knowledge* (TPCK) as a theoretical framework. The impact of the mandated changes on us and the course we developed was ultimately positive. We began to work together as a community as we grappled with the challenges thrust upon us. We instigated changes that resulted in positive outcomes not only for us but (more importantly) for our students.

Keywords: TPACK; Curriculum; Reflection.

Introduction

The turmoil of imposed organisational change as a result of the merger of the College of Education with the University of Canterbury, and its subsequent impact on an ICT (information and communication technology) course for pre-service teachers resulted in a sudden lack of clarity for those of us conducting the course. This lack of clarity concerned course goals, methods of delivery, and mode of assessment.

Context

Before the merger (2007), students could choose from a range of courses in ICT to meet their own needs and requirements. After the merger, these courses disappeared and students were left without choice. Since 2007, students have had only one mandated course available to them—"Strategies in e-Learning". The student cohorts engaged in the course are all curriculum specialists. Specialities included maths, languages, music, drama, physical education, and sciences.

Those of us teaching this course over the two years before the research documented in this poster took place all expressed dissatisfaction with it. We felt particularly constrained by the low number of student contact hours available to us and the course's compulsory nature. These constraints not only limited our opportunities to differentiate the curriculum for students with varying levels of skills and knowledge but also challenged our ability to provide an efficient and effective delivery of the content.

These difficulties led, we believed, to a lack of engagement by the students, evident in their low levels of initiative and curiosity about the content; an inability to pace the course to meet the needs of individual learners; and a struggle to balance between the "what" of practical skills and the "how and why" of the pedagogy.

We eventually decided to address this question—"How can I ensure all students' needs are met in my classroom despite the variation in ICT skills and pedagogical knowledge?" This question gave me, as researcher, opportunity to document the ensuring action research, to explore the teaching methods within the course, and to evaluate if changes in our teaching methodology had a positive impact on student engagement. Data were gathered as follows: initial survey on first day to ascertain students' knowledge

(skills and pedagogy); personal reflective journal; peer review of the researcher's teaching; post-course survey of students; other student comments.

Action research

Reflection and discussion on the question led to a major change in our teaching methodology, which was to include *technological pedagogical content knowledge* (TPCK) as a theoretical framework, supported with readings. I monitored the impact of this change and surveyed students about the modified course at its beginning and end.

We considered that the TPCK model (Mishra & Koehler, 2006) would help the students structure their thinking, by making explicit the importance of pedagogy and providing a guide as to which technology would be most appropriate to support the learning of their pupils. According to Harris and Hofer (2009), "Successful technology integration is rooted in curriculum content and students' content-related learning processes primarily and secondarily in savvy use of educational technologies. When integrating educational technologies into instruction, teachers' planning must occur at the nexus of standards-based curriculum requirements, effective pedagogical practices, and available technologies' affordances and constraints" (p. 2).

On the basis of this thinking, we considered it imperative to identify the students' *pedagogical knowledge* so that we had a basis on which to build the students' *pedagogical content knowledge* (Shulman, 1987). Only then, we thought, could we introduce TPCK. However, the students grappled to understand the significance of the intersections between technological knowledge and pedagogical knowledge.

We accordingly decided to have the students work in groups, each of which comprised a curriculum specialty. Here, the students were asked to map out the appropriate curriculum content, the pedagogical knowledge and, finally, the technological knowledge. We gave the students material on the TPCK model to read in their own time; each group's material related to its particular curriculum area. We also asked the groups to report back to the rest of the class at the end of the mapping exercise and to justify their use of the Web2 tool they had chosen to support their pedagogy.

We found the reporting to and feedback from the various curriculum groups a particularly useful activity because it gave all groups new ideas and strategies as well as opportunity to justify the pedagogical tools they had elected to use to support learning. The use of curriculum-specific groups and our decision to base the students' new learning in an authentic context (i.e., preparing them for their respective work placements) also had positive outcomes. Students began to work collaboratively and to share tasks and responsibilities.

As the course progressed, we focussed on making the theory authentic and relevant for the students as they developed the technology to support the curriculum. This shift in emphasis from *creating* resources using Web2 tools to the challenge of *choosing* the most appropriate Web2 tool to support their pedagogy was not easy. The students (in their collaborative groups) had to discuss and arrive at a consensus about the most appropriate tool in their curriculum area. However, once again, the participation in collaborative groups and using the technology in context led to rich connections for the students between the technology, the subject matter (content), and the means of teaching it (the pedagogy) (Mishra & Koehler, 2006).

Survey

Because of the small number of survey respondents (20), care is needed when extrapolating these findings to a larger population.

Questions 1, 2 and 3 indicate a marked shift in students' beliefs about the connection between pedagogy and content and about the connection between pedagogy and technology. In the first survey, the results for Questions 4 and 5 indicate a good understanding (rather than belief) in the connections between content, pedagogy, and technology. By the end of the course, the number of students in the "not sure" column had dropped considerably. Nearly all students agreed or strongly agreed with the six statements by this time. Question 6 produced a particularly interesting result: the students were almost evenly split between "strongly agree" and "not sure". By the end of the course, 92% of the respondents said they felt comfortable with their ability to choose appropriate technologies; initially, only 54% had felt comfortable.

Table 1: Breakdown of survey results (N = 20)

Opinions about and knowledge of aspects of teaching		Commencement of course		Completion of course	
		Strongly agree/Agree (%)	Not sure (%)	Strongly agree/Agree (%)	Not sure (%)
1	I believe there is an important connection between content and pedagogy.	10	90	100	
2	I believe there is an important connection between pedagogy and technology.	10	90	100	
3	I believe there is an important connection between content and technology.	85	15	100	
4	I understand the connection between content and pedagogy.	64	36	100	
5	I understand the connection between pedagogy and technology.	53	47	92	8
6	I am comfortable with my ability to choose appropriate technologies to support teaching and learning in my major teaching study	54	46	92	8

Comments from students

As part of their final assessment, students were asked to justify the use of the Web2 tool they had selected to create a resource for students in their curriculum area. Their justifications provided a means of determining if the students had engaged with the readings, understood the TPCK model, and had chosen the most appropriate tool for the context. The following student comments typify the students' responses overall and confirmed, for us, that students had engaged successfully with the course content.

> ICT in education is crucial in order to educate and engage students. I can see clearly [with the help of this course] the various areas and topics that can benefit from the use of ICT in the classroom. Using a wiki with my class allows for continual connection with it even out of school. Pedagogically, this tool works, as it allows for collaboration, both in and out of the classroom setting.
>
> Photo story or movie maker are quick and easy to use tools that capture the students' attention and their imaginations. It is a fun way to produce theory work for classes. By incorporating new approaches such as these, we are taking active steps in keeping up with our students and their learning needs.
>
> If we can utilise all that technology has to offer in our subject areas and improve our pedagogy, we will engage students, as they are far more technology literate than most teachers.

Conclusion and future development

In 2007, when this course was introduced, those of us teaching it felt despondent as we struggled to make the course relevant and authentic for our students. As teacher-educators, we needed, if we were to provide meaningful learning experiences for our students, to strike the right balance between structure and flexibility when combining e-learning technologies, social learning pedagogies, and situated activities.

The impact of the mandated changes on us and the course we developed was ultimately positive. We began to work together as a community as we grappled with the challenges thrust upon us. We instigated changes that resulted in positive changes not only for us but (more importantly) positive learning outcomes for our students.

Our compulsory course has continued to develop. In 2009 we moved from delivering it to small groups of 20 students to delivering it in a new space that has been developed to accommodate 80 students. A major challenge associated with this venture is ensuring that we can still *connect* with our students and offer them one-to-one mentoring. This challenge is also being mediated by the need for us to accommodate more mandated changes.

References

Harris, J., & Hofer, M. (in press). Instructional planning activity types as vehicles for curriculum-based TPACK development. In C. Maddux (Ed.), *Research highlights in technology and teacher education 2009*. Chesapeake, VA: Association for the Advancement of Computing in Education.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, *108*(6), 1017-1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, *57*(1), 1-22. https://doi.org/10.17763/haer.57.1.j463w79r56455411

Authors: Ann McGrath and Donna Morrow, College of Education, University of Canterbury.
Email: ann.mcgrath@canterbury.ac.nz

Please cite as: McGrath, A. & Morrow, D (2009). Did the impact of imposed course structure change lead to positive outcomes for lecturers and students? In *Same places, different spaces. Proceedings ascilite Auckland 2009*. https://doi.org/10.14742/apubs.2009.2332