

# **THE FUTURE OF TEACHER PROFESSIONAL DEVELOPMENT AND THE DEVELOPMENT OF ADAPTIVE EXPERTISE – DEIDRE LE FEVRE, HELEN TIMPERLEY & FIONA ELL**

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*Selected extracts*

~~that meets the needs of their students and communities. For this reason teachers need professional learning opportunities that provide them with the capacity to be change agents and activists.~~

## **THE COMPLEXITY OF TEACHING AND ADAPTIVE EXPERTISE**

The complex relationship between teachers and the curriculum means that teachers are constantly solving curriculum-related problems as they decide what is important to teach, what emphasis to give to any one area, and when to teach it. Indeed, the nature of subject matter itself is becoming increasingly uncertain. Curriculum-related decisions, however, are just one aspect of the complexity of teaching. Introduce the students with their diverse current understandings and misconceptions and the teacher has, what McDonald (1992: 13) describes as, 'the wildly uncertain triangle defined by the teacher's own ambivalent self, that bunch of unpredictable kids and the always slippery subject'.

Uncertainty also permeates the outcomes of teaching. Teaching is a practice that involves human improvement, and as such it brings practitioners face-to-face with large and significant questions such as the meaning of progress, the means of achieving it and the difficulties of knowing what has been achieved (Cohen, 1988). Complex demands on teachers occur not only sequentially, but also simultaneously. For example, during a class discussion, teachers monitor the pace of interaction, the sequence of student responses, the fair inclusion of individuals, the quality and relevance of responses, and the logic and accuracy of content all at the same time (Doyle, 1977). These often conflicting demands can mean teachers are in a constant state of dilemma management as they prioritise and attend to simultaneous and sometimes incompatible needs (Lampert, 1985).

## **SOLUTIONS TO COMPLEXITY**

With complexity, uncertainty and unpredictability endemic to teaching, how is it best managed? One approach popular in the 1970s was to try to simplify the notion of teaching, to create a teacher-proof curriculum and pedagogy that provided clear guidelines and practices for teachers to employ. It was thought teachers simply needed to learn specified scripts in a given situation to become more effective. Although this approach has largely been discredited (because students do not arrive on a given day with the same knowledge and skills as each other or respond in the same way to particular instructional practices), similar ideas have been revived more recently in another form with recent efforts to codify the knowledge, dispositions, competencies and skills required for effective teaching (MET Project, 2013). The implication for professional learning is that teachers simply need to learn how to enact these practices to improve student outcomes within our education systems. Although not dismissing advancements in knowledge about the effectiveness of particular teaching practices or the importance of the knowledge base for teaching (Cochran-Smith et al., 2015), there have still been considerable difficulties in attempting to encapsulate teaching within a generic set of standards or teaching practices that apply across contexts.

There is concern that attempts to codify teaching will develop into a 'technicist' vision of effective teaching. Such a vision may quickly lead to lists of essential capabilities and competences to be developed through professional development that do not take into consideration the overarching need of teachers to be able to be responsive to the needs of diverse students in complex and uncertain contexts. Of particular concern is responsiveness to those who are our most vulnerable student learners. There is little evidence that professional development focused on these kinds of competencies actually has the desired impact on student

learning (Timperley and Alton-Lee, 2008). Indeed some of the most powerful teaching practices require teachers to inquire deeply with students into students' current understandings and misconceptions, and to draw flexibly on a range of strategies to promote a particular student's learning at that particular time (Earl and Timperley, 2014; Wiliam, 2010). Although it is possible to specify principles and processes in such an approach, it is difficult to specify universal prescriptions for particular teaching practices because it depends on what students need to learn at that particular time and how they best respond to particular approaches to learning it.

Identifying and naming specific sets of knowledge or competencies independently of a diagnosis of the learning needs of a given teacher's students runs the risk of reinforcing a vision of teacher professionalism that does not acknowledge the complexity of effective teaching and does not recognise that particular teaching practices should be motivated by the desire to solve challenging teaching and learning problems as they arise.

An alternative to these more technicist views of professionalism is one of adaptive expertise (Bransford et al., 2009; Hatano and Inagaki, 1986; Sosla, 2012). We argue that teachers, to make well-informed decisions, need to fully understand the knowledge base for teaching, and which practices under which circumstances are likely to be more effective than others. At the same time, they need to shape the curriculum in ways that meet the needs of diverse learners in complex settings. They also need the disposition to question whether their efforts are leading to the desired improvements in student learning, and the skills to monitor the effectiveness of their efforts. As adaptive experts, they embrace the complexity of students, curricula and potential pedagogical approaches as they repeatedly try to solve the challenges presented by students and their learning of the curriculum. What we mean by this idea of 'adaptive expertise' and how to promote it through professional learning forms the remainder of this chapter.

## DEFINING ADAPTIVE EXPERTISE

Seminal research identified a qualitative difference between adaptive and routine expertise (Hatano and Inagaki, 1986) and the types of environments in which each is appropriate. Stable environments provide opportunities for routine expertise in which people can be highly efficient without needing deep conceptual understanding about what they are doing and constantly testing its effectiveness. Standard operating procedures work for the most part. In contrast, environments that experience constant change and complexity often demand that people are able to develop adaptive expertise.

Adaptive expertise involves the capability to use knowledge to understand and work effectively to problem solve in novel situations. In contrast to 'routine expertise', adaptive expertise demands that one acquires deep conceptual understanding to enable the creation of new solutions to existing problems and innovative solutions to new ones (Hatano and Inagaki, 1986). Adaptive expertise demands 'flexible knowledge and performance' in order to respond effectively and efficiently in novel situations. The qualities of adaptive expertise that distinguish it from routine expertise include being able to verbalise the principles underlying one's skills, and the capacity to modify ways of working to address specific needs and constraints in a task (Hatano and Inagaki, 1986).

Routine expertise encompasses how individuals and organisations have set ways of responding to problems and standard ways of approaching new tasks. However, there is a danger of setting up a false dichotomy when making a distinction between adaptive and routine expertise because routine expertise usually involves adaptations in response to situational demands and adaptive expertise requires the mastery of particular routines. Without routines, cognitive overload is likely with less-than-effective responses resulting. The essential difference between a primarily routine response and a primarily adaptive one is that, within an adaptive approach, the suitability of the routine response is constantly changing.

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improvement orientation; metacognition and cycles of inquiry; and distribution of expertise across education systems. Professional learning must mirror these attributes in its design and conduct. This means more than modelling being an adaptive expert; it means immersing leaders and teachers in new ways of thinking about teaching and learning and what it means to be a teacher.

We have identified six characteristics of professional learning environments that turn the attributes of adaptive expertise into considerations for the design of professional learning. They shift the emphasis from giving out knowledge and ideas to co-constructing knowledge through an evidence-inquiry process that is focused on improving outcomes for student learning. There is expanding research evidence that such learning environments accelerate the progress of students, whether in primary schools (Lai et al., 2009; Timperley, 2011), secondary schools (McNaughton et al., 2013) or in tertiary institutions (Bryk et al., 2015). These characteristics are first summarised and then described in greater depth later. In summary, they are:

- Responsive to the particular needs of students and then, as a consequence, responsive to teachers' needs in relation to their students' needs.
- Driven by curiosity and an inquiry mindset that poses questions, recognises and checks hunches and seeks to deeply understand student and teacher learning-related challenges.
- Based on evidence of student, teacher and leader learning throughout the process.
- Grounded in research theory and evidence as sources of information to diagnose learning-related challenges and identify possible solutions.
- A collaboration between teams of people, including those with specialist expertise who work alongside teachers, leaders, parents and students.
- Seeking transformative and sustainable change, rather than 'adding on' to practice or temporarily changing how things are done.

The first characteristic of responsiveness means that, rather than building teacher knowledge and skills for their own sake, professional learning begins with an analysis of the learning of students for whom the teachers

have responsibility. The process builds teachers' knowledge and skills to address identified learning challenges in context. In this way responsive practice is modelled with the professional learning experience directly addressing real problems. Responsiveness means that the focus of what is to be learned by the teachers will differ according to the challenges presented in that context. Some student learning challenges are common, but their causes may differ in different contexts, and deep inquiry into those causes and learning how to address them makes the learning for both teachers and students deeply responsive. This contrasts with approaches where professional developers deliver a particular programme to groups of teachers in the same way across different contexts, and without connection to a given teacher's student learning challenges.

Underpinning adaptive expertise is a mindset of curiosity and inquiry, the second characteristic we identified. Curiosity and questioning are encouraged by creating space for wondering and challenging in an atmosphere of trust and recognition of the role of emotion in learning. Those working with teachers need also to bring this mindset to their own work; bringing openness and curiosity to understanding how those they work with are developing their adaptive expertise. Posing questions, being curious and wondering also has a strong metacognitive element as those involved become aware of the need to question their assumptions, test the veracity of them and change them when necessary.

These two processes need to be strongly grounded in evidence (our third characteristic) if responsiveness to students is to go beyond weakly theorised personal beliefs, with curiosity more than individual musings. Professional learning that develops adaptive expertise makes use of a range of evidence as the basis of complex decision-making processes. Evidence related directly to the context is fuel for new thinking about teaching and learning and provides feedback on our efforts to improve.

The emphasis on responsiveness to context could mistakenly be interpreted that the focus is only on evidence from that context. However, the development of deep conceptual knowledge requires drawing on research theory and evidence, which forms our fourth characteristic. In teaching, this evidence base includes (among others) knowledge of students; how they learn; their conceptions and misconceptions; their emotions; and effective approaches to teaching them. An important attribute of adaptive expertise is to be able to draw on what is known from this research and to transfer and apply it to their situation. Deep knowledge is transferrable knowledge (Pellegrino and Hilton, 2012).

In more traditional professional learning models, professional developers are 'outsiders' to the context in which they work. They bring expert knowledge, ideas or materials from elsewhere, and those involved accept or reject their offerings by their subsequent actions (Wilson and Berne, 1999). In professional learning centred on adaptive expertise, those with specific expertise become members of a collaborative team who come together to address a particular student learning challenge. This 'inquiry team' might include parents, students and community members who work alongside teachers and leaders. Teamwork in the service of an identified problem harnesses the knowledge of the collective and builds the trust needed to share issues and ideas. Those with specialist expertise contribute their knowledge alongside other team members to build solutions, rather than being the only 'expert' in the room. This way of working gives agency to the school community and is much more likely to lead to sustainable change (Slavit et al., 2009; Timperley, 2011).

The final characteristic we have identified of helping people to develop adaptive expertise is about creating transformative rather than incremental change. The aim is to make an irreversible shift in thinking that will change teacher and student learners' approaches to all future problems, rather than giving them activities or techniques that solve a single immediate issue. Although

working on one problem, those responsible for promoting professional learning need to be explicit about how a given solution might apply to new problems and encourage mindset changes in thinking about practice. Transformation of an individual's practice is much more likely to happen when supported by an organisational environment that is also seeking to transform itself.

## **THE CONTRIBUTION OF THE LEARNING SCIENCES**

Although most of the learning sciences are grounded in research on student learners, they apply equally to those responsible for teaching them (Bransford et al., 2000). Recent syntheses of what we know about learning largely explain why traditional approaches to professional development rarely result in sustainable change. Next we briefly highlight some of the underlying principles from the learning sciences for each of the characteristics we have identified.

Responsiveness is grounded in the principle that all learning needs to put learners at the centre in ways that respond to their individual differences and needs (Istance and Dumont, 2010) and draws on their prior knowledge, experience, conceptions and misconceptions (Bransford et al., 2000). Engaging prior knowledge is a requirement for promoting conceptual change (Vosnaidou, 2007). Bypassing current conceptions typically results in problems of over-assimilation (Hammerness et al., 2005) where teachers believe they are doing something new but, in reality, it is little different from what they have done before.

Being driven by curiosity and an inquiry mindset recognises the importance of motivation and emotion in learning and the development of self-regulated learning and meta-cognition as learners come to understand themselves as learners (Boekaerts, 2010; De Corte, 2010; Lucas and Claxton, 2010).

Basing professional learning on evidence of student, teacher and leader learning brings