Teacher professional learning and professional teaching standards: Exploring the character of their connection

Nick Hutchinson, Macquarie University, nick.hutchinson@mq.edu.au
Jeana Kriewaldt, The University of Melbourne, jeana@unimelb.edu.au

Introduction

Standards influence all levels of teacher’s work as they are used to guide initial teacher education, for initial teacher registration and for advanced accreditation. Teaching standards are often claimed to have a key role in professional learning. Given the proliferation of teaching standards it is appropriate to examine the character of the connections between standards and learning. We contend that in conjunction with powerful learning processes, teaching standards can provide an organising framework for professional learning in which teachers improve their practice over time.

Contextually sensitive and area specific professional teaching standards can provide an organising framework for professional learning when used with powerful learning processes (Mayer, 2009). Standards may be useful in guiding professional learning (Ingvarson & Semple, 2006). In the certification system used by the US National Board for Professional Teaching Standards, through the process of meeting the standards there was evidence of professional learning by teachers which positively impacted on student outcomes (Bond, Smith, Baker & Hattie 2000). In accord with Timperley, Wilson, Barrar and Fung, (2007) processes of teacher professional learning which involved talking about teaching in conjunction with artefacts that represent student learning are one key to professional learning that works.

There are a multitude of ways that teachers formally and informally engage in professional learning including attending conferences, mentoring, case discussions, peer observation and coaching. Although there is no simple recipe for effective professional learning, four key elements of teacher professional learning that together have better rates of success work are:

1. Sustained collaborative activities and collegial exchange. These include collaborative structures such as study groups, learning circles, action research teams, communities of practice, lesson studies, partnerships, learning communities and learning networks – and each of these terms may be prefaced by the term professional – are common.

2. Ongoing teacher self study and teacher-based inquiry. Teachers systematically study their own teaching and their students’ learning commonly using processes of practitioner or action research.
3. **Close and sustained connection to other teachers’ work.** Teachers’ practice is deprivatised (Bell & Nugent, 2006) as teachers attend to each other’s work either in absolute terms with class visits, via watching film or through detailed reporting.

4. **Through examination of artefacts of student learning.** Artefacts include student work samples, test results and classroom film. By examining evidence of student learning, teachers enhanced their capacity to respond to students’ learning needs. Film in particular gave opportunities to deeply interrogate practice with strong consideration of context (Kriewaldt, 2009; Timperley, Wilson, Barrar and Fung, 2007).

For each element, the individual teacher has agency and practice is emphasised.

**Background to the study**

This paper reports on aspects of an Australian study which developed standards for teaching geography using processes that were unique in two respects. Firstly, the actual classroom practices of geography teachers were documented in order to investigate the nature of accomplished geography teaching. Secondly, student perspectives about what makes for effective geography teaching were also incorporated.

The authors have recently completed an Australian research project entitled *Strengthening standards of teaching through linking standards and teacher learning: The development of professional standards for teaching school geography*. Conducted between 2007 and 2010, it was funded by the Australian Research Council in conjunction with the Australian Geography Teachers’ Association, the Geography Teachers’ Association of Victoria and the Victorian Institute of Teaching.

In the first phase of this project lessons of highly regarded geography teachers were filmed, the researchers made field notes; teachers were interviewed before and after each lesson. As well, selected students were also interviewed after each lesson. Eleven geography classes were filmed over the course of two lessons. Filming was undertaken in four government schools (including a primary school) and four non-government schools across three Australian states: New South Wales, Victoria and South Australia. Field notes of lesson events were written of all the lessons filmed.

The eight schools represented the Public, Catholic and Independent sectors from both metropolitan and non-metropolitan areas. The authors observed twenty-two geography lessons conducted by accomplished teachers, who were selected through purposive sampling. Thus, members of the
Australian Geography Teachers’ Association with its affiliates were invited to nominate teachers widely regarded professionally, using various criteria, including reputation for accomplishment within the field of geographic education. Their teaching practice was filmed using a three-camera system developed from earlier research (Clarke, 2006). One camera focused on the teacher, a second on individual students who were part of a working group, and a third on the whole class as seen from the front of the room. Used as a catalyst for discussion and reflection, the film record of the whole class, with the teacher’s image inserted in one corner of the display screen, teachers were invited to make reconstructive accounts of the lesson events deemed critical to student learning. Similarly, students were invited to reflect on lesson events, this time individual student camera images were inserted as a ‘picture-in-picture’ in one corner of the display screen. Interviews were subsequently conducted with fifty-seven students and their teachers; the classroom recordings were used to help ‘capture’ the specificities of practice and stimulate the participants’ recall of key events.

In the second phase of the research project seventy teachers from Victoria, South Australia, Queensland Western Australia and New South Wales viewed film clips of the classroom episodes using the ‘GEOGStandards’ panel consultation website. They responded to a series of questions in an online ‘viewing diary’, before attending two panel meetings where they identified significant elements of accomplished teaching practice from the film clips and from their own classroom experiences. Thirty-seven of these participant teachers were also interviewed to further substantiate their views of accomplished teaching practice. This paper analyses some of the data sets to investigate the the character of the connection between teacher professional learning and professional teaching standards.

In the final phase of the project, the professional standards for accomplished teaching of school geography were published and printed copies distributed in August 2011. At the same time, the ‘geostandards’ website went ‘live’ and is freely available at www.geogstandards.edu.au.

Research method

Using grounded theory (Corbin, Strauss, & Strauss, 2008) we took a qualitative research approach to analyse multiple sources of information. Film excerpts were coded, interviews transcribed and several readings were made to identify and cluster patterns of responses in the data. We identified key ideas that emerged from the transcripts using open coding. Each idea was categorised to refine and condense the extensive responses (Charmaz, 2006). While our knowledge of other standards frameworks and of professional learning literature shaped our work we constantly endeavoured to keep an open mind asking what are the patterns in these data sets?
Findings and interpretation

The research questions addressed in this paper are: (1) to what extent are contributions from learning theorists, recent advances in neuroscience and empirical research from meta analysis studies of the more effective classroom practices reflected in professional learning and professional teaching standards; to what extent are these reflections manifest in filmed teacher performance?; and (2) how has teacher involvement with the professional teaching standards project shaped their professional learning?

1. **To what extent are contributions from learning theorists, recent advances in neuroscience and empirical research from meta analysis studies of the more effective classroom practices reflected in professional learning and professional teaching standards; to what extent are these reflections manifest in filmed teacher performance?**

Classroom film is widely regarded as a powerful resource for teacher learning because it can go some way to capture the complexities of interactions (Brophy, 2004). It is with this in mind that the The Professional Standards for Teaching School Geography [http://www.geogstandards.edu.au/index.php/standards](http://www.geogstandards.edu.au/index.php/standards) were developed. They are grounded in cultivating geographical imagination and understanding. A series of film clips and explanatory materials are hyperlinked to the professional standards and are designed to be used for professional learning. They portray enacted, embodied and performative standards. The accomplished teachers featured in each sample study exemplify achievement rather than best practice, the pursuit of excellence rather than an illusion of perfection. Their performances, critically appraised by teaching colleagues, have proved to be invaluable insights into the profession for pre-service students and set benchmarks for the profession. A critical eye demonstrates that these teachers may have consciously or unconsciously ascribed to contributions from learning theorists, recent advances in neuroscience and empirical research from meta-analysis studies of the more effective classroom practices.

---


2 Groundwater-Smith (2011) discussed the notion of the ‘good enough’ approach as a way of achieving excellence as opposed to driving toward an illusion of perfection. It has its origin in the phrase ‘the good enough mother’ (Winnicott (1967), a position that is preferable to seeking to be the perfect mother. The good enough (accomplished) teacher should not be seen as ‘merely good’ implying some kind of mediocrity but rather as ‘good enough’, an example of embodied practice in a complex amalgam of social and material conditions that takes place at a particular time and in particular contexts.
The accomplished teacher featured in Sample 5, Cyclone Nargis, film sample 3.1, remarked on the engagement of her students, sitting forward on the edge of their seats. These Year 8 students from a medium sized non-government coeducational school in non-metropolitan Victoria were uninhibited in their responses to the teacher’s rapid fire questioning. Dweck (2006) believes that students can be placed on a continuum according to their implicit views of where their cognitive ability comes from. Fixed-mindset students, who believe that their intelligence quotient is immovable consequently dread failure because negative comments on their achievements cause them to retreat within their shell; while growth mindset individuals do not mind failure as much because they realise that their performance can be improved. The teacher was successfully endeavouring to foster a growth mindset in her class.

She also demonstrated other attributes of accomplished teaching. Although it remains a mystery in determining what works and what does not in the classroom (Atherton, 2010, Hattie, 2009), innovation and passion invariably pay off the classroom (Hattie, 2003). A teaching colleague from NSW wrote in his viewing diary that this accomplished teacher was a, ‘dynamic, engaging teacher who is flexible and willing to seize upon contemporary issues to encourage a love of learning.’

The accomplished teacher featured in Samples 1 and 2, Regional centre of Geelong and Concept formation: Relative location, working with a Year 9 class in a large non-government boys’ school in metropolitan Melbourne, was concerned with deep rather than surface learning (Entwistle, 1993). A Victorian colleague studied the recorded lessons and recorded a comment in her viewing diary about the ‘Use of students’ prior knowledge, supplementary questioning to encourage deeper thinking. Catering for different learners - use of verbal, written and visual cues [and the] involvement of most members of the class in the initial discussion contributes to engagement.’ The accomplished teacher demonstrated the types of productive pedagogies that emphasise: significance, pedagogy that helps make learning meaningful and important to students by drawing clear connections with students’ prior knowledge; intellectual quality, focusing on producing deep understanding of important, substantive concepts, skills and ideas; and, on a quality learning environment, referring to the creation of a classrooms environment clearly focused on learning, setting high expectations and developing positive relationships between the teacher and her students and among students (NSW Department of Education and Training, 2003).

Samples 6a, Population growth: Brainstorming and 6b, Predicting the optimum population of Australia, sees an accomplished practitioner teaching in a medium sized non-government girls’ school in metropolitan Adelaide. Both the teacher and Year 12 students demonstrate considerable
abilities in integrating ideas, explaining relationships, and applying understanding. As one of the students remarked:

[it] put us in a spot to have to think and really analyse and evaluate what we’ve learnt and the things we’ve come across in order to come up with a sort of semi conclusion ourselves. So I think that was perhaps one of the key events that took place in the class. And getting us to do that enabled us to see like, just the diversity in our own class, with what we thought the Australian … population would be. It sort of ranged from fifteen million, which is less than what we’ve got, to fifty million, which is quite a bit more, so I think that was really a key event, not just in terms of the lesson, but in the topic overall.

Biggs and Collis (1982) maintain that the depth of understanding demonstrated by an individual can be determined by the structural complexity of their responses. The students were clearly working beyond the first three stages of the taxonomy: pre-structural, uni-structural and multi-structural thinking. Much of the time they demonstrated relational understanding, indicating sound conceptual knowledge. They had moved beyond ‘knowledge telling’ towards integrating conceptual components by explaining the relationships between two or more concepts and applying knowledge in familiar contexts, integrate ideas, analyse causal factors and explain links (Lane, forthcoming). The accomplished teacher attempted to shift their reasoning to the extended abstract stage while commenting on the rapid fire responses from the students during the brainstorming session.

The same accomplished teacher featured in Sample 7, Topographic mapping skills. He was revising the cartographic concept scale with a Year 12 class. The students were asked to explain the strategies they used to determine the scale of two different map extracts. One of the students commented,

…there were two ways, well there’s more than two ways of doing it, but two girls decided to do it two different ways, and by the teacher asking, I sort of learnt a way, I did it one way but I didn’t know the other way. Alice did it. So I think by asking those questions, you give people more options of how to approach things.

Flavell, one of Piaget’s students, first used the term metacognition in a 1979 paper. Thinking about thinking, where students develop a language for discussing their thoughts and strategies have had an enormous impact on geographical education (Leat, 2001). Cox’s (1988) applied metacognitive ideas to one of geography’s essential skills: reading maps to enable students to develop inner speech facilities to argue and debate internally about ways in which topographic features may be interpreted.
The accomplished teacher featured in Sample 8, Computer-based group work: Countries study, was working with a Year 10 Class at a large non-government girls’ school in metropolitan Sydney. One of his students was clearly emotionally involved in the learning task. She remarked, ‘... it made me more aware of Third World countries and what’s happening, and how we’re lucky and should help them really’. Kolb’s (1985) cyclical learning strategy contains two dimensions. One, the processing dimension asks how we approach a task, the other, perceiving dimension involves our emotional response or how we feel about it (Burton, 2009). Kolb suggests that learners need to immerse themselves in new experiences at the initial learning stage, to reflect upon these experiences to enable the learner to create concepts and subsequently make decisions and solve problems – another pathway towards deep learning. An emotional response dimension was also evident in a number of the Samples (1, Regional centre of Geelong, 4, Coastal fieldtrip and 10, After the simulation: Group discussion).

The accomplished teacher featured in Sample 11, GIS: Predicting volcano and earthquakes using ArcMap, working with a Year 9 class at a large government co-educational school in metropolitan Melbourne edged his students towards deeper understanding through persistent and judicious use of questions as the students were engaged in individually focused investigations using spatial technologies. For Vygotsky, psychological activity is imbued with socio-cultural characteristics (Burton, 2009). An appropriate metaphor here is the ‘student as apprentice’ (Flavell, 2002) where the student learns how to carry out activities and eventually learns the more hidden inner processes of thought. Roberts (2003) illustrates such skills-based activity in an exercise in geographical numeracy titled ‘intelligent guesswork’. Students work in pairs and the teacher leads a discussion asking: I wonder if that can be right? What do others think? How sure are you about that? Do you want to know the ‘answers’? Why do you think this was? What figures were surprising? Clearly, in this instance, knowledge is not transmitted directly from one knower to another, but is actively built up by the learner (Wiegand, 1996) with the assistance of a more knowledgeable and skilled person.

The GIS lesson was carefully scaffolded using material from Malone et al (2005, pp. 53-71). The term scaffolding comes from the works of Wood, Bruner and Ross (1976). The term was developed as a metaphor to describe the type of assistance offered by a teacher or peer to support learning. Another metaphor envisages scaffolding as bridge building between what students already know to arrive at something they do not know. Lane (2001) uses scaffolding more literally and the accomplished teacher featured in Sample 11 provides the students with detailed step by step
instructions, screen captures and questions that help students acquire broad-based problem-solving skills as well as timely individualised assistance.

There are also echoes of Bruner’s (1977) work here. He argued that by teaching, preferably using discovery-type methods, the core concepts of a subject, the learner will be able to cope with the problem of transfer much more efficiently and effectively. It is the implicit aim of education that what students learn in one context they will be able to transfer and use in another (Leat, 2001). The same accomplished teacher in Sample 4, Coastal Fieldtrip, Teacher post-lesson interview segment 4, describes the fieldwork experience as being directed, long lasting and effective. A feature of many of the samples is inquiry learning, a pedagogy that predates Socrates and his method of leading students to self-knowledge through aggressive questioning, a pedagogy encouraged by Dewey who advocated child-centred learning based on real-world experiences.

Sample 4, Coastal fieldtrip illustrates the efficacy of such learning experiences in the context of recent developments in neuroscience. Potent metaphors are common in descriptions of neuroscience. They act as an antidote to the abstruse, recondite language of the neuroscientist. A Chicago Tribune, Pulitzer Prize-winning journalist explains:

> The brain gobbles up its external environment in bites and chunks through its sensory system: vision, hearing, smell, touch, and taste. Then the digested world is reassembled in the form of trillions of connections between brain cells that are constantly growing or dying, or becoming stronger or weaker, depending upon the richness of the banquet (Kotulak, 1996, p. 4).

Nagel (2005) explains that many neuroscientists believe that aspects of memory are enhanced when brain cells fire together where (neural transmissions) are used over and over again. They “get accustomed to firing together and eventually become hardwired” (Nagel). The durability or fragility of memory is affected by the choice of learning experiences. For example, when we compare of people's memories for words with their memories for pictures of the same objects there is marked superior effect in terms of pictures (Bransford et al. 1999); therein lies the importance of fieldwork.

Nagel believes that skills that are premised on relevance and a capacity for students to form personal and emotional connections can ultimately increase opportunities for enriched neural activity, and long-term memory. Moreover, they work to eliminate an adolescent perception of being boxed in the classroom: a predilection towards boredom and apathy. Nagel is optimistic that if teachers come to terms with contemporary neurological research, they will be well placed to re-invigorate and re-engage the young minds they work with.
Sample 10 After the simulation: Group discussion, shows an accomplished teacher working with senior students at a large government co-educational school in metropolitan Melbourne. The students, who are working in teams, are responding to a simulation in which a hurricane approaches Montserrat at the same time as volcanic activity occurs on the island. Heralded by a siren, new data are shown on PowerPoint slides every three minutes. Students analyse the data and decide if they should evacuate the population and if so, where it would be safe to move them. The teacher has told the students that they should not ask him for answers as they are the disaster response team who must make decisions.

The film samples and other material contain further evidence of deep learning and exhibit many of the attributes referred to thus far. Such innovative lessons can be evaluated by reference to Hattie’s (1999, 2009) work that has synthesised data from some 800+ meta-analysis studies, involving many millions of students, and concerning many different innovative areas in education. He attempts to quantify the magnitude of these innovations by using effect sizes: an effect size of 1.0 is typically associated with advancing student achievement by one year, or a two grade leap in the UK General Certificate of Secondary Education from a C to an A grade (Petty, 2004). Whereas computer-assisted instruction and instructional media had an effect size of 0.31 and 0.30 respectively, feedback had an effect size of 1.13 (Hattie, 1999). Feedback was much in evidence during the lesson extracted in Sample 10. Feedback includes clarifying goals and setting tasks against explicit and shared assessment criteria. Students also obtain feedback on the processes they have used to complete the task, and on their ability to self-regulate their own learning (Petty, 2004).

It is difficult to argue that the analysis thus far demonstrates that ‘knowledge-for-practice’ is foremost in the accomplished teachers’ cognisance of performance. The observations here are reflective, a view from outside the black box. Nevertheless some aspects of ‘knowledge-for-practice’ were alluded to by the teachers viewing the film clips and to some extent they were also evident in the ‘student voices’. A similar position must also be made for ‘knowledge-of-practice’ but what is self-evident in the film clips is ‘knowledge-in-practice’. The film clips of pre and post lesson interviews with the researchers clearly demonstrated teachers’ reflections on practice. As to the question whether the contributions from learning theorists, recent advances in neuroscience and empirical research from meta-analysis studies of the more effective classroom practices are reflected in professional teaching standards we can only conclude that they are not explicitly shown but may be seen to be immanent.
2. **How has teacher involvement with the professional teaching standards project shaped their professional learning?**

There is strong evidence that the standards project shaped participants’ professional learning. Teachers reported mimicking, and adapting practices they viewed in the clips. After teachers watched film clips of geography classrooms, a common comment from participants was that they had incorporated ideas from the clips into their practice. In some cases this was without modification, yet in other accounts the participant reported tailoring the idea to suit their context and preferences. For example, in Sample 3 Field sketching, a teacher demonstrated how to draw a line sketch to his class by projecting a coastal image on to a white board, outlining the features then turning off the projector to reveal his sketch. Participants often said I hadn’t thought of that but it is a great idea and I will do it. Alain comments:

> I think [the teacher’s] sketch work on the board beforehand, putting the slide up, and doing foreground, background and then the main points, and then taking the picture away and leaving that sketch outline behind was really effective...[and it prompted me to] do that more (Alain, September 2009).

Other participants reported that this same clip triggered reflection and discussion about the role and place of direct instruction in their own teaching practice. So, more broadly, viewing the clips and the associated panel work enhanced reflection: ‘it made you examine your own teaching and consider what you could use, ways you could improve, or whatever. Or [it] reinforced what you were doing’ (Clyde, August 2009). The project experiences lead to enhanced individual reflection.

As well, some participants undertook shared reflection outside the panel meetings. Two teachers from the same school who participated in the project, Crystal and Mandy, took up the invitation to share elements of their practice, and worked together to collaboratively revise and teach a Year 8 unit on fresh water, collecting detailed evidence of their practice in the form of unit documentation, worksheets, posters, activity cards and student work samples. They presented this to their panel and through this, these teachers reported becoming more reflective as a result of participating in the project. At the end of the project, Crystal asserted: ‘we’ve probably been more reflective about what we’re doing because we were presenting it [to the group]’ (Crystal, October, 2009). These teachers subsequently presented at an annual geography conference and published their unit in an Australian geography teachers’ journal. They were buoyed by positive feedback and consequently more confident in the quality of their work. In this example, panel meetings became a space for sharing artefacts of teaching and learning. Putnam and Borko (2000) contend that sharing artefacts...
such as teaching programs, classroom film and student work samples should be a central part of professional learning.

This standards project was instrumental in bringing geography teachers together in groups for whole and half days to talk about teaching. In interviews, many of the teachers remarked that it was rare to have the opportunity to ‘watch’ or ‘see’ others teach (via film); as well they noted that it was challenging to find time for sustained professional discussions directly about teaching in the busy world of schools. They also observed that much of their other professional learning opportunities did not directly consider classroom practice. Rather they attended conferences where topic-based workshops were the norm and they did not meet with the same people in each session.

Each panel is potentially a professional learning community, which has been afforded dedicated time and structured processes to work together to develop standards and in so doing articulate what constitutes accomplished geography teaching. This participant described the process as ‘a spring board for discussion’ (Noah, August 2009) and similarly Mick blends processes of personal reflection and dialogue noting that the exchange of ideas in the panel meetings was particularly valuable.

I think viewing the video clip and Phil’s lesson, that provided a lot of opportunities for me to think about what I do in the classroom, and the discussion that occurred after[ward] even more so, in terms of my reflecting on learning… Because I would say that is a critical element of teaching; if one doesn’t reflect, one doesn’t learn (Mick, August 2009).

In this quotation teacher learning is viewed as arising from individual and shared reflection.

This comment was typical: I found ‘the time to reflect with others… particularly valuable’ (Rob, December 2009). The program was designed to encourage substantive conversations and participants rued the end of the project expressing desire to continue the conversations. Others have described such conversations as enhanced reflective dialogue (Brantlinger, Sherin, & Linsenmeier, 2011). Teachers’ willingness and capacity to articulate the reasons by which they judge practice was a significant strength of the dialogue. This project went some way towards building a community of practice (Lave, 1991; Lave & Wenger, 1991).

Conclusion

In the first section of this paper we concluded that the film clips show knowledge-in-practice, and although the contributions from learning theorists, recent advances in neuroscience and empirical research from meta-analysis studies of the more effective classroom practices are at best inherent
or immanent, the clips provide a platform for learning, especially as they are coupled with pre and post lesson interviews that demonstrate teachers’ reflections on practice. In the second section we propose that standards can assist in structuring dialogue, and create a shared language of practice. In this professional teaching standards project, teachers’ learning was shaped by viewing classroom clips and other artefacts. They took up ideas by mimicking and adapting what they saw in the clips, by enhancing teacher reflection individually and most powerfully in dialogue within a professional learning community centrally valuing this as a space for sharing artefacts of teaching and learning.

Bibliography


Lane, R. (forthcoming). Exploring the content knowledge of experienced Geography Teachers, *Geographical Education*


Acknowledgements
This paper arises as part of the *Strengthening standards of teaching through linking standards and teacher learning: The development of professional standards for teaching school geography* project, funded by the Australian Research Council in conjunction with the Australian Geography Teachers’ Association, the Geography Teachers’ Association of Victoria and the Victorian Institute of Teaching. The research team consists of Dianne Mulcahy, Jeana Kriewaldt, David Clarke and Sarah North of the Melbourne Graduate School of Education, University of Melbourne; Nick Hutchinson of the Australian Geography Teachers’ Association; Anne Dempster of the Geography Teachers’ Association of Victoria; and Fran Cosgrove of the Victorian Institute of Teaching. Roger Smith also made important contributions to this research.