ABSTRACT

This paper provides a case-study description of the experiences of the course coordinator and an educational technologist in integrating Information and Communication Technologies (ICTs) into a professional development course for academic staff at Rhodes University, South Africa. The Technological Pedagogical Content Knowledge (TPCK) model is used as a basis for conceptualizing the changes brought about by the introduction of a learning management system (LMS) in the course. In addition, the paper reports on the perceptions of course participants on the value of the learning management system for their learning.

The primary problem under discussion relates to an institutional culture that seems to perceive ICTs as separate from pedagogy and content. Mirroring practices in the wider South African Higher Education context, this separation was evident in the way that the use of ICTs in teaching and learning was covered as separate sessions in two of the four modules and as a separate elective module of the Postgraduate Diploma in Higher Education (PGDHE). Since this practice of dealing with ICTs in teaching and learning in isolation did not result in substantial uptake of ICTs by participants in their own courses, the PGDHE facilitators started to collaborate with the educational technologist with the aim of increasing their own use of the LMS in presenting the PGDHE. While observations and personal reflections by the course coordinator and the educational technologist provided important perspectives on the problem, these were augmented through ongoing discussions between them as well as with other colleagues teaching on the PGDHE. Descriptions of the experiences of course participants that were obtained through an online survey also support the experiences of the facilitators. Although this is not a systematic, longitudinal evaluation and the impact of this gradual change is hard to quantify, lecturers and course participants are valuing the integrated way in which ICTs are being dealt with in the PGDHE.

Key words: information and communications technology (ICT); learning technologies; professional development; academic development; educational development; curriculum development

INTRODUCTION

Internationally the way in which higher education (HE) is conceptualised is changing. Globalisation, massification, shrinking resources, the proliferation of information and communication technologies (ICTs), increased demands for quality assurance and greater public accountability, and increasing competition among higher education institutions have all contributed towards changing the traditional role of academics. Academics now operate in what Barnett (2000) terms “a world of supercomplexity”, where the very frameworks on which their professions are based are continuously in a state of flux. Technological and economic changes, for example, have resulted in a reorganisation of time and space (Giddens 1984, cited in Unwin, 2007). Furthermore, the supercomplexity and uncertainty of the postmodern world have caused people to be more reflexive, which, in turn, has led to a heightened sense of ontological insecurity for academics.

This changing context of higher education (HE) both internationally and in South Africa presents new challenges for lecturers. In particular, the expansion of the application of technology to approaches to teaching and learning has been one of the most ubiquitous major recent changes in higher education (D’Andrea and Gosling 2005). On the one hand the use of ICTs is presented as a solution to many of the teaching and learning challenges brought about by the new HE landscape, while, on the other
hand, starting to use ICTs in their teaching and their students' learning often represents one of the most insurmountable obstacles to lecturers.

One way in which higher education institutions have responded to such challenges is by placing greater emphasis on the professionalisation of academic staff as teachers and assessors. Staff development units are tasked with contributing to the professional development of academic staff in HE through professional development workshops and courses leading to formal qualifications. Through these initiatives Academic Development (AD) staff need to find ways of not only helping academics cope with these changes, but also of assisting them in developing appropriate strategies for preparing their students to operate successfully in a world of "supercomplexity". With regard to the use of ICTs in teaching and learning, however, a major problem is that staff developers themselves are often ill-equipped for using ICTs in their own teaching and courses, let alone for assisting academic staff to follow suit.

In response to these challenges, Unwin (2007) proposes the establishment of *professional learning communities*¹ as a way to counteract the sense of ontological insecurity. Following from the "communities of practice" concept developed by Lave and Wenger (1991) and Wenger (1998), such learning communities are important as they could contribute towards lecturers reconceptualising their professional identities. For Knight and Trowler a community of practice is “a closely interacting group of practitioners within which contextualized, situated learning is always happening and is legitimized” (2001, p. 9). These communities “have the potential to encourage teamwork, democratic discourse, creativity and trust” (Unwin 2007, p. 298). Also, within a learning community people bring along different resources and expertise which they can share with members of the group. Wenger (1998, p. 85) argues that

> These professional communities have allowed a sense of belonging and confidence in shared decision-making when (often) external factors seemed to be working against us … (in Unwin 2007, p. 296).

**BACKGROUND**

Since 2000 Academic Development (AD) staff members at Rhodes University have offered a Postgraduate Diploma in Higher Education (PGDHE) aimed at professionalising the practice of academic staff in the Institution. Although the curriculum for the PGDHE was developed by a team of AD practitioners, the team did not include an educational technologist initially. At the time the application of information and communication technologies (ICTs) to teaching and learning was addressed in the PGDHE through stand-alone presentations by an educational technologist. These stand-alone presentations did however not seem to lead to either successful learning about ICTs in teaching and learning, or to significant implementation of ICTs in participants’ teaching and courses. According to Mishra and Koehler (2006) this de-contextualised practice is indicative of the knowledge structures that underlie much of the current discourse on educational technology that separates technology from pedagogy and content. The introduction of a learning management system into the PGDHE in 2005 resulted in closer collaboration between the AD practitioners teaching on the programme and the educational technologist in the department. This has lead to the formation of what Unwin (2007, p. 295) called a “professional learning community” comprising the AD staff and the educational technologist, which has enabled an “integrated pedagogic approach to ICTs”. Since ICTs are now used to support participants’ learning in the PGDHE, the use of ICTs to enhance teaching and learning in Higher Education is modelled for participants to use in their own teaching.

**The PGDHE**

The curriculum for the PGDHE is based on the set of unit standards for a competency-based national qualification for lecturers in HE (more about this below). However, since the curriculum development team adapted the unit standards into a modular format, the curriculum for the PGDHE displays a higher level of theoretical coherence than is usually associated with unit standard-based programmes. Based on the curriculum development team’s shared theoretical and philosophical beliefs about what constitutes an appropriate approach to the development of academic staff in higher education, the

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¹ See also Shephard (2004) on the need for team-based approaches in higher education.
A practice-based, two-year course was designed to meet the specific needs of lecturers within the context of their disciplines, the university, and the higher education context, nationally and internationally. The stated purpose of the course is to encourage the professional development of lecturers by assisting them to enhance their ability to facilitate, manage, and assess their students’ learning, to evaluate their own practice effectively, to develop their knowledge of higher education as a field of study, and to provide professional accreditation (Postgraduate Diploma in Higher Education Course Guide, 2006). The programme is offered in the form of four core modules (Learning and Teaching in Higher Education; Curriculum Development; Assessment and Moderation of Student Learning and Evaluation of Teaching and Courses) and one elective module. Although the course comprises separate modules, coherence is achieved through the use of a common theoretical framework which underpins all the modules of the course (see Quinn 2003 and Quinn and Vorster 2004 for a more detailed account of the course and the theoretical framework which underpins it).

Despite the positive evaluations on the programme as a whole (see Quinn 2003; 2006), the curriculum development team has always felt that the add-on workshops on technology, although offered as part of specific modules, were not successfully encouraging participants to use technology to enhance their teaching and their students’ learning. This perception was borne out by our analysis of participants’ teaching portfolios, the primary method of summative assessment in the programme, which contained little evidence of them using ICTs in their teaching, and from feedback we elicited from them.

**Learning about ICTs in the PGDHE**

At our institution the close relationship between ICTs and teaching and learning has been recognised in that the position of the educational technologist is based in the unit that is mandated to develop teaching and learning, rather than in, for example, the division that is tasked to provide ICT infrastructure and services to the institution. While the academic development staff members have always recognised the importance of integrating ICTs into teaching and learning, we were less certain about the most appropriate way in which it could be integrated. Consequently, ICTs in teaching and learning were initially treated as an “add-on” rather than central to teaching and learning. As mentioned earlier, this was also evident in the development of the Postgraduate Diploma in Higher Education (PGDHE). Based on national unit standards this programme made provision for the “teaching” of ICTs in teaching and learning through an elective module worth 10 credits (initially called “Design and develop web-based learning”) and one 90-minute session in each of the “Learning and Teaching in Higher Education” and “Assessment and Moderation of Student Learning” modules. While the elective, now called ICTs in Teaching and Learning, provided PGDHE participants with the space to investigate and report on an ICT-related intervention, take-up of this elective was very low with only approximately 17% of participants taking this elective over a 5-year period. The two 90-minute presentations in the other modules were equally unsatisfactory in that participants found it difficult to contextualise those sessions within the modules in which they were being offered or to make connections between the content of the sessions (i.e. the potential of ICTs to support learning and assessment respectively) and the rest of the programme. Similarly, participants were unable to relate the content of those sessions to their own practices. It was clear that both these interventions in the PGDHE have had very little impact on the practice of lecturers at the institution with regard to the use of ICTs in teaching and learning, despite their being combined with other “promotion” strategies that were being actively pursued within the Institution (e.g. hands-on ICT workshops, showcases, seminars, and individual consultations).

Following a number of years of experimenting with various web-based learning management systems (LMSs), the institution adopted Moodle in 2004. While the LMS initially had very little impact on the way that the PGDHE was taught, the facilitators of the programme started using the LMS initially as a repository for resources (in 2005), but later also more interactively by requiring PGDHE participants to reflect on their learning in online journals (in 2006) and in participating in online discussion forums (in 2007). The primary aim of integrating ICTs into the PGDHE was to expose participants to the potential of ICTs to enhance their teaching and their students’ learning by modelling the use of ICTs. This is particularly significant as very few, if any, of the PGDHE participants have, as students, had the experience of being taught using ICTs. While we do not claim that this integrated model of imbedding ICTs into the curriculum was solely responsible for the increasing uptake of the LMS amongst PGDHE participants, we feel that it is a more pedagogically sound approach compared to the earlier practice of decontextualised, add-on presentations in some of the modules.
ICTs AND HIGHER EDUCATION

Many have regarded ICTs as the solution to a range of educational problems. In South Africa, much of the discourse on using ICTs in HE teaching and learning, however, seem to focus on access to technology; that is, on the availability of computers, the Internet and bandwidth rather than on the way ICTs are being used in support of teaching and learning. In many contexts this focus on access has resulted in pedagogically poor applications of technology where ICTs are only used in transmission modes of teaching and learning. Following some spectacular failings of eLearning projects, (see, for example, Latchem, 2005) there now seems to be a growing concern about the application of those technologies in teaching and learning to investigate how they can and are being used to support teaching and learning (see for example, Czerniewicz and Brown, 2006). In addition, there has been a growing recognition that technology used in the absence of a sound theoretical framework or pedagogy is generally not very effective in reaching programme goals. Laurillard (2002); Mishra and Koehler (2006) and Unwin (2007), for example, have cautioned against the use of ICTs without a conceptual framework or without a clear understanding of why and how the ICT will contribute to students’ learning. These insights have led some higher education institutions (HEIs) to realise that pedagogically sound integration of ICTs in lecturers’ teaching requires more than technical support; it also needs professional development for lecturers to use ICTs in their teaching and learning.

There seems to be a wide variation in how HE practitioners conceptualise the integration of information and communication technologies (ICTs) in teaching and learning. What do we mean by learning with ICTs and what does this mean for the professional development of academic staff?

Discourses on ICTs in HE separate ICTs from teaching and learning

Following Shephard (2004), we use the concept ICTs in teaching and learning to broadly include computer-based and online tools and resources used to support student learning, but we also focus on the interactive use of those tools to facilitate interpersonal communication and collaboration.

At Rhodes University, many of the discourses on the role of ICTs in teaching and learning conceptualise computers in isolation from lecturers’ teaching practice. Users of one such dominant discourse believe that the use of ICTs only add value to those students who are under-prepared for higher education studies. Such students should therefore, for example, be sent to a computer laboratory to work through a computer-based tutorial or other courseware product on a particular topic. This thinking is in line with a model of computer-based education that emphasises content transmission over the process of learning and seems to be loosely based on behaviourist theories of learning, even though their designers might profess constructivism as the underlying theory of learning. In this model, students “learn” or supposedly “construct their own knowledge” by working, often sequentially, through courseware lessons such as computer-based “tutorials”, drill and practice programs, simulations, tests and games (Alessi and Trollip 1991).

Given the way in which ICTs are dealt with in isolation from teaching and learning in official documentation pertaining to teaching and learning, this separation of ICT-use from other teaching and learning endeavours in South African Higher Education comes as no surprise. The same division is, for example, reflected in the Higher Education Quality Committee’s (HEQC) Improving Teaching and Learning (ITL) Resources (2005). Developed during 2003 in a series of workshops the ITL Resources was a collaborative project between the HEQC and academics in private and public higher education institutions in South Africa and other countries. Aimed at quality promotion and capacity development these resources contain suggested good practice descriptors that are subsequently being used as the basis for the institutional audits conducted at various South African higher education institutions.

With regard to the use of ICTs in teaching and learning, the ITL Resources also contain the Unit Standards for a Web-based Learning elective module, which forms part of a postgraduate qualification for higher education practitioners aimed at providing professional development and recognition for HET practitioners (the Postgraduate Certificate in Higher Education and Training or PGCHET). However, apart from this elective, all of the reference to computer(s), IT (information technology), technology and the Web relate to access and the provision of resources and services. Where the use of ICTs is somehow connected to learning in these ITL Resources, references to ICTs are used exclusively in relation to the development of computer literacy skills for both students (p. 112) and staff (p. 141), despite a recognition, in these very resources, that
... technology has revolutionised teaching and learning; and academic staff members now face the challenge of introducing effective ways of engaging technology for learning (HEQC 2005, p. 140).

Furthermore, in the Unit Standards for the PGCHET itself, the use of ICTs in teaching and learning is dealt with in isolation of other core modules such as curriculum development, assessment, evaluation and learning design. While the unit standard for the elective module, Design and develop web-based learning, specifically focuses on the use of ICTs in teaching and learning, none of the other seven compulsory core unit standards or four elective unit standards address the issue of using ICTs in support of teaching and learning. We believe that this separation of the use of technology from other teaching and learning topics severely limits the potential of ICTs to enhance teaching and learning.

Fortunately, due to the widespread use of the Web and the increasing pervasiveness of ICTs in all aspects of life, this practice of isolating educational technologies is increasingly being challenged in favour of practices based on social constructivist learning theories that, for example, emphasise interpersonal interactivity over interaction between a student and a courseware program. Consequently, computers are increasingly assuming a more central role in mainstream teaching and learning which sees it taken out of the confined spaces of “the lecture” to learning any time and anywhere; and out of student computer laboratories and the limited accessibility of “open hours” of these labs to everyday practices of teaching, learning, research, administration and recreation.

Since “there is no single technological solution that applies for every teacher, every course, or every view of teaching” (Mishra and Koehler 2006, p. 1029), the appropriate and pedagogically accountable integration of ICTs into teaching and learning, however, contains many challenges which has to be addressed in professional development courses.

**What does this mean for professional development?**

Due to the relative newness of the field as well as the increasing pace of technological change, much of the work being done in relation to the use of ICTs in teaching and learning can be described as exploratory and thus is often implemented in the absence of well developed theoretical frameworks (Unwin 2007). Practice that “develops slowly and theory hardly at all” (Laurillard 2002:preface) severely limits the potential of ICTs to enhance teaching and learning.

It is therefore unsurprising that ongoing debate seems to characterise discussions about the most appropriate way of supporting academic staff in using ICTs in their teaching and in their students’ learning. Shephard (2004, p. 67), for example, distinguishes between the provision of technological support to describe an orientation of “let us help you to develop and use these learning resources” and professional development to signify the scaffolding provided to lecturers to help them develop the theoretical understandings and skills that they will need “to find, develop, and use these learning resources” in ways which contribute to the kind of learning that is valued in higher education.

These different orientations to assisting academic staff to integrate ICTs in their teaching and learning have very specific implications for educational technologists and academic development practitioners alike.

With regard to the support model, the term “instructional designer” is often used to describe the role of educational technologists. In supporting staff (“let us help you to develop and use these learning resources”), both an instructional designer and a lecturer (as content expert) would often be part of a courseware development team which might include any or more of the following: a project manager, a graphics or web designer, a programmer, a web developer, etc. Instructional designers would therefore engage in specific projects (e.g. developing a piece of courseware), with target and sign-off dates, often following well-established software development models such as the modified ADDIE model\(^2\) as described by Kruse and Keil (2000).

In a professional development context, however, educational technologists increasingly fulfil the role of “curriculum designer” alongside one or more academic staff members in a curriculum development team (Littlejohn and Peacock 2003). In this context, educational technologists are more likely to play

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\(^2\) Analysis-Design-Development-Implementation-Evaluation plus a “Rapid Prototyping Phase”
the role of “curriculum designers” (rather than that of instructional designers), resembling the function of academic development practitioners more closely. Here emphasis moves away from specific ICT-based interventions (for example as in the case of developing a piece of courseware) to a series of consultations over a longer period of time, for example, in a whole module or course that is presented over anything from a few weeks to an entire academic year. Lecturers starting to use a learning management system, for example, usually make small incremental changes to their courses and teaching as they adopt various tools or features of a LMS over a period of time. In this process they would be assisted by an educational technologist (acting as a “curriculum designer”) who would work alongside them to negotiate the pedagogical implications of various options of using ICTs. This change of focus in the work of educational technologist seems to have been brought about on the one hand, by the increasing use of LMSs in higher education, and on the other hand, by inflexible course structures, time tables and the dominance of the “performance” model of teaching (Morrow 2007).

In the next section we will use Mishra and Koehler’s (2006) Technological Pedagogical Content Knowledge Model as a lens through which to view our own practice.

REFLECTION ON OUR PROGRAMME

It is essential to have conceptual, theoretical lenses through which to explore research data as they allow researchers (and practitioners) to make inferences about the world (Mishra and Koehler 2006; Oliver, 2003). May goes so far as to claim that the findings of social researchers are meaningless unless they are situated in a theoretical framework which must be made explicit: the “facts do not speak for themselves” (2001, p. 30). Furthermore he argues that social theory and concepts are necessary both for interpreting empirical data, but also as a basis for critical reflection on the research process, and social life and social systems in general. In our research the main purpose was to use the available theory to help us begin to uncover the mechanisms and processes at work in our context.

Technological Pedagogical Content Knowledge

There seems to be emerging consensus that the integration of ICTs into teaching and learning requires balancing different sets of knowledge and skills. Inglis, Ling and Joosten (1999, in Shephard, 2004), for example, identify three zones of expertise: expertise in information technologies, expertise in instructional design and expertise in a subject area. Based on Shulman’s (1986) notion of pedagogical content knowledge (PCK) Mishra and Koehler (2006) developed a theoretical framework that not only corresponds with the zones of expertise identified by Inglis et al., but also identifies four additional sets of teacher knowledge bases by focussing on the areas of overlap between each pair in this triad as well as the interplay of all of these primary knowledge bases (See Figure 1). For Mishra and Koehler,

TPCK represents a class of knowledge that is central to teachers’ work with technology. This knowledge would not typically be held by technologically proficient subject matter experts, or by technologist who know a little of the subject or of pedagogy, or by teachers who know little of that subject or about technology (ibid, p. 1029).

Claiming that this framework enables a deeper understanding of a range of contextually bound and complex relationships, Mishra and Koehler (2006) argue that

a conceptually based theoretical framework about the relationship between technology and teaching can transform the conceptualisation and the practice of teacher education, teacher training, and teachers’ professional development (ibid, p. 1019).
As alluded to before, much of the earlier theorising about the use of technology in education involved viewing technology as being separate from both content and pedagogy. A number of scholars have pointed to the failings of traditional add-on methods for teaching the use of technology. Mishra and Koehler, for example, regard these methods as "ill suited to produce the 'deep understanding' that can assist teachers in becoming intelligent users of technology for pedagogy ..." (1032) and suggest that it is necessary to integrate the use of educational technology with sound pedagogy and that doing this requires the development of "a complex situated form of knowledge that [they] call Technological Pedagogical Content Knowledge (TPCK)" (ibid, p. 1017). TPCK emphasises "the connections, interactions, affordances, and constraints between and among content, pedagogy, and technology" (ibid, p. 1025).

In practical terms, apart from looking at the three types of knowledge in isolation, Mishra and Koehler suggest that it is necessary to examine them in pairs: pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogical knowledge (TPK) and the three combined as technological pedagogical content knowledge (TPCK). Substantially expanded from Shulman’s initial categories, this model is useful for helping researchers to decide which research questions they need to ask and what data it is necessary to collect. As will be described below, we were interested in determining whether the participants on a professional development course had developed their TPCK. The following elements and relationships were considered:

**Content knowledge.** In the context of a professional development course which is made up of lecturers from a range of disciplines it is safe to assume that they have or are able to acquire the disciplinary knowledge they require for teaching. In a cross-disciplinary course for lecturers it is therefore neither practical nor necessary to teach “content knowledge”. Participants should however be encouraged to critically examine their disciplines; to think about issues such as what counts as knowledge in their disciplinary areas, and so on (see for example Quinn and Vorster 2004).

**Pedagogical knowledge.** Mishra and Koehler define pedagogical knowledge as “deep knowledge about the processes and practices or methods of teaching and learning and how it encompasses, among other things, overall educational purposes, values and aims” (1026). This kind of knowledge is the focus of a professional development course for lecturers in higher education. In addition, another purpose of such a programme is to encourage participants not just to develop their disciplinary identities (e.g. lawyer, historian, geologist), but also to develop their identities as teachers in HE. For this to happen, participants need to be exposed to current theories of teaching and learning generally and those applicable specifically to HE contexts.

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As Mishra and Koehler (2006:1026-7) acknowledge, these ideas are not new. They cite, for example, Keating and Evans 2001; Zhao 2003, Hughes 2005 and Neiss 2005 who have argued similarly.
Pedagogical content knowledge is knowledge linked to the teaching of a specific discipline. PCK explores, for example, the difference between teaching history and teaching chemistry or drama. It requires knowledge of which curricula and teaching and assessment methods are most likely to achieve the learning outcomes of specific disciplines and courses. According to Mishra and Koehler, PCK “is concerned with the representation and formulation of concepts, pedagogical techniques, knowledge of what makes concepts difficult or easy to learn, knowledge of students’ prior knowledge, and theories of epistemology” (1027). Pedagogical content knowledge also includes the ability for disciplinary experts to make explicit the academic literacies of their disciplines (Boughey 2002) to enable students to understand not only what counts as knowledge in their disciplines but also how to express that knowledge. In the context of a professional development course, much of this cannot be explicitly taught but participants can be asked critical questions which encourage them to transfer generic pedagogical knowledge and apply it to the teaching of their specific disciplines.

Technology knowledge. We would like to believe that lecturers in higher education should come with some basic level of computer literacy skills. They should, for example, be able to work with computers, networks, the Internet and understand operating systems, computer filing systems and so on, in the same way that they are able to work with books, pens, and overhead projectors, for example. We are aware, however, that this picture does not reflect the current reality at Rhodes University. Since all seven parts of TPACK are necessarily integrated and should not be viewed in isolation, participants’ potential lack of basic computer literacy skills might jeopardise their development of TPACK. For this reason basic computer literacy are being addressed at an institutional level by the Human Resources Development Section of the Human Resources Division, but may still potentially leave a lack of alignment between their offerings and our own. We do not see the development of basic computer literacy skills as core to our function. Such skills are therefore only addressed on an ad-hoc just-in-time as-is-needed-basis.

Technological content knowledge is “knowledge about the manner in which technology and content are reciprocally related” (1028). Again, in the model which we propose for professional development, TCK is not explicitly taught, but it is modelled through the use of technologies to teach the programme. Due to the practice-based nature of the PGDHE, participants are encouraged to reflect on how technology is used and to think about how they could apply it in their contexts.

Technological pedagogical knowledge is made up of generic knowledge regarding how technology can be used for general pedagogic aims. While TPK is not directly addressed in the PGDHE, the educational technologist offers hands-on workshops which are focus on the potential of technology to support teaching and learning in general and which is aimed at developing participants’ TPK.

Technological pedagogical content knowledge emerges from and goes beyond the three basic components of content, pedagogy, and technology. For Mishra and Koehler,

> quality teaching requires developing a nuanced understanding of the complex relationships between technology, content and pedagogy, and using this understanding to develop appropriate context-specific strategies and representations (1029).

In their framework, and in the way in we theorise our practice, separating the components is only for the purposes of analysis. In reality all seven are necessarily integrated and should not be viewed in isolation from one another; they exist in dynamic tension. It is obvious then that content neutral, add-on generic courses or workshops to train lecturers to use ICTs in teaching and learning, while they have a valid place and purpose, are unlikely to lead to integrated knowledge which will enable lecturers to take full advantage of the potential of educational technologies to enhance their teaching. TPACK is more likely to help academic staff to develop the kinds of curricula, teaching and assessment methodologies that will ensure that their students engage in the kind of learning appropriate for their context.

Mishra and Koehler’s framework, as outlined above, has helped us to understand better and in a more theoretical way, practices which we are implementing in an intuitive way. This is helping us to build metacognitive understanding of our practices and thus in future we will be able to integrate the development of TPACK in a more deliberate and theorised way. Mishra and Koehler found that the TPACK framework helped them to articulate “a clear approach to teaching (learning technology by design) but also as an analytical lens for studying the development of teacher knowledge about
educational technology” (1041). Using the framework enabled us to analyse evaluation data and for us, as a team, to critically reflect on the relationship between content, pedagogy and technology and how we were developing the range of different knowledges in our programme. It helped the “development of deeper understandings of the complex web of relationships between content, pedagogy, and technology, and the contexts in which they function” (1043).

Our analysis of course evaluations and our own critical reflections show that we as educational developers and other lecturers as participants on the PGDHE, have made shifts towards developing TPCK, that is, a more nuanced understanding of the relationships between the three types of knowledge and how to develop TPCK in a way which is commensurate with the aims, purposes, underpinning philosophy and outcomes of the PGDHE. Lecturers who attended our professional development programme in 2007 are beginning to acquire the appropriate knowledge which will enable them to use ICTs in their own teaching in ways which will lead to the kind of learning valued in higher education.

It is our contention that the formation of a curriculum development team which included an educational technologist and our using of ICTs to teach the PGDHE enabled us to powerfully model ways of integrating ICTs into teaching. Participants were thus able to experience first hand the benefits of using ICTS in this way for their own learning in the PGDHE. Most of the participants believe that their learning was significantly enhanced by having access to Moodle: “Moodle has been an exceptional tool for our learning …”. Pointing to some specific features of Moodle, other participants described their experiences in the following ways:

"The journals have been a very useful way to record my thoughts about the learning tasks … it's been a very good way of receiving comments back from my course facilitator. I think this system works very well, and it's a very convenient way of exchanging information, and then storing it in one place. … The journals are also a 'safe' space to record your thoughts when you're not necessarily on top of the material yet – it is then very useful for reflective purposes to go back later and see how your own views and understandings have changed."

"I found the … journal entries to show progression in my thinking and allow me to 'build' a piece of work. Forum discussions have been really great – as we can easily share our thoughts at a convenient time and refer back to what has been said."

Some of the feedback from course participants provides evidence that they began to acquire the appropriate TPCK to use ICTs in the design of their own courses and modules:

"It is definitely the case that using Moodle in the course has made me aware of its potential in my teaching – this has been the best way of demonstrating it to us."

"I have become so aware of it [need to integrate ICTs in teaching and learning] that I have made it my elective to investigate the potential to use it at my college."

"… in the way I am thinking of using Moodle or should I say how I am currently using Moodle is that it is a resource site at the moment, but it is an interactive resource site … I've sectioned off stuff so as to lead people gently into what its all about and then added the use of the calendar tool, where I keep updates on all sorts of useful information …it's really cool. I'll be ready next year."

**Implication for staff developers**

If, according to Mishra and Koehler (2006) educators have to develop or maintain these seven sets of knowledge bases, what are the implications for academic development staff who are tasked with the professional development of these educators? Which sets of knowledge bases should they possess or develop for themselves?

As discussed earlier, due to the specificity of content knowledge in various disciplinary contexts, it is neither feasible nor desirable for academic development staff to be responsible for lecturers acquiring any of the Content Knowledge, Technological Content Knowledge, Pedagogical Content Knowledge or Technological Pedagogical Content Knowledge for any disciplines other than in the disciplinary
area of Education and related fields (e.g. Psychology, Adult Education, etc.), which is already represented as Pedagogical Knowledge in the TPK model. While educational developers would normally, by virtue of the field they are working in, have already acquired Pedagogical Knowledge, the possibility of them having developed Technological Knowledge and Technological Pedagogical Knowledge is rather slim, often because they too, have not experienced being taught with technologies, but primarily because the structures in which educational technology operate (as described above) frequently perpetuate the undesirable split between the development of teaching and learning on the one hand and the use of ICTs in teaching and learning on the other.

Assuming that staff developers have already developed their Pedagogical Knowledge, they would be required to also develop their Technological Knowledge as well as their Technological Pedagogical Knowledge so as to enable them to become comfortable in advising lecturers on the potential role of ICTs in their teaching and curricula and thus maintaining their professional status and credibility as staff developers. Educational Technology will consequently have to be perceived as less of a specialist area (i.e. focusing on technology) and more of a teaching and learning issue. Working in teams which include a technology expert, as we have begun to do, seems to be one way in which academic staff developers can begin to gain the other types of knowledge that will enable them to help their “students” develop TPK.

Implications for curriculum development

In line with the ideas of many academic development practitioners (see, for example, Toohey 1999, Mishra and Koehler 2006, Unwin 2007) we would like to argue for curriculum development to be a team-based activity. Although this is certainly not a new idea, like many campus-based institutions, lecturers in most departments at Rhodes University work in isolation from their colleagues when developing their courses resulting in academic processes at this institution still resembling a cottage industry (Daniel, 1996). In cases where curricula are indeed designed by teams of colleagues, the absence of an educational technologist (or “technology enthusiast”) serves only to perpetuate the undesirable split between teaching and learning on the one hand, and technology on the other. It might therefore be worthwhile to promote the idea that the curriculum design team should also include an educational technologist (or enthusiast) and other specialists, for example an information science specialist from the University Library.

Rather than acting primarily as an “instructional designer” as described earlier, educational technologists have a role to play in identifying areas of teaching, learning, assessment and evaluation that might benefit from the use of ICTs and in assisting lecturers to use ICTs in pedagogically sound ways. The ICT enthusiast “will be there to mediate … the potential of the technologies with the desired pedagogies. … they will be able to reduce anxieties and allow the development of confidence within the learning community with the technologies being used” (Unwin 2007, p. 302).

CONCLUSION

In this paper we described the establishment of a professional learning community within an academic development unit, the purposes of which were to address both the lack of knowledge and experience of the AD staff with regard to using ICTs in teaching and learning, as well as to model the various ways in which lectures can integrate ICTs into the teaching and learning of their disciplines. Through using technology to teach our course and through forming the professional learning community we have tried to provide a professional development experience for lecturers that might help them to develop the kind of nuanced understandings called for in Mishra and Koehler’s TPK framework (2006).

REFERENCES


Quinn, L. 2006. A social realist account of the emergence of a formal academic staff development programme at a South African university. A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy, Rhodes University, South Africa.


