TIME CAPSULE:

REFLECTING ON AND COMMEMORATING OUR PAST

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Welcome to the Time Capsule, a new feature of the DLTV Journal. In this edition, we open the Time Capsule from 2011:

- Henderson, M. (2011). In professional learning the relationships are more important than content. *ICT in Education, 34*(1), 6–8
- Phillips, M. (2011). Exploring teachers' technology integration choices: Understanding knowledge and communities. *ICT in Education, 34*(1), 9-11.

The above two articles have been selected for re-print to commemorate the contribution of the outgoing editors of this journal, Michael Henderson and Michael Phillips. Together, they championed the DLTV journal since its inception.

Henderson's (2011) article, reprinted here, draws on Communities of Practice theory to investigate factors contributing to "sustained and transformational professional learning" (p. 6). Henderson's contribution to preservation of the integrity of Wenger's (1998) conception of Communities of Practice theory is significant as the term makes its way into educational policy and guidelines in Victoria (Department of Education and Training, 2017a).

Phillips' (2011) article reprinted here, also draws on Wenger's (1998) conception of Communities of Practice whilst also providing an introduction to the TPACK model. The TPACK model has also endured as a theory to inform practice and is referred to in Education Department guidelines about teaching with digital technology (Department of Education and Training, 2017b).

Henderson and Phillips' contributions predate their time with DLTV, having previously worked together as state council members of Information and Communications Technology in Education Victoria (ICTEV) and as co-editors of the ICT in Education Journal. In 2013, Michael Phillips was the recipient of the Outstanding Professional Service Award from the Council for Professional Teachers' Association Victoria (CPTAV) for his work with ICTEV.

This was the same year that the two teacher professional associations, Victorian Information Technology Teacher Association (VITTA) and ICTEV amalgamated to become DLTV. Henderson and Phillips were instrumental in this merger. Donna Gronn who led the merger of the organisations and became its first president, described DLTV as "the descendant of the Computer in Education Group in Australia" (Gronn, 2014, p. 5). Next year will mark 40 years since the foundation of the Computers in Education Group Victoria (CEGV), a milestone that will be celebrated.

DLTV has been able to provide these reprinted articles to you as custodian of its legacy organisations' journals, *COM-3* (CEGV), *Infonet* (VITTA) and *ICT in Education* (ICTEV). DLTV is currently researching options to make these past journals available online. The Journal of Digital Learning and Teaching Victoria is an artefact representing the important work of the association in developing symbiotic praxis by supporting connections between universities and schools. Henderson and Phillips' work in this space is evidence of this.

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In professional learning the relationships are more important than the content

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Reprint: Henderson, M. (2011). In professional learning the relationships are more important than content. *ICT in Education, 34*(1), 6–8.

The design of professional learning (PL, also known as professional development) is usually focused on issues of content, delivery and technology. However, through my research over the last eight years I have increasingly come to the conclusion that designing for and investing in relationships is ultimately more important when trying to achieve sustained and transformative professional learning. In my research I draw on the theory of Community of Practice to help me understand the complex social and cultural issues influencing how and why teachers integrate technologies in their classroom.

Due to teacher preference and system level resource allocation, the majority of PL continues to be delivered in single or short sequences of face to face sessions. Unfortunately the research on these kind of models of PL, especially in the field of teaching with ICTs, reveal that they do not have a significant impact on what teachers do in their classrooms. PL needs to be meaningful and sustained over time. As a consequence in the past decade there has been an increasing focus on community based approaches, such as learning communities, personal learning networks, and communities of practice. A community perspective directs the focus of research and design towards the complex nature of teachers as members of a wider community, as professionals with unique ways to understand and manage their worlds, and as situated learners.

In essence, PL of teachers must recognise the interdependency of identity and practice. It is important to recognise that the use of the term identity is carefully applied to describe an individual's history, goals, and traits within a social context. It is argued, from a Community of Practice (CoP) perspective that learning is dependent on both doing and becoming (Wenger, 1998, p. 5). The key to this transformative process is active participation and engagement based on the complex socio-cultural relationships among participants (Carlen & Jobring, 2007; Henderson, 2006).

Community of Practice (CoP)

Wenger (2001) states that "a community of practice is not merely a community of interest. … Members of a community of practice develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems – in short a shared practice" (pp. 2-3). However, they "are connected by more than their ostensible tasks. They are bound by intricate, socially constructed webs of belief, which are essential to understanding what they do" (Brown, Collins, & Duguid, 1989, p. 34). Community of Practice places the issue of identity on centre stage. In order for teachers to transform their practices they must enter into what is essentially a personally transformative experience that occurs over time. As a result, Community of Practice begins to explain why sustained experience is valuable, and why PL must tackle more than mere technical skills.

Situated learning at its grass roots argues that learning is a matter of enculturation (Brown et al., 1989). A CoP perspective "encourages us to consider educational designs not just in terms of techniques for supporting the construction of knowledge (let alone in terms of delivery of curriculum), but more generally in terms of their effects on the formation of identities" (Fowler & Mayes, 1999, p. 11). At a community level, both practice and identity sustain a community and therefore learning (Wenger, 1998). Wenger (1998) argued that a community's cohesion is a product of the extent to which practice and identity are invested in mutual engagement (doing things together), joint enterprise (responding together to the organisation's needs and goals), and shared repertoire (resolving problems together). Consequently this research has developed a model of community cohesion (see Figure 1) to guide the design of PL.

An example of mutual engagement could be teachers who work together, have coffee together, attend meetings together, etc. The same teachers would be involved in joint enterprise, such as responding and aligning themselves to the same departmental requirements and guidelines. Furthermore, the teachers would share their repertoire of ways in which to meet their needs, such as the departmental requirements. In this way the teachers reshape and reinforce their identities as members of the community as well as negotiate and propagate the community's practices. Through this process they are not only coming to understand the world in which they live but also shape their identity through the relationships of their CoP. The central role of the social, over the individual, is emphasised by the terms mutual, joint and shared.

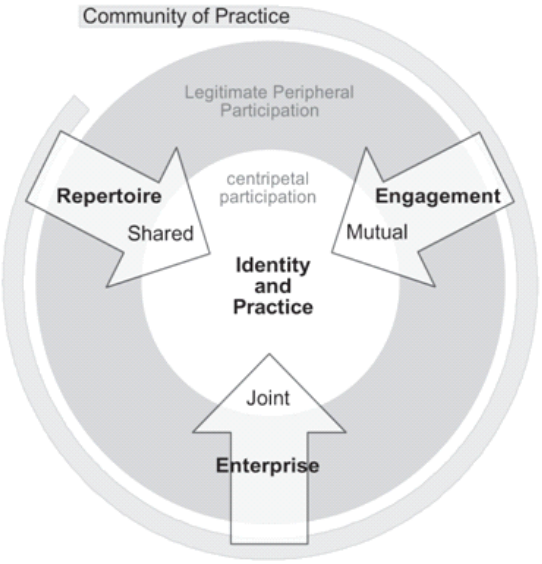

Figure 1: Model of community cohesion

Practice and identity cannot be externally defined. While a set of procedures can be imposed by the institution, the practices surrounding those procedures are a result of negotiated meaning by the community members. Similarly job descriptions do not define members' identities. Communities of Practice, and therefore learning, cannot be designed, created and controlled. This is significant for the current investigation because it suggests that we cannot create a Community of Practice for specific PL goals. However, Wenger (1998) argues that while you cannot design the learning you can design for learning. In other words you can design an environment that will either facilitate or frustrate emergent practices and identity. Wenger (1998) draws on the concept of legitimate peripheral participation and states that "required learning takes place not so much through the reification of a curriculum as through modified forms of participation that are structured to open the practice to non-members" (p.100). Learning is more than a process of handing down a defined body of knowledge to newcomers, rather it is best described as a process of catching up to a dynamic, changing and essentially social practice. Aspects or versions of these practices are offered to newcomers who can legitimately participate in a centripetal trajectory. Furthermore, Wenger (1998) points out that practice is not a result of design but a response to design. Therefore it is important that any design for learning balances prescriptive measures with that of emergent practices.

Lessons learned

In this paper I will share two lessons I have learned from my research about how to design for transformative and sustained PL.

Lesson 1 – PL needs to be designed so that success can only be achieved when participants support their fellow community members.

All aspects of the PL course design, including the time-line, content, goals, and assessment need to be based on a unifying philosophy: support your fellow community members. Using the community cohesion model (see Figure 1) as a design framework this sets the tone of engagement, becomes a core enterprise, and establishes the need and authority for shared repertoire. In other words, in order for teachers to complete the PL they had to engage with each other, respond to common challenges, and share practices. For instance, the teachers were asked to investigate different topics and to give feedback to the group on what they felt was important. The other participants responded to these contributions as a way of providing support and further investigating the ideas reported. Unless the contribution was discussed the task was seen as incomplete. One teacher in my research commented: "you're accountable to them as well and their learning is reliant on your participation so if you haven't participated then you know you've let them down." Although the core materials of the course were provided, the essential element of critical evaluation was left to the participants and consequently, when combined with the need to support each other, both encouraged and gave license for the sharing of opinions, experiences, stories, ideas and even divergent trajectories of inquiry.

Lesson 2: PL needs to be designed so that participants are immediately, and over time, engaged in meaningful interpersonal interactions.

A CoP is a site of authentic learning where participants make meaning of their environment and negotiate solutions to problems. While the teaching profession could be described as a CoP, individual teachers do not usually mutually engage with the teaching profession at the global level. Instead, they engage with localised versions of the CoP, which could be at the level of their school, department, interest group, etc. Transformative and sustained PL is dependent on the formation of a localised, coherent CoP where the participants do things together and form a sense of belonging and accountability (mutual engagement). This common frame of reference is then the basis of understanding how problems can be resolved, what is important and what should be done (joint enterprise). As the participants engage with each other, responding to problems, they form a unique social history that includes not only a communal memory of action but also a raft of tools, concepts and language that helps them in engaging with the core practices, and thereby also defining the boundaries of the CoP (shared repertoire). In simple terms we need to bring teachers together frequently over time, to work together with real problems (not limited artificial tasks provided by the instructor) long enough for them to develop usable language, concepts, problem solving skills, and world perspectives which will transfer with them into their classrooms.

In my research the consequences of PL groups who do not engage with each other is simply that they do not develop a sense of mutuality, and consequently are less likely to invest effort over time. In light of this I have found the very first moment of PL to be critical in developing a sense of mutuality. For example, a teacher in my research indicated that he felt disconnected from his group because he did not participate

early in the PL and that as a consequence the "main impetus for actually getting things done was emails from the facilitator suggesting that we should be making comments and getting involved". Since the community lacked mutual engagement, and a clear sense of direction, it necessarily relied more heavily on the facilitator and was characterised by a teacher led instructional model.

Conclusion

PL design needs to *focus on relationships*. Relationships built on mutual engagement sustain participation. Supportive relationships between members of the community (including the facilitator) can leverage individuals to continue participating. Consequently, PL design needs to include social activity that values and legitimates meaningful relationships. It is something more significant than merely adding a social discussion forum or buying lunch for the course participants. It requires a re-consideration of who has control over negotiating meaning in the course. Relationships of mutual engagement mean being involved in what matters. Thus a central aim of PL courses needs to make relationships a core enterprise. This is remarkably different from most PL which value content and skills, relegating relational activities as a last-minute add-on. PL within a CoP framework therefore inherently values tools, discourse, objects and activity that support members engaging with each other in profound ways.

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Exploring teachers' technology integration choices: Understanding knowledge and communities

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Reprint: Phillips, M. (2011). Exploring teachers' technology integration choices: Understanding knowledge and communities. ICT in Education, 34(1), 9-11.

Effectively integrating emerging technologies as part of teaching practice is an ongoing challenge. Research supports what many teachers and researchers have been suspecting for years: that technology integration is not happening, happening too slowly, or happening with little or no effect on students' learning (for example: Donald, 2002; Kuhn, 1977; Marks, 1990). Despite this, many of us have experienced successful technology integration or witnessed colleagues effectively introducing a new form of technology into their teaching practice. There is a general consensus of what good teaching with technology 'looks like': engaged students, authentic learning tasks, opportunities for collaboration, and co-construction of subject knowledge involving both the teacher and students. However, most professional learning/development approaches are clearly not making this a reality. In addition, the research literature reveals that there is little understanding of the ways in which teachers develop knowledge about pedagogical integration of technologies within their unique communities of practice, whether at the school, department, or classroom levels.

This problem has led me from a decade in the classroom to now studying full- time as a PhD student with the goal of revealing ways in which to more effectively identify, support and plan for teachers who are learning to integrate technologies into their classroom practice. At this stage of my work I am exploring a new, as yet untested approach that intertwines two existing theories; one that looks at the social and cultural aspects of teachers' work (Communities of Practice) and the other that examines the development of teachers' knowledge (Technological, Pedagogical and Content Knowledge or TPACK). This paper briefly outlines these theoretical frameworks and what I propose to do.

Many studies have examined factors influencing teachers' technology adoption (for example: Somekh, 2008; Straub, 2009) however the complexity of teachers' work has made it difficult to develop a robust and effective model of teacher professional learning. As experienced teachers will tell you, every time you teach a class you need to work with unique factors generated by the individual experiences of each student every day. The combination of your students' experiences together with many other variables such as your teaching style, the subject you are teaching and the technology available to you can be considered as a particular Community of Practice with complex interdependencies. Much research over the last three decades on the adoption of technologies in classrooms has been over-simplistic and has not encompassed the complexity of teachers' Communities of Practice. In response, Mishra and Koehler (2006) developed an alternate framework which allows for the unique cultural and social aspects of teachers work to be considered alongside the practical considerations of technology availability and subject matter.

Mishra and Koehler's (2006) TPACK framework has informed both theory and practice and is based on the premise that three core components are at the heart of good teaching with technology: Content Knowledge (CK) about the subject area you are teaching; Pedagogical Knowledge (PK) which can be simplistically described as knowledge about the processes and practices of teaching and learning; and Technological Knowledge (TK) or an understanding of the opportunities offered by different hardware and software.

While one could examine each of these individual forms of knowledge in an attempt to understand why teachers adopt or reject technology as part of their classroom practice, "it is the interactions, between and among these components, playing out differently across diverse contexts, that account for the wide variations seen in educational technology integration" (Cox & Graham, 2009, p. 3). CK might, for example, simply be the ability of a teacher to represent the topic they are teaching in different ways. The options available to a Science teacher presenting the flow of electrons in a Science class might include text book diagrams, student construction of clay models or the written presentation of facts on a whiteboard. These are all valid options for a teacher if they are considered independently of pedagogical considerations such as the age, ability and preferred learning style of students; however, if a teacher considers these pedagogical elements, Mishra and Koehler (2006) would classify this as Pedagogical Content Knowledge (PCK).

Similarly, if a teacher considered using computer-aided models (TK) to represent the flow of electrons to students without

considering the pedagogical implications of the technology, this would be considered Technological Content Knowledge (TCK). Mishra and Koehler (2006) argue that a deep understanding of all three forms of knowledge (TK, PK, CK) is required to teach well with technology. This combination of all three forms of knowledge is known as TPACK and is represented in Figure 1.

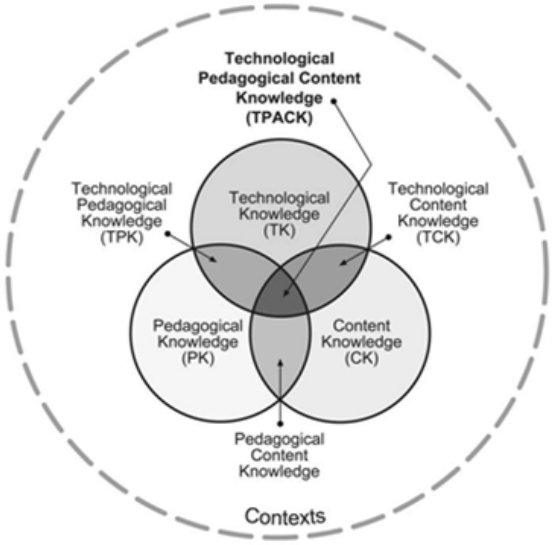

Figure 1: Technological, pedagogical and content knowledge (TPACK) from http://tpack.org/

The introduction of the TPACK model by Koehler and Mishra (2006) has had "a profound impact on the field of educational technology" (Cox & Graham, 2009, p. 60) yet it is not without its limitations or critics. Graham (2006) claims that "while hundreds of studies claim TPACK as a theoretical framing, very little theoretical development of the model has occurred" (p. 1953). Effectively, Mishra and Koehler (2006) have provided researchers and teachers with an understanding of what forms of knowledge teachers need to develop to effectively integrate technology into their classrooms or what good teaching with technology 'looks like', however significant questions remain unanswered. Of particular concern to teacher educators is how teachers acquire TPACK and specifically, by which path do they arrive at that knowledge? Cox and Graham (2009) have stated that, some seem to believe that teachers should first acquire TCK and then the TPACK will come as they enact their knowledge in a pedagogical context. Others feel that it is first necessary to have a knowledge of the general uses of technology in the classroom (TPK) before one can fully utilize subject-specific methods (p. 69).

In an attempt to better understand teachers' TPACK development and ultimately the factors affecting their pedagogical technology integration choices within their own school setting, my PhD study aims to incorporate elements of Wenger's (1998) Communities of Practice (CoP) with existing understandings of TPACK to contribute new understandings to this gap in current knowledge.

The CoP framework is based in the notion of situated learning which argues that learning is a matter of enculturation (Brown, Collins, & Duguid, 1989). It is my contention that teachers' TPACK development occurs, in a large part, when they are introduced into, and participate as, members of a variety of CoP that co-exist in every school. As practicing teachers, we are familiar with this process - 'newcomers' are introduced to the practices, beliefs and values by 'old timers' from a CoP. It is through this introduction and on-going participation that I believe many teachers develop CK, PK, and TK and ultimately their own understanding of TPACK.

My current research aims to focus on the shared repertoire or "routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions or concepts that the community has produced or adopted in the course of its existence, and which have become part of its practice" (Wenger, 1998, p. 83). Through an examination of these practices I hope to be able to map the development of various combinations of knowledge described by the TPACK model in different individuals within a CoP. This mapping process will provide a valuable initial step in understanding how membership of a CoP contributes to TPACK development and ultimately an understanding of the factors that affect teachers' pedagogical technology integration.

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