TEACHERS NEGOTIATION OF A JOINT ENTERPRISE OF INTEGRATING TECHNOLOGY IN A SCHOOL COP

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Teachers in Malaysian schools, as in Australian schools, are expected to meaningfully integrate technology in their teaching. Nevertheless, despite considerable funding for over a decade, integration of technology in the classroom continues to be limited. This qualitative case study has approached the problem using a socio-cultural framework, namely Communities of Practice, to understand how 10 teachers in a Smart School learn to integrate technology. This paper focuses on how teachers negotiate a joint enterprise in the context of the policy imperative of integrating technology. An analysis of data confirms that teachers’ responses to the national and institutional needs are negotiated within smaller groupings, such as leadership teams and subject departments. This finding is relevant to Malaysian schools as well as the international community. For instance, funding technology in schools, mandating technology integration (e.g. national curriculum, ICT policy), and providing staff professional learning, is necessarily mediated by the teachers’ communities of practice. Consequently, interventions such as Malaysia’s Smart Schools project and Australia’s Digital Education Revolution need to shift from structured professional development programs designed for the whole school or individual teacher to that of the communities of practice which are already in place.

Introduction: Technology in Malaysian Smart Schools

Teachers in Malaysian schools, as in Australian schools, are expected to meaningfully integrate technology in their teaching. In support of this, Malaysia introduced in 1999 a major educational reform called the Smart Schools Project in which select schools are funded by the government for the purpose of providing a technology-rich teaching and learning environment (Hamzah, Ismail, & Embi, 2009; Lubis, Ariffin, Muhamad, Ibrahim, & Wekke, 2008). It started with 87 pilot schools, and funded RM400 million by the Malaysian government. Out of this fund, RM300 million was allocated for technology infrastructure and another RM100 million was allocated for training the teachers and administrators (Abdullah, 2006; Multimedia Development Corporation, 2005). However, despite the implementation of this reform for more than a decade, with all the funding and systems in place, technology integration by teachers continues to be limited.

An evaluation of the Smart School pilot project by the Multimedia Development Corporation (2005) reported that although the project as a whole was considered to be a success, the teachers’ use of ICT in the classroom was minimal. This finding was supported by several independent studies conducted by Malaysian researchers involving Smart Schools which reported that technology integration practices among teachers were not encouraging (e.g., Wan Ali, Mohd. Nor, Hamzah, & Alwi, 2009; Ya'acob, Mohd Nor, & Azman, 2005). Wan Ali, et al.’s (2009) study on the conditions that facilitated and hampered the implementation of ICT integration in the Malaysian Smart Schools found that time constraints, inappropriate course content and technical malfunctions were major problems that teachers faced to successfully integrate technology in their teaching. Ineffective in-service teacher training was also identified as a contributing factor to the low adoption of technology in Malaysian Smart Schools (Abdullah, 2006; Multimedia Development Corporation, 2005; Thang, Hall, Murugaiah, & Azman, 2011).

Even though training of in-service teachers was one of the key components in the implementation of Malaysian Smart Schools, teachers still lacked the knowledge and skills to successfully integrate technology in their teaching. In response to this continuing concern, there is a need to understand how teachers could best learn to integrate technology in their teaching practices. In particular, it has been argued that looking at teachers as learners in a social and cultural context of the school environment could provide valuable insight on how teachers learn to improve their technology integration (Glazer, Hannafin, Polly, & Rich, 2009; MacDonald, 2008; Webb, Robertson, & Fluck, 2005). This study...
therefore, has adopted a socio-cultural framework, in particular Communities of Practice (CoPs), to investigate how and why teachers develop different technology integration practices. This paper particularly focuses on how the teachers respond to the national, institutional, and other pressures in the negotiation of their own and shared enterprise (e.g., values).

**The theoretical framework: Communities of Practice (CoPs)**

Wenger (2001) argues 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). 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). An example provided by Henderson (2004, 2006) explains that mutual engagement could be teachers who work together, have coffee together, attend meetings together, etc. He goes on to point out that through this engagement the teachers would negotiate a joint enterprise, such as coming to a tacit agreement about how to interpret and respond to departmental requirements and guidelines. Furthermore, the teachers would share their repertoire of ways in which to meet their needs. For instance, tools of the trade, such as computers, are viewed, discussed and used in certain ways which make most sense to teachers and only partially understood by those outside of the community. 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.

A critical aspect of the CoP theory is that since practice and identity are socially negotiated over time within their unique socio-cultural context, the practices cannot be externally defined, although they can be influenced. For example, 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. This is significant for the current research because according to a CoP framework, the provision of funding, a mandated policy and even staff training such as in the Malaysian Smart Schools project and similar initiatives such as the Australian Digital Education Revolution does not necessarily mean that the teachers will adopt the practices and values intended.

In this case study, it is proposed that the teachers’ joint enterprise may be shaped, but not necessarily defined by their values, perceptions and beliefs surrounding the national policy and institutional needs of integrating technology. For example, in negotiating this enterprise, teachers might mutually engage with peers through discussion and involvement in departmental activities that incorporate technology use. Through this process, teachers may share a repertoire of practices, that is, the tacit knowledge learned from each other on how they could successfully integrate technology in their teaching. As claimed by Wenger (1998), participation and engagement in a CoP is a socially constructed negotiation and it is a complex and dynamic process, with mutual engagement, joint enterprise and shared repertoire intertwined with each other. Therefore, although this paper focuses on teachers’ joint enterprise of integrating technology in terms of their responses to the policy imperative, and how these responses were reified in their participation and teaching practices, elements of mutual engagement and shared repertoire will also be part of the discussion.

**The research design: A qualitative case study**

This paper is part of a larger qualitative study exploring how teachers learn to integrate technology from a CoP perspective. A case study methodology was employed in which data collection included observations, semi structured interviews, and gathering teachers’ lesson plans, teaching materials, school policies and other technology related documents. The observations included teachers’ interactions in whole school staff activities such as meetings, teacher interactions in staffrooms and in
other locations such as the school’s cafeteria and library. Individual teachers were interviewed for approximately 45 minutes. A further 20 minutes interview was conducted with some of the teachers for further clarification.

This study involved ten teachers in one Smart School in the northern peninsular of Malaysia. Three of the teachers (the principal, the ICT coordinator and the ICT teacher) identified themselves as part of an ICT leadership group in which they were involved in the school’s administration and directly involved in the ICT planning and implementation. The other seven participants consisted of two teachers from the English panel (department) and five from the combined Science and Mathematics panel. Initially this study aimed to only involve teachers from these two departments; however, the data revealed that the teachers were also members of other groups such as the Living Skills department and a pre-service teacher community. While most of the teachers more closely identified with their curriculum CoP when asked about their understanding of technology integration, two of the Science teachers revealed that while they were influenced by their membership of the Science and Mathematics CoP, their joint enterprise (and consequently their repertoire) was in relation to a pre-service teacher CoP.

**Findings: Teachers’ joint enterprise of integrating technology**

It has already been noted that the Malaysian Smart Schools blueprint expects teachers to integrate technology in the curriculum (Smart School Project Team, 1997). However, despite the significant funding of systems and training the literature indicates that the implementation of technology in schools and in the classroom varies widely from the policy expectations. In an attempt to understand this difference, this paper explores the way in which teachers negotiated government, institution and other pressures in forming a joint enterprise. Consequently an analysis of the data has revealed that all of the teachers’ enterprise in this study appeared to be aligned with the Smart School project policy, that is, they agreed with key aspects of the policy such as it is important to integrate technology in teaching and learning. However, there were subtle differences in how they articulated this joint enterprise. Analysis revealed that teachers’ CoPs within the school were more strongly aligned in their enterprise than teachers across the school. In other words, although the ten participants of this study demonstrated that they were all members of a single school community, their joint enterprise were more strongly aligned to one of four smaller, and more cohesive, CoPs (i.e., ICT leadership group, English panel, Science and Mathematics panel, pre-service teachers). While this is a small qualitative case study and findings cannot be generalized, an implication is that if the CoPs within a school are more powerful in their influence on teachers’ practices in integrating technology then the funding, training and other initiatives should focus on those communities rather than the school as a whole. Some of the subtle differences arising from the first iteration of thematic coding will be explored below.

The three participants in the school ICT leadership CoP, like teachers in other CoP involved in this study, felt that technology should be integrated in the processes of teaching and learning. However, the ICT leader participants also revealed that the CoP had a number of joint enterprises. For example, the principal (Kamarul) and the ICT coordinator (Zakuan) also felt that ICT should be used by teachers and other staff (i.e., clerks) for administrative tasks. While the belief that ICT should be used for teaching and learning as well as for administrative functions was a direct response to the Smart School’s policy, this was in response to their need to account for teachers’ work, combined with a shared understanding that ICT is needed to facilitate teachers and other staff to easily complete their administrative tasks. In this case, the ICT leadership group adopted the Smart School policy and combined it with its own administrative needs. An obvious finding of this study is that the implementation of a policy is mediated by the varied and unique needs of the community of practice.

The values of the CoP also influence the joint enterprise. This can be seen in the following quote in which the principal describes a meeting of core and peripheral members of the ICT leadership group;
Just before you came, I had a meeting with the ICT coordinator and head of panels discussing about computer rooms. We planned to fully equip the rooms with necessary technologies so that our teachers can use the rooms to access materials. We also proposed that each panel come up with their own website so that we could upload teaching materials to the website. For example, there was a school that came up with Mathematics materials for weak students, to help them, so that they can at least pass the subject. We can use those materials, and we can come up with our own materials and put it on the websites where teachers from other schools could access it. We want to do this through the panels. (Kamarul, Principal, translated)

In this example, the principal indicates that the leadership group valued technology to ‘access materials’ and that it was desirable for teachers to create, upload and share their own materials. The focus on materials may reveal a blinkered understanding of the role of ICTs in teaching and learning.

While the school ICT leaders (Kamarul and Zakuan) had a joint understanding of the importance of ICT integration and had a shared goal of how it should be accomplished within the school, this did not mean that the same enterprise was shared by the other teachers. Indeed, Rasyidah, an ICT teacher who was involved in ICT planning at the school level and who had responsibility for training teachers in the use of ICT, admitted that teachers’ technology integration was not successful in all subject areas. However, it needs to be pointed out that Rasyidah was evaluating the teachers’ use of technology against the joint enterprise of the ICT leadership group.

Through observation, document archives and interviews it was found that the other CoPs integrated ICTs according to their own joint enterprise which was a product of their own unique needs and values. The English teachers (Azlina and Raihan) revealed a joint enterprise similar to the ICT leadership group that ICT is important in facilitating teaching and learning. Similarly, they perceived ICT as helpful because they could prepare materials in advance of the lesson and those materials could be updated from time to time. However, Azlina and Raihan also believed that the use of technology in the classroom could stimulate students’ thinking and make learning more interactive and enjoyable. This enterprise was also mediated by competing needs resulting in a joint understanding of what needs to be done and a repertoire of strategies to achieve it. For example, Raihan said:

We do discuss from time to time. We discuss on what we want to teach, how we are going to teach, we do share materials, but most of the time we have to be on our own. We are so busy with other stuff so we don’t have much time to sit together. (Raihan, English teacher)

Similarly, Azlina responded;

Mostly because of time constraints, today for example, when I free at this hour, other English teacher will have class, in the evening the other teachers will be having other co-curricular activities, and I’ll be having mine. So, it’s quite impossible for us to sit together. So basically they do their part, I’ll do mine, then we exchange, or we combine the work. (Azlina, English teacher)

In these instances, Raihan and Azlina valued being together as a means of mutually engaging with each other in their technology integration practice. However, they perceived time as a constraint limiting their engagement with each other as well as other teachers. Regardless of this constraint, Raihan and Azlina pointed out that they planned, discussed, shared materials and exchanged information with each other. In doing so Raihan and Azlina had negotiated the conflict between the competing values of being together and limited time by developing a shared repertoire of strategies such as coming together to plan for the integration of technology, then preparing the materials individually and finally coming back together to discuss or share the resources. For example Azlina stated: “I did a module for Form 3 students and I shared it with my other friends who were also teaching Form 3. So did they. We did it on our own and we exchanged it.” This and other repertoires shared by the English teachers were negotiated to meet a joint enterprise influenced by rival pressures: the need to respond to government and school priorities in technology integration; the teachers’ own desire to use technology for stimulating student thinking; the value placed on working together; and the need to maximize time.
The student teachers in Science and Living Skills (Liana and Farzana), also revealed a joint enterprise that ICT is important in facilitating teaching. In achieving this enterprise, Liana and Farzana as peripheral participants of the Science and Mathematics CoP took the opportunity to seek advice from other community members. Liana said: “Sometimes, we meet with other Chemistry and Biology teachers; they suggested us to use courseware for student’s exercises”. Liana used the words “we” and “us” referred to herself and Farzana. Farzana did the same when she was interviewed. Farzana said: “If we have problems or anything, we will discuss together. We will ask from other teachers, especially our teacher advisors”. Interestingly, Liana revealed that their enterprise of integrating technology was also shaped through interaction and discussion with other student-teachers beyond the school community. Liana said;

I stay at a teachers college hostel, together with Farzana and other student teachers. So, every day we talk to each other about our practical training. Mainly we talk about experiences and problems at school. We discuss about [data projector] facilities because everybody wants to use Power Point. We were encouraged to use Power Point by our lecturers and the school. For me it’s easy to use Power Point, and students also get advantage. So, problems related to [data projector] and teaching and learning were things that we always discuss. In this school, the [data projector] facilities are good, but some other schools have very limited facilities. (Liana, student-teacher, translated)

As student teachers, Liana and Farzana participation and engagement in the CoPs were not limited within the school community itself. They also participated in an external student teachers CoP which suggests that membership in a shared practice, beyond the school environment, is important in shaping their technology integration practices.

The Science and Mathematics teachers’ joint enterprise also revealed that they valued the importance of ICT in facilitating teaching and learning. However, the CoP joint enterprise was shaped through not only involvement in Smart School training programs but also through participation in the English for Teaching Mathematics and Science (EtEMS) program started in 2003. With the implementation of EtEMS program, all Science laboratories were equipped with a data projector and computer, and most teachers in Science and Mathematics panel were provided with a laptop and courseware. Using courseware supplemented by the ministry was one of the teaching strategies adopted by Science and Mathematics teachers in their technology integration practices. In adopting this strategy, teachers need to negotiate certain issues such as suitability of the materials and the technology. This could be seen in the following example.

I only choose a few topics that suit my lesson plan. I’m not using the courseware all the time. Some of the topics are too long, and our lesson is only 40 minutes, so we have no time to use all materials from the courseware. (Hanita, Science & Mathematics teacher, translated)

Similarly, Iskandar noted;

Sometimes, I used the CD or software given by the ministry. I integrated a bit of audio, video, and sometimes I used past years programs or modules. But I’m not depending solely on the ICT media. Normally, even though I use ICT, I still use the whiteboard. Because for Chemistry subject especially for the form 6, it’s not only about the knowledge, erm... the content knowledge, it’s involving lots of calculation, so I have to integrate the use of ICT with the whiteboard. (Iskandar, Science teacher)

For the Science and Mathematics teachers, this provision of technology and special training from the EtEMS program has shifted their enterprise from ‘integrating ICT’ to ‘integrating ICT in appropriate ways’, that is making choices about the most appropriate technology for the lesson, whether to use ICT or something else.

**Conclusion**

This paper has briefly described how teachers in a Smart School CoP negotiate their joint enterprise of integrating technology. In general, teachers in this study were positive about the importance of
integrating technology in teaching and learning. Their enterprise however was shaped within their localised CoPs, such as the ICT leaders, English teachers, Science and Mathematics teachers and student-teachers groups. The ICT leaders’ joint understanding of ICT integration was framed within their understanding of the role of technology in providing access to materials. For the English teachers, their enterprise was negotiated within the competing values such as time constraints and the pressure to meet the institutional demands of integrating technology. In contrast, the joint enterprise of student teachers was negotiated within their community of pre-service teachers which extended outside of the school. The Science and Mathematics teachers’ enterprise was shown to have been influenced by a curriculum specific funding arrangement in which the teachers were provided with additional training and technology facilities (i.e., laptop and courseware), specifically designed for their unique curriculum outlook. This study has confirmed that CoP perspective (Wenger, 1998) is valuable in understanding teachers enterprise of their technology integration practices. As a consequence, we argue that reforms that seek to change teachers’ technology practices such as the Malaysian Smart Schools project and the Digital Education Revolution, should focus on the unique needs, values and beliefs of teachers’ CoPs.

References


