

THF Working Paper

Working Papers Series No.15/2015

CAPACITY BUILDING IN A PRACTICE- FOCUSSED PROFESSION

Reflections on Preliminary Findings in the
Context of Asian Knowledge Building

Dr Peter G Taylor

*Adjunct Professor, Griffith University
Special Advisor, Teacher Learning,
Brisbane Grammar School
peter.g.taylor@live.com.au*



The
HEAD
Foundation

Introduction

To educate is to intervene. Therefore building teaching necessarily involves interventions. Yet the nature and timing of such interventions continues to be a matter of debate. In this paper I seek, as a mentor to teachers and an advocate of the professionalising of teachers, to challenge contemporary approaches to building teaching capacity by bringing the findings of neuroscientific research, and video informed reflection to such interventions. In particular it challenges common approaches to professional development that use information as the currency of capacity building. Those rely on telling teachers what they ought to do, or providing resources that they ought to use in particular and new ways. Such approaches have had very little positive impact on the practice of teaching to date. So rather than dig deeper into that dry well, this discussion moves to outline an alternative approach, one that appears to have more to offer a practice-focussed profession.

The literature on teaching improvement has been greatly enriched by the work of John Hattie and Helen Timperley. Hattie's (2009) work, involving a synthesis of the meta-analyses of the impact on student achievement of various interventions, has given us a clear indication of priorities for future capacity building. It has helped teachers understand that their participation in professional development (PD) ought to impact their students' achievement in positive and demonstrative ways, and moreover, that the selection of foci for PD can and should be informed by quite precise indicators of likely payoff for student learning.

Timperley's work complements that of Hattie by synthesising research on the impact of leadership on student achievement, and by foregrounding inquiry as an approach to PD in the interest of 'transforming learning in schools' (Timperley et al, 2014). In an earlier paper Timperley (2011) provided a rationale for the inquiry-based approach to PD. She is advocating forms of professional development focused on developing *adaptive expertise* in teachers, and by implication, schools as adaptive organisations. Adaptive expertise, a notion discussed in some depth by John Balfanz (2007), involves deep knowledge about what to teach and how to teach it, with a particular awareness of the assumptions that underpin practice. Adaptive experts know that expert practice is based on routines, and they "are constantly vigilant about the impact of [their] teaching and learning routines on students' engagement, learning and wellbeing" (Timperley 2011, p.6). Adaptive experts expect to improve their practices so as to more effectively promote the learning of their students. They see engagement in inquiry and learning "as core to their professionalism".

She contrasts *adaptive expertise* with *routine expertise*. The latter involves expertise in the application of a core set of skills and related routines, with great fluency and efficiency. In turn, *routine expertise* generates responses to problems based on intuitive and holistic 'reasoning'. This understanding explains in part why teachers who adopt a routine expert perspective "may be surprised, or at worst feel insulted, by requirements to engage in ongoing professional development ... [when] in their minds, their very experience means they are already expert" (p.7).

As with most PD models, Timperley et al's (2014) spiral of inquiry assumes an adaptive expertise mindset, and tends to assume information as the currency for capacity building. Here the teachers expect ongoing learning in order to respond to situations where existing routines or skills are not adequate in supporting achievement of the desired learning outcomes. Where routine experts might focus on the students, or the curriculum, or some other context-related factors, adaptive experts are intended to embrace their own practice as a focus for improvement through their "capability to identify when [their] routines are not working as well as they might and to seek [to develop] different approaches when needed" (Timperley 2011, p.6). Teachers are invited to turn to the research literature as a key resource for designing those new routines.

Classroom research, as systematically analysed by Hattie (2009), has ensured that the impact of the quality of teaching on students is now well documented. In broad terms, this work suggests that approximately 30% of the variation in student achievement can be attributed to the quality of teaching. Given that over 50% of that variation lies with the home and family, the quality of teaching remains the single largest controllable variable impacting student achievement¹.

Analysis of student achievement also shows that there is more variation in the quality of teaching within any school than between schools. In other words, the actual quality of teaching within any large school is inconsistent. However, what we, as individual teachers, do in our classrooms is demonstrably consistent in terms of support for student learning², and the impact of those practices on student learning is likewise quite predictable.

This is largely because each of us establishes a pattern of interactions with and among our students and also with the intended curriculum and related resources. We repeat and reinforce this pattern on a daily, hour-by-hour, minute-by-minute basis until it becomes routinized behaviour—the way our classroom 'works'. I refer to this routinized pattern of interactions as the classroom culture.

It is for these reasons that more recent attempts to promote change and improvement in educational practice are increasingly focused on site-based activity, whether those attempts are catalysed by educational policy, or site-specific initiatives.

Teaching as a Practice-Focussed Profession

Entry to teaching, in both developed and developing countries, is regulated through specific requirements. Some are educational—most often the completion of a pre-service teacher education course—and some are legal and/or moral requirements,

¹ The largest systematic collection and analysis of data relies on student achievement in international tests like PISA, PERLS and TIMMS, and those analyses underpin these statistics.

² I make the assumption that student achievement is directly related to student learning without wishing to debate whether that achievement reflects what students should be learning, or in fact are learning. But we do know that 'assessment is the tail that wags the dog'—it focuses the attention of both teachers and students for better and for worse.

involving suitability for working with children. While such requirements are often established by governments, the responsibility for their implementation is most often overseen by practitioners. In effect, this serves to recognise the actual work of teaching as a self-monitoring profession.

While entry to the profession involves educational requirements, there is a research-informed consensus that those requirements have little impact on how teachers teach. Rather, the consensus is that our teaching practice is determined more by our experience of-and-in practice than any 'training' for practice. There are two sources of this experience. First there are our experiences of being educated in primary, secondary and tertiary settings. It is in these settings that we first experience variation in classroom cultures, and make judgements about which teachers and cultures we prefer. Through these experiences we come to see particular teachers, and therefore 'styles' of teaching, as 'good', and others as 'bad'. 'Good' individuals become our aspirational role models—the teachers who inspired us, and whom we seek to emulate.

The second source of our experience is the daily acting out of the practice of teaching. As beginning teachers, unlike many other professions, we are expected to run our own classrooms, carrying much the same work load as our more experienced colleagues from the first day of our appointment at a school. We have myriad decisions to make. Some are proactive, involving planning and preparation for teaching, but most are reactive, occurring in the context of managing our classroom, and interacting with students/pupils, colleagues, supervisors and (perhaps more stressfully) parents. For many current teachers this initial exposure to the practice of teaching has been experienced as emotionally and physically exhausting, a time when personal and professional survival is the priority.

During this survival phase, the role models and personal preferences for teaching style from our own experience as a student are often very influential. Over time and through experience, however, we become better planners-for and managers-of our classrooms. These achievements reflect our growing capacity to be more successful and proactive in establishing the sort of classroom culture that we want. Importantly, while these cultures are established by us as teachers, our students readily adapt to those patterns—they become acculturated. And as with the notion of 'culture' in the broader sense, those living within it tend to take it for granted. That is, such a culture is largely tacit, unknown to its participants.

Core propositions concerning teacher expertise and learning

As implied by the preceding discussion, a central proposition of this paper is that we teachers develop our expertise largely through personal experience. Many years ago John Dewey (1938) helpfully differentiated 'experience' from 'quality experience', in terms of whether "[t]here is an immediate aspect of agreeableness or disagreeableness, and there is its influence upon later experiences" (p. 16). Arguing that agreeableness was 'easy to judge', he went on to challenge educators to provide "the kind of present experiences that live fruitfully and creatively in subsequent

experiences” (p. 17). Dewey’s argument has great relevance to this discussion. While Dewey did not say that the first reaction to experience is an emotional one, this is a clear implication of his choice of words—“agreeableness or disagreeableness”. Second, it suggests that experience-as-a-teacher is not of itself a sufficient basis for the development of teaching expertise. Most commentary suggests that experience must be interwoven with judiciously selected concepts and ideas, traditionally accessed through PD activities. However, there is very little evidence of the efficacy of this tradition.

A second proposition is that this expertise is principally an expression of implicit knowledge and related capacities. This means that the assemblage of knowledge underlying practical teaching expertise is likely to be largely implied by practice rather than readily accessible to the practitioner—this is knowledge for doing rather than telling (Oshri et al 2006). Thus, the explicit knowledge about practice that teachers can and do share tends to be expressed as anecdotes and opinions rather than detailed ‘theories’ based on propositional and procedural knowledge.

The third related proposition is that practice-focused expertise is based largely on the exercise of routine behaviour. This is expertise that has been built up over extended periods of engagement in the particular practice. As a result, an individual’s competence emerges without conscious deliberation. Indeed, during performance, it is important to avoid thinking as it tends to disrupt the flow of expertise.

The final proposition is that expertise in teaching is enhanced through the deliberate development of more learning-effective routines and/or through decreasing the use of existing but less-effective routines. The latter involves unlearning—the systematic (and demanding) attempt to avoid the use of existing, but sub-optimal, routines. This begs the question of how it is possible to achieve this outcome effectively and efficiently. The remainder of this paper is an attempt to explain and illustrate how the use of video informed reflection can be an integral part of an authentic response to this challenge.

An Explanation for Teachers’ Expertise and Learning³

To understand more about the development of teachers’ expertise, the four propositions provided above can be usefully explored through consideration of neuroscientific informed discussion, in particular Jonah Lehrer’s (2009) *The Decisive Moment: How the Brain Makes Up Its Mind*, David Eagleman’s (2011) *Incognito: The Secret Lives of Brains*, and Daniel Kahneman’s (2011) *Thinking, Fast and Slow*. The discussion that follows foregrounds the conclusions and implications discussed in these books rather than the actual research on which the above-mentioned authors’ draw.

³ This section involves an intensive introduction to some relevant aspects of neuroscientific research. In particular, Kahneman’s metaphors for our cognitive processing—System 1 and System 2—are essential to the later discussion. Please read with care.

The central point of these neuroscientific accounts of decision making is that our cognitive functioning involves two interacting systems. The first system, referred to by Kahneman (p. 13) as **System 1**, involves fast thinking that “includes both variants of intuitive thought – the expert and the heuristic – as well as the entirely automatic mental activities of perception and memory”. It generates our intuition and emotion, and works subconsciously, meaning that most of what we do and think and feel is not under conscious control. The other system, **System 2**, is used when intuition fails, and we turn to our relatively slow, “deliberate and effortful form of thinking” which enable us to direct our attention and to engage in rational thought.

These two systems interact and both are active when we are awake. Kahneman (p. 24) provides an overview of their interaction.

System 1 runs automatically and System 2 is normally in a comfortable low-effort mode, in which only a fraction of its capacity is engaged. System 1 continuously generates suggestions for System 2: impressions, intuitions, intention, and feelings. If endorsed by System 2, impressions and intuitions turn into beliefs, and impulses turn into voluntary actions. When all goes smoothly, which is most of the time, System 2 adopts the suggestions of System 1 with little or no modification. You generally believe your impressions and act on your desires, and that is fine – usually.

It needs to be acknowledged, perhaps disconcertingly, that System 1 has the greatest capacity for information processing. In particular, it allows us to draw on the breadth our experience, so that we can make very fast decisions with minimal new information, time or thought. These are the bread-and-butter ‘decisions’ on which all ‘normal behaviour’, including classroom expertise, depends. System 2, with its rational capacities, is perhaps better thought of the tip-of-the-iceberg of our information processing capacity.

The neural circuitry and associative memory that underlie the operation of System 1 generates what might be called ‘neural programs’ based on experience. These programs allow us to effectively anticipate what will happen, and they are initiated without any conscious deliberation. Routine expertise is effectively automated by the neural programs operated by System 1. As a result, highly experienced teachers tend not to engage in deliberate lesson or activity planning—that is something that only novices do! System 1 processing, allows relatively effortless, fluent and efficient teaching, consistent with Timperley’s (2011) description of routine expertise.

Importantly, these neural programs are highly responsive to experience—they are constantly updated. However, that updating is most readily achieved where the circuitry is relatively simple—recognising the new ring tone on a mobile phone, for example. Where the circuitry involves complex interactions of different parts of the brain, such as the programs underlying classroom routines, updating requires a quite systematic and sustained effort to focus on mistakes or failures of expectations.

Thus, the routine expertise that is highly valuable in relatively stable contexts can become a major limitation in contexts that require significant rather than minor revision of those routines.

Achieving change in routines requires the intervention of the slow and rational System 2 in the automaticity of System 1. Our System 2 allows us to set goals and gives our brain an “ability to supervise itself, to exercise authority over itself” (Lehrer p. 115). This is the executive control that is related to self-regulation and meta-cognitive capacity that are discussed frequently in relation to student learning. However, it is essential to note that substantial updating routines based on System 1 requires that we give attention to a failure of expectation. In turn, this requires that our System 2 has generated a simple sense of the preferred alternative to our current routine.

Our beliefs filter the information to which we give attention because System 1’s pattern-based processing tends to bias our subconscious attention to information. For example, we tend to pay attention to only the facts that confirm what we already believe (Lehrer, p.198). This gives rise to a ‘certainty bias’ through which we create coherence and certainty in our thinking, and confidence in our beliefs.

The operation of System 1 and 2 provides an explanation for the core propositions identified earlier. Experience drives the development of the ‘programs’ that underlie the operation of System 1 [Proposition1]. System 1 operates below conscious awareness, so its ‘programs’ represent implicit or tacit knowledge [Proposition2]. The rapid and seamless operation of those ‘programs’ generate highly complex and patterns of behaviour, patterns we experience as routines [Proposition 3]. That change in the activation or use of these routines requires the activation of the slow and effortful System 2 [Proposition 4].

Some implications for attempts to build capacity

The explanation provided above underlines the point that attempts to improve our teaching practice run against our inherent cognitive operations. One obvious implication of this neuroscience-based explanation is that teachers, and those who provide support for professional development, need to understand the limitations for reasoning, and being reasonable, that are characteristic of our existing practice. System 1, the primary instigator of our classroom practices, and the basis of our response to information, operates below the level of our consciousness and automatically in non-rational ways. Activation of our quite limited capacity for rationality, based on the use of System 2, requires a deliberate and effortful intervention into our normal operations.

Perhaps more importantly, experience-based System 1 expertise tends not to have ‘conceptual infrastructure’—ie, language—built into it. This reflects the relatively private nature of that expertise and its development. It is also reflected in the tendency of teacher talk to avoid the specifics of practice. Rather, teacher discussions are more likely to be animated by anecdotes, particularly anecdotes that focus on students, while theoretical or research-rich discussions are very rare. As a

result, teachers often find it difficult to discuss, or even to reflect on, their own practice in any conceptual depth. Put differently, System 2's capacity for reasoning and rationality does not easily interact with, or interrupt, System 1's confident and efficient automaticity.

It can help us both to design for capacity building and to participate more effectively in that endeavour, if we understand more about how our own experiences have given rise to the System 1 neural patterns that, in turn, generate our behavioural patterns, beliefs and preferences. Yet this is no small ask, given that System 1 operates below the level of our awareness, and we tend not to have a cognitive infrastructure that connects System 1 and System 2, as just discussed. This implies that we are unlikely to be aware at any sophisticated level of our routines, beliefs or preferences, or even to have a language for thinking about or reflecting on them.

Such a neuroscience informed explanation of teacher practice calls into question any attempt to improve 'routine' practice by providing information about an instance of 'best practice' or the showcasing of a new approach. Neuroscience suggests that when we 'hear' information that conflicts with our preferences, System 1 will both react negatively to it at an emotional level, and give selective in-attention to it. Helen Timperley (2011, p8) cites research showing that many well-intentioned teachers take away superficial aspects of PD messages while the core elements of their routine practices, the principal focus of the PD work, remain entirely unchanged.

So what for capacity development?

The reconceptualising summarised above suggests that the initial focus for capacity building ought target three foci of our professional identity, namely:

- uncovering and enunciating the attitudes, beliefs, and preferences which underpin our professional identity and related routine practice;
- discovering and reflecting on the nature and effectiveness of our personal routines in terms of promoting the intended learning outcomes; and,
- engaging in conversation with colleagues about both of the above, as a means of building our capacity to insightfully reflect on practice and deliberately design our practice.

Successful engagement with these three foci ought create the conditions in which the introduction of new research-informed ideas might become a capacity building activity.

In relation to the latter possibility, it is important to acknowledge that System 1 processing of any new experience or information is inevitably biased. Knowing the limitations of our cognitive systems, Lehrer offers two suggestions to minimise the effect of such bias and pattern creation. First, we should engage deeply with alternative explanations as a means to challenge our beliefs. Second, we should continually remind ourselves of what we don't know. In a sense, this suggestion

invites us to engage consciously with uncertainty, rather than rely on the System 1 programs that underlie our professional preferences. To mitigate these limitations, Lehrer suggests that we force ourselves to think about information we don't want to think about, and seek out and pay attention to ideas and data that disturb our deep-seated beliefs or preferences. This is consistent with the commitment of scientific research to seek disconfirming evidence.

Kahneman adds two further strategies. One involves the adoption of an 'outsider' for the purposes of broadening the framing of the issue/problem. The second involves simply slowing down the speed at which we generate a response, for example, taking time to respond to a challenge, rather than simply (and very quickly) reacting to it.

Collectively, these strategies are based on the deliberate activation of our brain's System 2. In particular, we need to use System 2's rationality in ways that are relatively unfamiliar to most of us—our reason as a source of deliberate scepticism concerning our own thinking and also as a means of setting and monitoring progress towards quite specific goals for changing our routine practices. Again, these are very significant challenges, given that, over time, experienced teachers' can be expected to build confidence in their existing behavioural patterns, beliefs and preferences, and assume high levels of rationality in terms of their capacity to weigh up the potential value of alternative perspectives. Put bluntly, this means that to build capacity, we must pay attention to data and to ideas that are likely to challenge our very sense of professional expertise.

Given these implications and related challenges I want to illustrate how the use of video informed reflection might contribute positively to capacity building for both experienced and early career teachers.

Video Informed Reflection

My work as a researcher/consultant with schools over the last eight years has increasingly focused on the use of video evidence to explore classroom practice. This has involved five different but related approaches to, and foci for, the use of video-informed reflection. They are discussed here in the temporal order in which I have used them.

1. Characterisation of practice

This is essentially a research-driven use of video data to analyse and then characterise site-specific classroom practice.

What this involves

The approach uses research to answer site-leaders' questions. In these instances researchers make video records of sequences of whole lessons. The focus for the work reflects the leaders' intentions, and leaders arrange for volunteers to participate as subjects of the research. The researchers conduct the subsequent analysis, so video informs researchers' reflections on the classroom practices, and thereby the

student experience in these settings. The analysis is shared with school leaders and staff, but not the video files – they remain confidential.

Outcomes

The process provides the on-site professionals with a much deeper understanding of their daily practices, both in terms of the nature and quality of those practices, and a vocabulary for discussing them. The researchers become much more sensitive to, and insightful about, actual classroom practice.

2. Smart Borrowing

This follows on somewhat inevitably from the characterisation of practice, when the video-making volunteers agreed to share aspect of their practice with peers.

What this involves

This was activated by a school-, department-, or year-level-wide agreement on foci for improvement in practice, followed by an invitation to staff to record short (2-4 minute) video clips that allow sharing about how they think and do the particular practice. Individuals make their own clips, and view and reflect on them. Some make multiple clips before they are happy to share, while others are comfortable to share their 'first take'. Sharing is usually in small groups, with the provider leading a peer-based reflection and discussion, exploring a range of issues including, what the practice involves, why they use it, and when they do and don't use it.

Invitations to engage with this approach explicitly avoid use of terms like 'best practice' and 'showcasing'. Rather *Smart Borrowing* is about professionals sharing how they do what they do a quite specific task or lesson element.

Outcomes

The process is culture-building in a number of ways. It validates the professionalism of the staff, both those who share and the larger group that may well have experienced PD to date as something done to them by external experts. It also de-privatises practice in a relatively controlled way, through both the limited sharing and the conversations which help participants developed a shared language about their practice. The use of a focus for the work builds awareness of the importance of that aspect of practice to student learning and wellbeing.

3. Smart Building

This emerged as an extension and refinement of the *Smart Borrowing* work, arising from a recognition that video-informed reflection can help teachers implement good ideas that had been provided to them by the more traditional workshop approach.

What this involves

This is quite a different framing of the purpose of making and sharing video clips. In all instances, initial implementation followed a briefing of the whole staff and after extensive consultations with the school leadership. The process is tailored to the site's own aspirations and prior experiences.

The core of the process involves small teams (4-5) of teachers collaborating to achieve improvement in an agreed aspect of their teaching. In some instances the focus may represent ideas that are drawn from traditional PD, for example, attendance at a Dylan Willem workshop on assessment for learning. In other cases, staff may identify a focus through their own sense of where improvement is needed.

Some sites decide to allocate teachers to teams – I recommend maximum diversity in terms of teacher location within the school. Others draw on existing subject/year level teams. Like *Smart Borrowing*, teachers make their own video clips of their version of the agreed focal practice. The 'rule' is that everyone must make a video, but they only share when they feel comfortable to do so. At no stage, then, does the ownership of the video transfer to other individuals, whether they be peers, school leaders or researchers.

In the briefing I give, I recommend that staff share their intentions with students. Students will of course notice that the lesson is being video-recorded, indeed they might be asked to help achieve this. There is real value in their knowing what is happening, and why, given that they have an investment in the classroom culture. Experienced teachers need not feel mawkish about sharing with their students the idea that they are exploring ways to improve their own learning, not just that of their students.

In this context team sharing and conversation focus on how to improve practice—participants are co-learners rather than borrowers. Given this intention, conversations tend to move from congeniality (pleasantly altruistic) to constructive collegiality (candid about improvement) as participants try to develop their capacity to challenge and support each other's growth. Borrowing still happens, but the conversation inevitably identifies options for practice that no participant initially brought to the table. In other words, practices that are new to the team are being imagined and built.

A final element is the usefulness of teams sharing experiences of, and progress with, the process. This encourages both documentation of progress by teams, and co-learning between and among teams.

Outcomes

The outcomes of Smart Building include all those for Smart Borrowing, with some important additions. My experience indicates that, as a result of engaging in Smart Building, teachers become more curious about practice – their own practice, the practice of their peers, and the larger professional literature about practice. That curiosity often gives rise to significant collaboration beyond the designated focus.

And as teams go through cycles of sharing and re-setting intentions, the teacher participants become more self critical and ambitious for their practices.

Feedback I have received indicates that teachers feel more professional when they are identifying their own foci for growth, and working collaboratively to achieve that growth. They claim to invest more thought and time than in more traditional PD work, and gain much greater satisfaction and professional self-awareness through the process. In my most recent involvements with Smart Building, teacher feedback continues to be positive, as teachers discover their practices, develop a language to reflect on and discuss those practices, and build their aspirations for better practices.

One of the collateral benefits arises from teachers sharing their learning intentions with students. Feedback is overwhelmingly positive, as students both admire the intention, and actively support the teachers in their quest for improvement. A related benefit of this is that students begin to anticipate and welcome an emergent classroom culture that is more learning-productive for all.

4. Performance appraisal

More recently I have been involved in two additional uses of video-informed reflection, both at the same large high performing school. One involves my role as an external reviewer in a scheme to recognise high quality performance for teachers at the school.

What this involves

In previous years I had been involved in developing the school's expectations for teaching, expressed in a relatively detailed site-specific set of standards for professional practice. As the external reviewer for the performance appraisal I was asked to record a sample of lessons of each applicant, and then analyse four of the videoed lessons against those standards, provide a written report of the quality of the applicant's classroom practices based on that analysis, and then participate in a panel review for each applicant.

Applicants and panel members were given access to all video files, and to my report. Applicants were asked to review two of the four files that I have analysed, and to reflect on both the practices evident, and my ratings of those practices. Panel members were asked to watch at least one of these lessons, and undertake a similar reflective process, with a precise invitation to challenge or support my ratings.

Outcomes

The video files associated with performance appraisal gave rise to a very systematic and disciplined type of reflection. This is because the reflection focuses on the perceived alignment between practices evidenced in the video file, and practices described at different levels of performance in the standards. This was not unlike the research analysis undertaken at the first stage of this work.

Unlike the co-learning opportunities offered by *Smart Building*, reflection prompted by this video analysis focused on how well practices were performed.

Interestingly, all panel members used the process to reflect on their own practices, not just those of the applicant. Culture shift can be mobilised in this way.

There is a second impact involving the acceptance of video files as evidence in an evidence-informed appraisal process, and the cultural implications of this acceptance. As a result, video use is becoming normalised in this particular school setting, and used in multiple ways, always with a reflective and growth- focused dimension.

5. Mentoring

In the same site as the Performance Appraisal work I am also undertaking a mentoring role for teachers who are 'new to the school'.

What this involves

In this role I was asked to help the teachers engage with the school's standards for professional practice. This year's group involved 14 teachers, five of whom were beginning teachers. After being introduced to the standards, each teacher identified one or more aspect of those standards as a focus for their own professional growth, and I worked to support them with this intention. Involvement as mentee was entirely voluntary. I made video recordings of lessons that they nominated, shared the video file with them, and then met with them individually to discuss the video data and to set refined or new goals.

Outcomes

Once they had experienced the process, some of these teachers quickly sought to make extensive use of both video as a resource for reflection and my time for conversation about their practices. These teachers tended to arrange for additional video recordings to be made, and to use my availability often and intentionally.

One teacher made the observation that the camera had become 'her friend', freeing her to focus on her teaching, knowing that the video file, rather than her memory, would become the focus for later reflection. Others asked if they could engage in conversation at the planning stage, and then the video to show them how their first attempts to try new strategies went. This is reflection in anticipation of action, supported by reflection on first attempts to enact plans.

In all instances these teachers indicated that they found the videos much more useful for their own growth than previous experience with 'feedback' from supervisor observations, or indeed, observations from 'buddies' (where content and/or congenial feedback tended to be the norm). The videos removed the subjective lens of the observer, allowing mentees to see themselves in action. One teacher spoke of watching the first video of her work as perhaps the most important step she had taken in her professional life.

In three instances, the video enhanced mentoring, with conversation at the planning stage, led teachers to teach in ways which they had never experienced, and

in ways which are much more effective than they had ever imagined. The school's subsequent 'confirmation of appointment' process affirms the exceptionality of what they are achieving in their classroom practices. In terms of the framework for teaching, the quality of their teaching capacity moved from 'basic' to 'distinguished', and they clearly demonstrate adaptive expertise.

Integrating Neuroscience with Video-Informed Reflection

The neuroscience informed explanation provides some powerful insights into the challenges associated with attempts to improve the practice of teaching. Perhaps the most significant insight concerns the interactions between System 1 and System 2, or more specifically, how we might use System 2 to achieve relatively permanent changes in System 1.

To reiterate, System 1 operates without conscious intervention—our routines 'happen' without any deliberation on our part. The neural networks are updated, on the basis of experience, automatically. It has no need for a language-based infrastructure of awareness or reflection. And it biases our processing of information in ways that reinforce rather than challenge our existing attitudes, beliefs and preferences. The consequence is, to adapt a colloquial expression, that traditional PD practices are 'water off System 1's back'.

The neuroscience explanation makes it clear that any substantive change in System 1 processing, and therefore classroom practice, requires deliberate interventions from System 2. Importantly, this points to the significant requirement that this requires individual human agency—no 'developer' can make this intervention. Rather, the developer can draw participants' attention to particular strategies, such as those discussed earlier, namely:

- engage deeply with alternative explanations as a means to challenge our beliefs;
- remind ourselves of what we *don't* know;
- force ourselves to think about information we don't want to think about;
- seek out and pay attention to ideas and data that disturb our deep-seated beliefs or preferences;
- adopt an 'outsider', or broader, framing of issues/problems;
- slow down the speed at which we generate a response to new information or a novel experience.

My work with video-informed reflection suggests that reviewing video evidence of our own practices can provide powerful insights into the nature and effectiveness of the behavioural routines that our System 1 is generating, and the impact of those on our classroom culture. Where an individual teacher seeks to understand and improve, the video evidence allows them to select specific foci in their actual routine behaviour for improvement. This implies significant activation of System 2 in both goal setting and monitoring of performance.

Equally importantly, video evidence allows extremely useful feedback on actual performance of attempted new routines. One participating teacher spoke for many I have worked with in saying that the video record makes it possible to stay in the moment of teaching—“it really allows you to switch that part of your brain [ie, memory] off and know that it is taken care of for later [reflection]”. By implication, it is cognitively stressful to pay attention both to the new practice being implemented and to what is happening in the classroom. Video takes care of the latter, freeing System 2 to focus on implementation.

Once we begin deliberately to ‘take control’ of our System 1, we enable other changes in how our cognitive processes operate. Deliberation implies a reasoned intervention, with a conceptual underpinning. Unlike experience-driven ‘learning’, deliberation brings with it ideas/concepts and relationships—a logic of explanation and expectation. This conceptual infrastructure facilitates communication between System 2 and System 1, and makes adoption of the strategies listed above much easier. And this is how a classroom practitioner can move from being a *routine expert* to an *adaptive expert*, as described by Timperley (2011), and discussed earlier in the paper.

It follows that PD which aims to improve practice in our practice-focussed profession must address how teacher practices are developed, and instantiated in the context of practice. It must help us to understand how our cognitive processes, organised in to System 1 and System 2, operate, and how this operation in turn contributes to the development of experience-based expertise. No current account of school-focused learning is of much help if and when it is based on theories that take rationality, rather than experience, as the starting point of teaching practice. My extensive *in situ* work with teachers and their reflections on practice convinces me that few teachers know their own practices in the sense of being able to articulate them in any deep and sustained way. What we ‘know’ is known through the biased lens of our unique System 1. That baseline understanding of our cognitive processes makes it easier for us to adopt a less defensive response to information about our own practice.

Openness to exploring our own practice allows us to develop insights into our own experience-generated routines—and video evidence can be a key contributor to this outcome. The key point here is that teacher reflection on and conversation about those routines must draw on strategies that minimise, rather than endorse, System 1 bias. As a result it becomes possible to move on from reassurance that ‘all is ok’ with our practices or that current problems are the fault of ‘the system’. Focussed reflection and conversation about authentic instances of pedagogical work can help give us a language for thinking about our practices, and for setting goals for improvement. Finally, video evidence can free our System 2 to focus on intended improvements, allowing us, at some later time, to monitor the quality of our implementation.

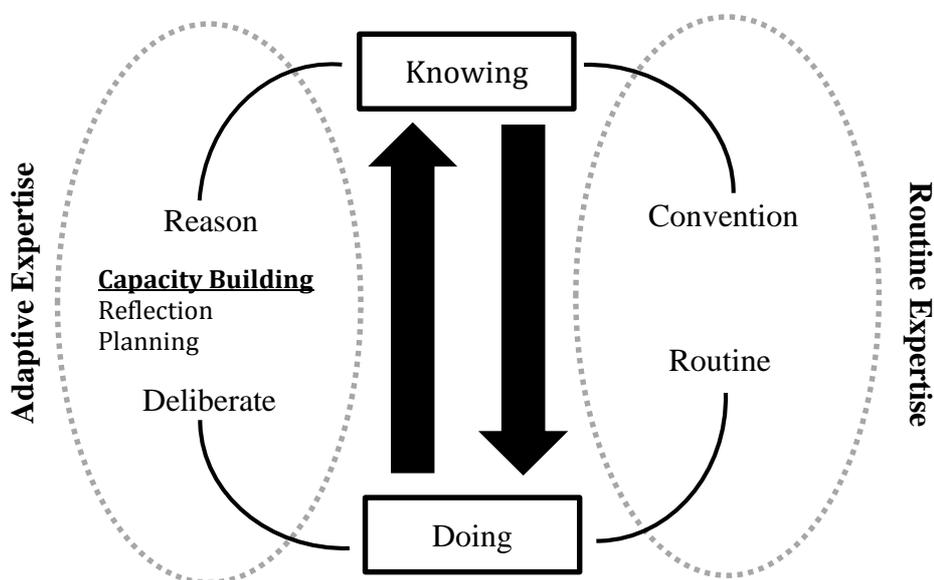
The capacity to have conversations about preferred practices opens the possibility of deliberate intervention in classroom culture. Importantly, this requires

that we plan for those changes—highly intentional planning is a hallmark of adaptive expertise. A teacher who makes substantial changes in her/his classroom routines risks a backlash from students, and parents, and peers [and not necessarily in that order]. My advice to teachers and leaders is to take the students/parents/peers with them through proactive discussions about why change in routines are needed, what those changes might mean for them, and when the changes will be reviewed. This allows for co-ownership of the change, and for students to see, and value, their teachers as learners, not just knowers.

In conclusion

Figure 1 provides an overview of this discussion’s view of teacher capacity building. It suggests that there are two principal contributors to our knowing: reasoning and convention. Similarly there are two principal ways of ‘doing’: deliberate ways, and routine ways. The combination of reasoning and deliberation underlie adaptive expertise, while the combination of conventional knowing and routine practice underpin routine expertise. Most importantly, we connect our doing to our knowing through reflection, while we connect our knowing to our doing through planning—and reflection and planning are the hallmarks of adaptive expertise ie, how it augments and improves on routine expertise.

Figure 1: An overview of this view of capacity building



I offer the deliberations above in the interests of capacity building directed towards the achievement of adaptive expertise. However, I want to offer several caveats to this aspiration. First, I caution against seeing these as polar opposites—any successful adaptor must make new practices part of their classroom routines in order to sustain those new practices. Unless they do this, the almost inevitable outcome is a reversion to former routines. Thus, adaptive expertise builds new routines, but continues to be ambitious to improve the learning value of all classroom routines.

Second, I suspect that it is unrealistic to expect those whose professional identity is intimately based on the notion of routine expertise to become adaptive late in their career. Indeed one of the ironies of my experience over the last 15 years is the resistance of most teacher educators to test or to move on from their assumed routine expertise. They readily update the 'content' they teach, but not how they teach, in spite of the extensive literature (see Darling-Hammond & Bransford 2005) that indicates a need to engage with, and challenge, the attitudes, beliefs and values that their students bring to pre-service teacher education.

Third, and on the basis of my mentoring work, I believe that it is entirely possible for relatively inexperienced teachers to develop adaptive expertise. That may reflect their own dissatisfaction with the routines they have experienced. The key to this achievement is co-planning, and video-as-memory for intentional reflection. And once they are functioning as adaptive experts, they are well placed to mentor their early career peers, unlike those who only possess routine expertise. Thus, adopting this focus and approach to capacity building has the potential to generate a substantial multiplier impact—an invaluable outcome for resource poor systems. It is an approach that can genuinely impact teachers' capacity to improve their practice in ongoing and sustainable ways.

Note

The HEAD Foundation Working Paper Series© are preliminary papers subject to further revisions, and are circulated to solicit comments and suggestions for improvements. The *Working Papers* are unedited and unreviewed. The views and opinions expressed are those of the author(s) and do not necessarily reflect those of The HEAD Foundation. No part of the article may be cited without permission from the author(s).

References

- Bransford, J. (2007). Preparing people for rapidly changing environments. *Journal of Engineering Education* 96 (1): 1-3.
- Darling-Hammond, L. and Bransford, J. (Eds.) (2005). *Preparing Teachers for a Changing World: What Teachers Should Learn and Be Able to Do*. San Francisco: Jossey-Bass.
- Dewey, J. (1938). *Education and Experience*. New York: Free Press.

Capacity Building In A Practice-Focussed Profession: Reflections on Preliminary Findings in the Context of Asian Knowledge Building

- Eagleman, D. (2011). *Incognito: The Secret Lives of the Brain*. Melbourne: Text Publishing.
- Hattie, J. (2009). *Visible Learning: A synthesis of over 800 meta-analyses relating to achievement*. London: Routledge.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. London: Allen Lane.
- Lehrer, J. (2009). *The Decisive Moment: How the Brain Makes Up Its Mind*. Canongate: Edinburgh.
- Oshri, I., Pan, S.L & Newell, S. (2006). Managing trade-offs and tensions between knowledge management initiatives and expertise development practices. *Management Learning* 37 (1): 63-82.
- Timperley, H. (2011). *A background paper to inform the development of a national professional development framework for teachers and school leaders*. Australian Institute for Teaching and School Leadership.
- Timperley, H. Kaser, L. & Halbert, J. (2014). *A framework for transforming learning in schools: Innovation and the spiral of inquiry*. Centre for Strategic Education, Seminar Series Paper No. 234.