MINISTRY OF EDUCATION
Te Tāhuhu o te Mātauranga

Learning to practise

A paper for discussion

Learning to Practise

A paper for discussion

Helen Timperley
Faculty of Education
The University of Auckland
2013

Contents

Acknowledgements

Many people have contributed to this paper. From the outset, Ro Parsons and Paul Aitken of the Ministry of Education engaged with the thinking at every level from the title down. I want to thank them for their unfailing encouragement. Consultants Russell Bishop and Rae Si'ilata used their deep cultural knowledge and their experience in challenging assumptions to co-construct case material with me. As always, they also challenged my thinking. Amongst his many comments on an early draft Russell asked, "Why not develop a tight model of practice?" Section 3 is the result.

Over numerous drafts, the advisory committee contributed important ideas and raised significant issues. Bobby Hunter strongly influenced how I thought about the model and helped me see how it might be put into practice. Margie Hōhepa helped shape much of the material to ensure its relevance to Māori and she challenged the use of 'clinical' in the original title, persuading me that it was a distraction. Field Rickards urged boldness, and Alister Jones asked for the paper to be more practice-oriented. As a result, it is. Graeme Aitken, Claire Sinnema, and Frauke Meyer, co-authors of the companion paper on standards for graduating teachers, have helped shape my ideas and the various diagrams.

While I cannot acknowledge by name everyone who has assisted this project, I must thank Anne Sinclair, Ngaire Hoben, Fiona Ell, Lexie Grudnoff, and Lyn MacDonald, who have engaged with and challenged my ideas and assisted with references.

Working with those named and many others has left me confident that New Zealand has the intellectual grunt and the practical smarts to create a world-leading initial teacher education system.

Helen Timperley
Faculty of Educaton
The University of Auckland

21 March 2013

Introduction

This paper is a companion to Initial teacher education outcomes: Standards for graduating teachers (Aitken, Sinnema, & Meyer, 2013). Its purpose is to describe and exemplify the design of practice-based experiences that will promote the outcomes identified in the first paper.

There are two urgent reasons for reviewing how we do initial teacher education. The first is the disparity in achievement outcomes evident in the performance of New Zealand students in national and international assessment studies; the second is the disconnect between what we now know about effective teaching practice and what actually happens in the classroom. Underscoring this latter issue, a recent OECD report (Jensen, Sandoval-Hernandez, Knoll, & Gonzalez, 2008) found that "structured teaching experiences" (transmission teaching) "were used more frequently by new teachers than student-oriented and activity enhanced teaching practices that we know to be more effective. There were few differences between new and more experienced teachers in their use of these practices" (p. 10).

This international finding is supported by observations carried out as part of the Te Kōtahitanga project in New Zealand secondary schools (Bishop, 2007). Sixty percent of the teachers observed had graduated from teacher education institutions in the previous five years, yet 86 percent of their interactions involved transmission of pre-determined knowledge, monitoring to see if this knowledge had been absorbed, and giving behavioural feedback. This pattern was observed even in teachers who said they wanted to engage their learners, build on prior knowledge, and group students for the purposes of processing learning and providing feedback.

A similar contradiction was observed in associate teachers when working with teacher candidates in New Zealand secondary schools (Hoben, 2006). While the practices generally espoused by associate teachers suggested that candidates would be exposed to quality learning experiences during their placements, this was true for only a minority.

As for any area of education, the issues are complex, but if we want to address them, we cannot continue with more of the same. For this reason, the advisory group for this project encouraged us to be bold. I have tried to do this, presenting a perspective that is consistent with an emerging international literature on priorities for and organisation of teacher education.

Section 1 of this paper situates learning to practise within a conception of professionalism that is congruent with the graduate profile presented in the companion paper. Teachers are conceived of as responsive and adaptive experts for whom the engagement, learning, and well-being of all students is the basis of their professional identity. Section 2 describes five principles that underpin the design of initial teacher education experiences that are most likely to promote the development of adaptive expertise. Examples illustrate how each principle can be applied in university and school-based contexts. Section 3 introduces and explains a practice-based model designed to be used by those responsible for helping teacher candidates learn to practise. The model integrates the learning principles into a sequential process that is consistent with developing adaptive expertise and achieving the standards outlined in the companion paper. Section 4 briefly discusses implications for the system if the kinds of changes envisaged in the two papers are to become a reality.

1. Conceptualising professionalism

The New Zealand Curriculum (Ministry of Education, 2007) has shifted thinking about the skills and knowledge required by today's young people. This means teacher educators need to think differently about the skills and knowledge that teacher candidates must develop to prepare today's students for tomorrow's world. Learning to teach involves not only learning what to do, but also learning what it means to call oneself a teacher (Lampert, 2009). In this paper I present a vision of teachers as adaptive experts.

This conceptualisation of teaching was originally proposed by Hatano & Inagaki (1986) and further developed by others (e.g. Bransford, Brown, & Cocking, 2000; Feiman-Nemser, 2008; Soslau, 2012). Elaborating it further, I suggest that adaptive experts are driven by the moral imperative to promote the engagement, learning, and well-being of *each* of their students. To achieve these outcomes, adaptive experts know they must recognise the assumptions (including cultural positioning) that underpin their practice, when these assumptions are getting in the way, and when to let them go. Adaptive experts actively seek in-depth knowledge about the content of learning and how to teach it effectively to their particular students and in their specific context. They work with others, including their students, to:

- retrieve, organise and apply professional knowledge in the light of the challenges and needs presented by their learners, particularly those who are not engaged;
- obtain evidence of the impact of their teaching on learners' engagement, learning and well-being (this includes knowing how to assess students in both the short and long term against appropriate measures);
- develop innovative approaches when regular routines are not working and to recognise when they need to seek help;
- engage in ongoing inquiry with the aim of building the knowledge that is the core of professionalism.

The Teaching for Better Learning model (Figure 1) described in the companion paper is consistent with this vision of teachers as adaptive experts. Asking and answering the questions in the model is key to learning to practise in ways that develop adaptive expertise. The inquiry into professional learning priorities (at the centre of Figure 1) is particularly crucial because it challenges teachers to become metacognitive. Metacognitive teachers recognise when they are being effective and when it is time to learn and do something new. This paper is about constructing learning experiences that will support teacher candidates to become the kind of teacher envisaged by the model.

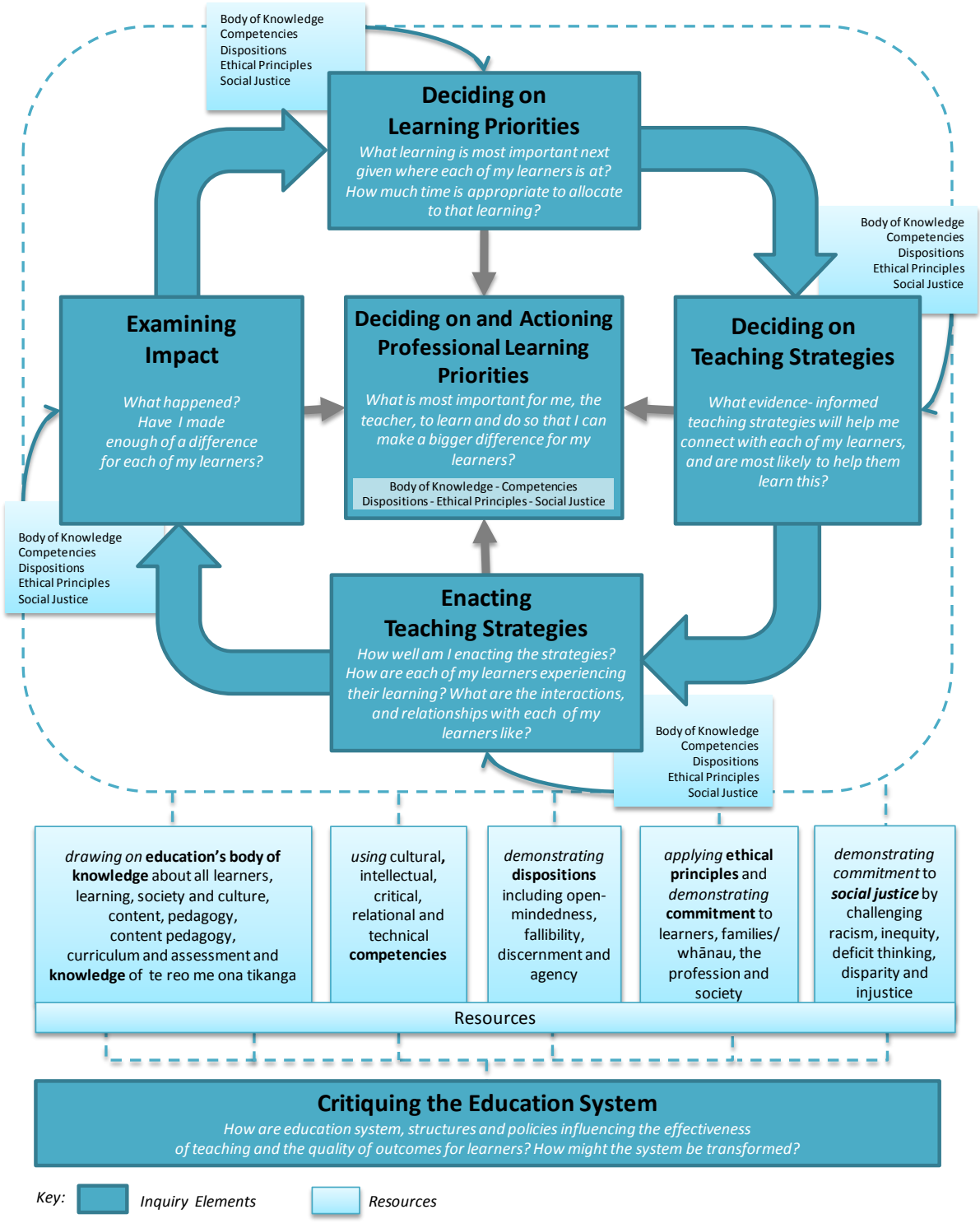

Figure 1. The Teaching for Better Learning model (Aitken, Sinnema & Meyer, 2013)

Learning to teach: The challenges

Recent learning theories (e.g. Bransford et al. 2000, Dumont, Istance & Benavides, 2010) emphasise the importance of linking new learning to existing conceptions of how the world works. In this context, 'how the world works' refers to how teachers teach and students learn.

All teacher candidates have prior conceptions shaped by 'the apprenticeship of observation' (Lortie, 1975); indeed, nearly all begin their teacher education with well-formed ideas about how to teach. Some of these ideas may be effective with diverse learners, but many will not. Engaging these prior conceptions in ways that help teacher candidates understand how to become adaptive experts, responsive to learners, is where the construction of practice-based experiences must start. This does not mean that the experiences of novices should be viewed as a problem to be solved; rather, they are a starting point to be used as a resource for developing adaptive expertise. Just as teachers need to recognise the resources that their students bring to their learning, teacher educators need to recognise the resources that teacher candidates bring to their learning.

Much traditional teacher education literature has been based on models in which the teacher progresses from novice to routine expert (Dreyfus & Dreyfus, 1986), not adaptive expert. Although not mutually exclusive, routine and adaptive expert models represent fundamentally different views of what it means to be professional. To help clarify the differences, the following two sections identify some of the assumptions that underpin or co-exist with the two types of model.

From novice to routine expert

Routine experts, like adaptive experts, continue learning throughout their professional careers. For routine experts, the focus is on applying a core set of skills and routines with greater fluency and efficiency. The assumption is that novice teachers can become expert through supported practice (Dall'Alba & Sandberg, 2006). In such 'practice makes perfect' approaches, skills development takes place in a stepwise, cumulative manner, so becoming an expert involves progressively developing a set of relevant knowledge and skills (e.g. Dreyfus & Dreyfus, 1986). Most models of routine expertise begin with an initial stage of survival and rule following, followed by one or more stages of developing flexibility, experimentation and consolidation. In a final stage, mastery and fluency are consistently demonstrated: rule following has been transformed into skilful know-how in which problems are identified intuitively and holistically and appropriate strategies enacted to solve them. The emphasis is on procedural efficiency (Hatano & Oura, 2003).

In the introduction I referred to the enduring belief, well attested in international research, that the teacher's job is to transmit content and skills to students and then give them opportunities to respond to that knowledge and practise those skills. This conceptualisation of teaching is consistent with routine expertise but at odds with current learning theories (Darling-Hammond, 2006). And it demonstrably does not meet the needs of under-served students, partly because it never invites teachers to question the efficacy of what they do (Bishop, Berryman, Cavanagh & Teddy, 2009).

In order to illustrate the differences between routine and adaptive expertise, Table 1 identifies challenges that teacher educators typically face in developing routine expertise in teacher candidates. Table 2 describes the same challenges from an adaptive expertise perspective. Both

highlight two shifts that teachers make on their journey from novice to routine expert. The first is a shift in focus, from self to students; it is closely tied to the three interrelated issues of identity, efficacy/agency, and normality. For example, new teachers must survive 'practice shock' and the questioning of their own efficacy/agency that usually goes with it. For some, practice shock includes an element of culture shock as they engage with students from cultural backgrounds that are very different from their own or those of their peers when they were school students themselves. The familiarity of the classroom environment can accentuate these issues in that it encourages teacher candidates to take a lot for granted instead of questioning the efficacy of what they experienced as students (Feiman-Nemser & Buchmann, 1985).

The second shift is to increasingly complex understandings about teaching and learning. This shift includes ideas about knowledge, interactions and responsibility, and the location of learning. Novice practice tends to be teacher-dominated and consist largely of transmission of knowledge in ways that are familiar to the teacher and that encourage students to consume, store and recall (Feiman-Nemser & Buchanan, 1985). As they develop routine expertise, the teacher recognises that what students learn is filtered through their personal frames of reference, and they take account of this when constructing classroom environments (Villegas, 2008). Of course the teacher may have limited resources with which to understand the learner's frame of reference and, as routine expertise is typically framed, teachers are not necessarily challenged to question their own positioning (Bishop, 2007) as they are when developing adaptive expertise.

Table 1. From novice to routine expertise: Some shifts

Focus of shift	**From**	**To**
1.	Self	Students
Identity	Self as a student learning how to teach.	Self with a well developed professional identity whose job it is to construct effective learning environments.
Efficacy	Self-preservation: Surviving the reality shock.	Self with a strong sense of self-efficacy that provides the confidence necessary for teaching.
Normality	Self as the norm: All learners are like them and learn as they do.	Realises some learners are different from them (othering).
2.	Simplicity	Complexity
Complexity and knowledge	Teaching is about transmitting accepted knowledge (just follow the lesson plan).	Teaching needs to flexibly provide opportunities to learn accepted knowledge.
Interactions, relationships, and responsibility	If taught in ways familiar to the teacher, students should learn.	What students learn depends on a number of factors, such as prior knowledge. The student's responsibility is to learn the content presented by the teacher. The teacher's responsibility is to present it as well as possible.
Location of learning	Learning happens primarily in classrooms. Other environments such as the home get learners ready for schooling.	Learning is a complex interaction between home, community, and school. The school needs to build on this learning.

From novice to adaptive expert

Routine expertise and adaptive expertise are not mutually exclusive. For example, a teacher needs to master particular routines to become an adaptive expert. However, it would be a mistake to envisage a developmental sequence in which the teacher progresses from novice to routine expert to adaptive expert; adaptive expertise should be understood as a fundamentally different conception of professionalism.

Table 2 describes shifts that teachers must make as they gain adaptive expertise. These shifts should be compared with those for routine expertise described in Table 1.

Table 2. From novice to adaptive expertise: Some shifts

Focus of shift	From	To
1.	Self	Students
Identity	Self as a student learning how to teach.	Professional identity is focused on promoting valued outcomes for *each* learner.
Agency	Self-preservation: Surviving the reality shock.	Agency depends on developing relationships with learners that promote their learning – particularly those not well served by the system.
Normality	Self as the norm: All learners are like them and learn as they do.	Individuals and groups are diverse. Teachers must learn to identify and use the cultural and linguistic resources that learners bring with them. The focus is on "mārama: developing an understanding of one's own identify, language and culture" and understanding its impact on relationships (Tātaiko, pp. 4 and 8).
2.	Simplicity	Complexity
Complexity and knowledge	Teaching is about transmitting accepted knowledge (just follow the lesson plan).	Teaching is the co-construction of knowledge. It involves joint identification of learning goals, understanding learners' conceptions and misconceptions, and drawing on diverse resources (e.g. whānau, iwi, community, digital). The expertise of others is acknowledged and utilised.
Interactions, relationships, and responsibility	If taught in ways familiar to the teacher, students should learn. Marks reflect student ability (absolute view).	Teaching and learning is a function of complex relationships between teachers, students, whānau, iwi, and communities. Teachers find ways to navigate this complexity, develop learner agency, and assess the effectiveness of their teaching (particularly for students who are least like themselves).
Location of learning	Learning happens primarily in the classrooms. Other environments such as the home get learners ready for schooling.	Learning draws on resources from multiple environments, including digital. The teacher develops educationally powerful connections between these environments, recognising the importance of an integrated approach to learning.

While the routine expert develops the confidence to teach and uses it to construct effective learning environments, the adaptive expert focuses on promoting valued outcomes for each learner. For the adaptive expert, it is not so much a matter of efficacy as accepting agency for developing the relationships and teaching strategies that will achieve these valued outcomes. Villegas and Lucas (2002) emphasise the attitudinal component in agency and cultural responsiveness.

The importance of focusing on *each* learner (see tables 1 and 2) is highlighted by teachers' ratings of their effectiveness in teaching literacy in an evaluation of a Ministry of Education project (Timperley & Parr, 2005). This group of teachers rated themselves highly in terms of self-efficacy, but in their justifications pointed almost always to the progress of their middle and top readers and largely ignored those making slow progress. Only one expressed frustration about her ineffectiveness with this latter group; for others, their slow progress was only to be expected.

In contrast, the self-efficacy of adaptive experts is tied to their sense of agency in advancing the learning of those who are struggling. For teachers to get to this point, they need to acquire more sophisticated notions of normality, knowledge, and learning. This will always involve questioning their taken-for-granted assumptions and recognising how their world view is profoundly shaped by their life experiences (Villegas & Lucas, 2002). This is particularly important in terms of cultural positioning and relationships with learners, and for understanding why students as well as teachers must have agency in their own learning (Bishop et al., 2009).

2. Learning experiences that develop adaptive expertise

The research literature has many examples of and suggestions for activities that relate to learning to practise. These include video reviewing of self or others (Blomberg, Stürmer & Seidel, 2011; Masat & Dooly, 2011; Zhang, Lundeberg, Koehler & Eberhardt, 2011), peer coaching (Lu, 2010), engaging with colleagues in joint planning, teaching and assessment activities (Anthony, Haigh, & Kane, 2011; Nilsson, & Driel, 2010), meetings with and teaching alongside mentors (Anthony et al, 2011), self-reflecting or engaging in reflective conversation that draws on shared authentic situations (Lunenberg & Samaras, 2011), sharing autobiographies (Le Fevre, 2011), examining learner products that follow teaching (Darling-Hammond, 2006), immersion in cross-cultural programmes (Bleicher, 2011), situating coursework in the field (Montecinos, Walker, Rittershaussen, Nuñez, Contreras, Solís, 2011), and examination of cases (Darling-Hammond, 2006; Silverman, Welty & Lyon, 1996).

This literature tends to highlight the effectiveness of the approach under discussion, usually in terms of shifting thinking or practice. These overwhelmingly favourable accounts have been criticised (e.g. Colley, 2002; Ingersoll & Kralik, 2004 cited in Hobson et al., 2009; Sundli, 2007), but their positive bias should come as no surprise: researchers naturally want their efforts to be seen in a positive light, and papers with positive stories are more likely to be published.

In a review of the research literature on mentoring beginning teachers, for example, Hobson, Ashby, Malderez, and Tomlinson (2009) caution against assuming positive outcomes for any of these practices even when they include increased personal confidence and self esteem, improved self-reflection and problem solving, better classroom management, and better socialisation of teacher candidates. In practice, these outcomes are often not realised.

The long list of possible practices, taken together with doubts about the effectiveness of at least some versions of them, raises two issues: (i) all may have value, but only in some circumstances, and (ii) all can't be used as the foundation for a programme, so how does one choose from among them?

To answer these questions, I have drawn on the *Teacher Professional Learning and Development: Best Evidence Synthesis* (Timperley, Wilson, Barrar & Fung, 2007). In this synthesis, no particular professional development experience was found to be consistently associated with improved outcomes for students. For every instance of an activity leading to improved outcomes, we found instances in which it did not. What made the difference was how the activities were constructed. Activities that led to deeper understanding and changes in practice and improved outcomes for students were consistent with established principles about promoting learning. Activities that did not were inconsistent with these principles.

Because no particular activity or experience is inherently effective or ineffective, I have turned to recent theories of learning for help in uncovering the attributes of approaches that are most likely to address the challenges that teacher candidates will encounter and most likely to lay a foundation for the development of adaptive expertise. I express these as five learning principles. I then provide a brief analysis of four activities to illustrate how they could be enacted in a teacher education programme in ways that are and are not consistent with the five principles.

Underpinning principles

> As mountains of research now demonstrate, the notion of transmission teaching doesn't actually work most of the time. The reality of effective teaching is much different: successful teachers link what students already know and understand to new information, correcting misimpressions, guiding learners' understanding through a variety of activities, providing opportunities for application of knowledge, giving useful feedback that shapes performance, and individualizing for students' distinctive learning needs (Darling-Hammond, 2006, p. 8).

Although Darling-Hammond (above) is referring to students, what applies to them applies equally to those learning to teach (Bransford et al., 2000). Adults do come with greater experience and more sophisticated ideas, and they are not part of a captive audience in the same sense as young learners. But both respond to the same underlying principles of learning so I have applied these principles and the related research to both.

The approach I have taken is to identify principles that are particularly relevant to the challenges of learning to teach and laying a foundation for developing adaptive expertise. In doing so, I have drawn primarily on recent work relating to conceptual change (Vosnaidou, 2007), how people learn (Bransford, Brown & Cocking, 2000; Putman & Borko, 2000), effective learning environments (Dumont et al., 2010), and what it means to be smart in the twenty-first century (Lucas & Claxton, 2010).

Each principle has direct implications for the assessment of teacher candidates. These implications are summarised at the end of each section.

Principle 1. Develop knowledge of practice by actively constructing conceptual frameworks

> Professional knowledge and skills need to be actively constructed within a holistic conceptual framework organised around important ideas. Underpinning the framework is a theory of what it means to be professional, with effectiveness defined in terms of the engagement and learning of *each* student.

Every profession has its own body of required knowledge and skills. Indeed, this has traditionally been taken as the defining characteristic of a profession. As teaching has become more professional, expectations have developed that teacher candidates should master this body of knowledge and its application (Timperley & Alton-Lee, 2008). Present-day New Zealand teachers can only implement the New Zealand Curriculum if they have deep curriculum knowledge. And they cannot answer the question, "What learning is most important, given where each of my learners is at?" (see Figure 1), without knowledge of the social purposes of education or independent of expectations of learners and relationships with them.

The same issues apply to the question, "What evidence-informed strategies will help me connect with each of my learners, and are most likely to help them learn this?" To answer this question, a

teacher must have knowledge of the students and their cultural and linguistic resources, and of the teaching strategies that are most likely to be effective. As the same paper emphasises, knowledge about teaching cannot be separated from its enactment: teachers do not learn new things and then how to implement them. Rather, they develop their professional knowledge through a mix of theory, practice, and finding out how students respond. Teacher candidates need repeated opportunities over time to develop this complex understanding.

There is increasing evidence that this professional knowledge is unlikely to be deeply understood and readily retrieved in practice unless organised within an appropriate conceptual framework (Bransford et al., 2000) – unless, that is, it is connected to and organised around important ideas in such a way that patterns and relationships become apparent. A framework models the holistic nature of teaching, the practice of which requires a deep understanding of theoretical knowledge and how it is enacted in specific contexts over time.

Conceptual frameworks consist of interrelated and overlapping ideas. See the example in Figure 2. At the centre of this framework is a high leverage practice. While co-operative learning is used as the example, it could equally well be assessment for learning, scaffolding, or modelling a particular learning process. This practice is located within an adaptive expertise framework. The framework is necessarily high level so it will not give teachers in-depth understanding of the focus practice or detailed guidance on how to enact it. For those needs they must draw on more detailed evidence-informed frameworks consistent with the overarching framework.

Different frameworks are useful for different practices. The Figure 2 framework draws on Te Kotahitanga (Bishop et al., 2009), emphasising discursive positioning and relationships that enhance learner agency. It is constructed from the six aspects of the Effective Teaching Profile:

- Manaakitanga (caring for students as culturally located human beings above all else)
- Mana motuhake (caring for the performance of students)
- Whakapiringatanga (creating a well managed learning environment)
- Wānanga (engaging in effective teaching interactions)
- Ako (using a range of strategies to promote effective teaching interactions and relationships with learners)
- Kotahitanga (promoting, monitoring, and reflecting on outcomes).

Locating co-operative learning within a conceptual framework in Figure 2 ensures that the practice, instead of degenerating into a collection of discrete strategies (for example, ‘think, pair, share’), comes to be viewed as a set of integrated strategies informed by deeper understanding. The use of a Te Kōtahitanga framework is illustrative only. Other possible frameworks include the Teaching for Better Learning model (Figure 1).

Figure 2. Situating a high leverage practice within a sample conceptual framework

In terms of developing adaptive expertise, the conceptual framework requires teachers to consider what it means to enact the practice effectively. The only way they can judge its effectiveness is to observe how students respond. Because no practice is effective in every context, the 'Examining impact' and 'Identifying professional learning priorities' inquiries in the Teaching for Better Learning model (Figure 1) require teachers to reflect in evidence-informed ways on what has and has not worked, and for which of their students.

Conceptual frameworks evolve over time as a result of new experiences. Just as student learners construct frameworks in ways that make sense to them given their current knowledge (Istance & Dumont, 2010), so also do teachers and teacher candidates (Bishop, 2007). The idea that teacher candidates should 'sit, receive (even with examples), and then implement' has its origins in a routine expert concept of professionalism, where the teacher educator's role is to help them learn how 'to do it right'. Educators who assume this role may be unable to support candidates to develop conceptual frameworks that are robust enough to withstand the continual testing for efficacy (as gauged by students' responses) that is fundamental to adaptive expertise.

Implications for learning to practise

- Situate learning to practise within appropriate conceptual frameworks and a defensible theory of professionalism (such as adaptive expertise) and ask the same questions across content areas and contexts;
- Include in the knowledge base how to inquire into the effectiveness of practice for the full diversity of learners in any particular context;
- Actively engage teacher candidates in constructing conceptual frameworks in which to locate their practice, with the aim of deepening understanding and creating a sense of agency.

Implications for assessment

Assessments require evidence that:

- candidates' practice (planned and actual) is underpinned by appropriate conceptual frameworks, including the Teaching for Better Learning model (Figure 1), and adaptive expertise;
- candidates assess their practice in terms of how it promotes the engagement, learning, and well-being of diverse learners in the particular context.

Principle 2. Build formal theories of practice by engaging everyday theories

> Personal knowledge and practice, both formal and everyday, have their basis in theories. The challenge is to build formal theories of practice by engaging and challenging teacher candidates' everyday theories. If this is not done, everyday theories will always trump formal theories. The aim is not to integrate theory and practice but to engage and integrate different theories of practice.

One of the ongoing frustrations of initial teacher education programmes is the limited transfer of taught theory to everyday teaching and learning (e.g. Korthagen & Wubbels, 2001; Wideen, Mayer-Smith, & Moon, 1998). Even when candidates show evidence of transfer during a practicum, this evidence tends to become "washed out" once they are in an actual position (Cole & Knowles, 1993). Then, theories developed by teachers during their own long "apprenticeship[s] of observation" as students themselves (Lortie, 1975) typically intervene to have a greater impact on their practice than any theories encountered in teacher education. The challenge for teacher candidates is to move beyond their own personal experiences of what it is to be a student, recognising that these are not universally applicable, and to incorporate formal knowledge or practice and develop more sophisticated understandings of diversity.

This issue of limited transfer is found across all formal learning situations and has been the subject of considerable research (e.g. Hatano & Inagaki, 1994). To address it, I draw primarily on the research on conceptual change (Vosnaidou, 2007).

Both formal and everyday knowledge, and the actions that they lead to, are theory based. Formal knowledge is underpinned by publicly tested frameworks that are encapsulated in a theory. Everyday knowledge is underpinned by cognitive frameworks that are based on experience but often tacit. Over time, they become consolidated as personal theories, sometimes referred to as theories of practice or mental models.

When it comes to conceptual change, it may be that formal theories are difficult to transfer to everyday practice situations because each situation triggers different frameworks and theories (see Principle 1) – different in concepts, in structure, and in the phenomena they explain. A teacher candidate may happily write an eloquent assignment based on formally taught theory without it having any impact on their everyday theories. Indeed, the two may quite contradict each another without the candidate realising it. For example, they may produce a well-justified assignment on learning-oriented feedback in which they explain how personal praise can be counterproductive to learning (Hattie & Timperley, 2007), yet when on placement, give only personal praise as feedback because this is the kind of feedback they experienced as students, and they liked the teachers who gave it. So they simply forget the arguments they had put forward in their assignment.

Unless this competition between formal and everyday theories is systematically addressed, everyday theories, given their derivation in familiar experiences, will always trump formal theories in practice situations (Vosnaidou, 2007). In the example above, the teacher candidate's own past experience of feedback in the form of personal praise triggers an everyday theory, not the formal theory they had espoused in their assignment. Figure 3 explores what is involved in engaging, challenging, and replacing or integrating theories.

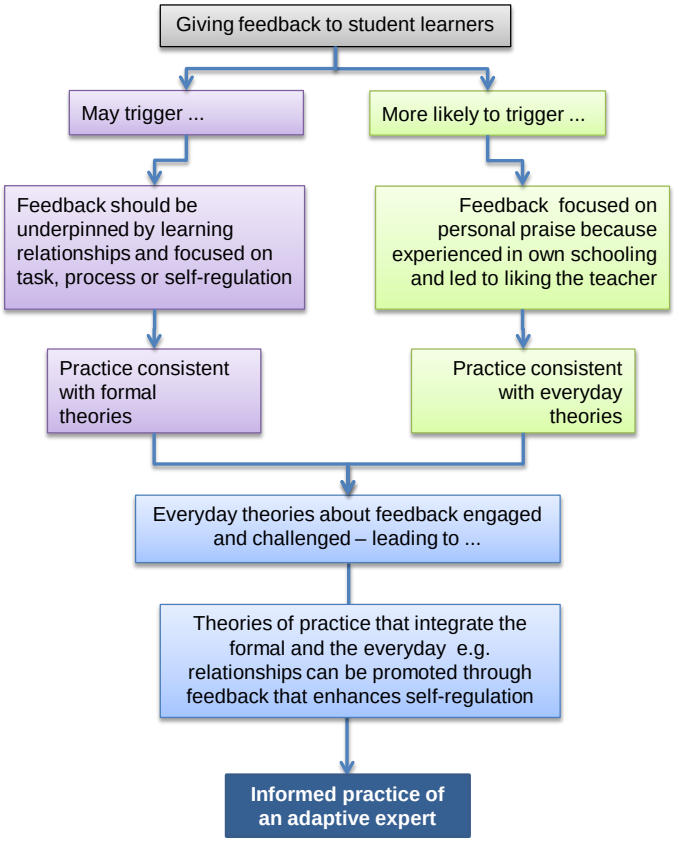

Figure 3. Engaging, challenging, and replacing or integrating formal and everyday theories

When it comes to integrating theories, over-assimilation is a well-documented issue (Hammerness, Darling-Hammond, Bransford, Berliner, Cochran-Smith, McDonald & Zeichner, 2005). Over-assimilation is what happens when candidates believe their current practice (based on everyday theories) is more or less what is being advocated (based on formal theories), when they are fundamentally very different. Their reaction is 'I already do this.'

Another major challenge relates to cultural diversity. If teacher candidates assume that their cultural experience is 'normal', they will likely have difficulty understanding that their normal is underpinned by strong cultural assumptions that will limit their ability to connect with and teach those who are different. As Sleeter (2008) argues, "As long as teacher candidates see themselves as normal but not cultural, they use their own unexamined frames of reference against which to judge students, students' families and their communities" (p. 561). A classic approach to addressing issues of diversity, educational injustice, and inequality is to teach formally "in the hope that such knowledge *about* might magically inform knowledge of how to and might provoke dramatic changes in new teachers' dispositions, commitments and beliefs" (Sykes, Bird & Kennedy, 2010). Yet formally taught courses in this area rarely have much impact because they do not engage and challenge everyday theories of practice.

Those responsible for constructing learning experiences for teacher candidates must therefore highlight, engage, challenge, and resolve theoretical tensions in ways that lead to the replacement of everyday theories or their integration with formal theories. As candidates experience this process they learn to recognise the assumptions that underpin their practice, when these assumptions are

helpful, and when to let them go – important attributes of an adaptive expert. Being able to examine their own assumptions is particularly important if, when assessing the impact of their teaching (see the Teaching for Better Learning model in Figure 1) teachers find there has been little improvement in student engagement, learning, and well-being. At this point, an adaptive expert will move to the next inquiry in the model, asking: "What is most important for me to learn so I can make a bigger difference for my students?"

The idea that all practice is underpinned by theory is very different from what Lampert (2009) describes as the common but unhelpful view that theory and practice are quite separate matters, with universities responsible for the theory and schools for providing the domain for practice. The gap to be bridged is not between theory and practice, it is between formal theories of practice and everyday theories of practice. Bridging this gap requires the formal and the everyday to be unpacked and compared in ways that create a space for new cognitive and action frameworks that entertain different perspectives and different points of view, and that enhance their integration (Wideen et al., 1998).

Implications for learning to practise

- Examine how personal everyday theories differ from/are the same as formal theories of teaching and learning (particularly important for understanding that everyday notions of 'normality' are strongly cultural);
- Intentionally resolve the tensions between personal everyday theories and the formal theories to which candidates are exposed.

Implications for assessment

Assessments require evidence that:

- in their analysis of practice situations, candidates include alternative analyses based on personal everyday theories and formal theories of practice (including assumptions about diversity), and then compare them.

Principle 3. Promote metacognition and self-regulated learning

> Metacognition and self-regulation promote life-long learning by developing awareness of one's own learning, enabling one to take control in ways that lead to ongoing inquiry into the effectiveness of practice for diverse learners, and to the making of appropriate changes.

Nowhere do the shifts demanded by twenty-first century learning and the need for adaptive expertise come more obviously to the fore than here (De Corte, 2010). Metacognition and self-regulated learning underpin the development of adaptive expertise, with professional learning an embedded imperative driven by the desire to improve outcomes for students. The deliberate testing of assumptions and the resolving of tensions between everyday and formal theories, discussed under Principle 2, are both part of metacognition.

Definitions of metacognition and self-regulation abound. For metacognition, I will draw on the definition offered by Lucas and Claxton (2010):

> "Meta-cognition ... is essentially thinking about thinking ... Meta-cognitive skills are the higher order skills which ensure learners have the ability to stand back and take control of their own learning."

While metacognition relates to awareness, self-regulation refers to the extent to which learners actively use this awareness to initiate, motivate and direct their own efforts to acquire knowledge and skill instead of relying on others as agents of instruction (Schunk & Zimmerman, 1994). Self-regulated teachers take an agentic position towards improving practice (Bishop et al., 2009) and increasingly become their own teachers.

Various studies of young people's learning have established that metacognition and self-regulation have a significant impact on academic performance above and beyond ability and/or prior achievement (Aamodt & Wong, 2011; Hacker, Dunlosky, & Graesser, 2009; Ponitz, McClelland, Jewkes, Connor, Farris, & Morrison, 2008; Pressley & Harris, 2006). If they are so powerful for younger learners, they should be equally powerful for those who are learning to be teachers.

All teacher education programmes promote the idea of lifelong learning but their approaches to learning to practise do not necessarily systematically develop the metacognitive awareness and co-regulated learning skills that are crucial. Candidates require support to develop strategies that will allow them to take responsibility for their own learning in ways that promote better outcomes for the full diversity of their learners. For teachers, lifelong learning does not start when they become registered; rather, throughout their initial teacher education they need to be developing the skills and dispositions to inquire into the effectiveness of their practice for diverse learners. That is, they need the skills to learn *from* practice as well as *for* practice.

The Teaching for Better Learning model (Figure 1) is a tool for helping teacher candidates analyse their own practice. As they start asking themselves the inquiry questions, and then collecting evidence on which to base their answers, they will be developing their metacognitive understandings in ways that promote self-regulated learning. A caution, though: If candidates see the inquiry questions simply as hoops they must jump through for the purposes of graduation and registration, it is unlikely they will gain much from using the model.

Integrating formal and everyday theories as discussed under Principle 2 also requires metacognition because it involves bringing into consciousness and applying things learned in one context (e.g. university) to other contexts (e.g. classroom). Successful integration involves activating thinking routines, instructions to oneself, and deliberate planning processes. In other situations it might involve transferring understandings about practice from one curriculum area to another. For most learners, the skills to integrate and transfer need to be taught; they do not develop automatically (Lucas & Claxton, 2010).

To become self-regulated learners, candidates (like students) need clear expectations (Dumont et al., 2010). These are found in the standards for graduating teachers. Using the standards as their starting point, candidates identify personal learning goals, seek and receive evidence-based

feedback on their progress and, with the support of others, identify what to work on next. Formal assessment of candidates should emphasise these areas.

Implications for learning to practise

- Provide learning experiences that are consistent with promoting development of metacognitive and self-regulated learning. Encourage teacher candidates to assess their own progress in terms of the Teaching for Better Learning model;
- Systematically develop the integration and transfer of important ideas across contexts, curriculum areas, and from learner to learner as a deliberate, metacognitive, and agentic process.

Implications for assessment

Assessments require evidence that:

- candidates have engaged in a conscious process of systematic inquiry using the Teaching for Better Learning model to identify goals, the feedback they need, and next learning challenges;
- candidates can demonstrate how they have integrated and transferred learning across contexts.

Principle 4. Integrate cognition, emotion, and motivation

> Learning to teach is an emotional experience. Support to meet the inevitable challenges that arise needs to be framed in terms of developing a sense of professionalism (adaptive expertise) focused on benefitting learners, not those learning to teach.

"Learning results from a dynamic interplay of emotion, motivation and cognition ... It is therefore important to understand not just learners' cognitive development but their motivations and emotional characteristics as well" (Istance & Dumont, p. 321).

To develop the competencies outlined in connection with Principle 3, teacher candidates require positive images of themselves as learners, and the motivation to engage in metacognitive and self-regulated learning processes. The very act of asking the inquiry questions in Figure 1 requires a level of self-confidence. Feelings of being overwhelmed or helpless will get in the way.

Recent research on the human brain has identified that emotion and cognition operate seamlessly (Lucas & Claxton, 2010). While some emotions pass quickly, those that endure (such as shame and powerlessness), have an ongoing impact on motivation and learning in the face of similar challenges. Overload can also lead to challenge avoidance (Dumont et al., 2010). On the bright side, the motivation to engage increases when learners experience positive emotions towards learning activities, and the activation of positive rather than negative emotions frees up cognitive resources for learning (Boekaerts, 2010).

I have drawn attention to this principle because learning to teach can be an intensely emotional experience. Surviving 'practice shock' is primarily about emotions. The shift from focus on self to focus on students requires the freeing up of cognitive and emotional resources. Operating within a

routine expert framework, the traditional approach has been to provide personal support and practical advice to assist beginning teachers through the early months (sometimes years) until they are able to move beyond survival and rule-following and enter on to the path to mastery and fluency (Dreyfus & Dreyfus, 1986). The process emphasises the development of self-confidence and self-efficacy. Associated practices become deeply embedded; personal theories about how to be effective become equally embedded (Dall'alba & Sandberg, 2006).

The problem with this approach is that these personal theories are not necessarily situated within a defensible theory of teaching effectiveness, and the beliefs and activities that become entrenched may actually benefit the teacher more than their learners. The aim, therefore, must be to support beginning teachers to survive the emotional rollercoaster by building their sense of professionalism within a defensible theory of teacher effectiveness. Dealing with stressful situations becomes easier when teachers develop strategies that explicitly link teacher and student success. But these need to be founded on more than a strong personal theory.

Implications for learning to practise

- Support teacher candidates through 'practice shock' by situating their experiences within an adaptive expert framework of developing knowledge and skills;
- Support the shift from focus on self to focus on students by situating it within a defensible framework in which students and teacher both benefit.

Principle 5. Situate learning in carefully constructed learning communities

> Learning is essentially relational and social. It is promoted by engagement in communities, both within the profession and the wider community, which are focused on the active construction and critique of knowledge and practice.

Learning is essentially relational and social (Dumont et al., 2010; Lucas & Claxton, 2010). Our brains are primed for social interaction and the construction of individual knowledge occurs through negotiation and co-operation with others.

The *Teacher Professional Learning and Development: Best Evidence Synthesis* (Timperley et al., 2007), found that opportunities for teachers to learn and process new ideas with colleagues was a necessary but insufficient condition for improving student outcomes. To make the condition sufficient, groups either needed to contain or have access to those with appropriate expertise. Sometimes, this expertise had to challenge the group's norms. Under Principle 3, I highlighted the importance of teacher candidates seeking social interactions that will enhance their learning and development, whether this involves asking a colleague to model something that is challenging them, seeking feedback on their attempts to teach something, or seeking clarification of a concept. Relying solely on one's own understanding will likely lead to constructs that are idiosyncratic rather than drawing on a wider knowledge base.

Learning is also shaped by the social context in which something is learned. Lave and Wenger (1991), whose activity theory is widely drawn on to describe the experiences of teacher candidates, suggest that workplace learning should be conceived of as a process of social participation within communities of practice. Further, they go on to suggest that what we call cognition may in fact be a complex social phenomenon, with any change in the context influencing what we learn, and how. Whatever the academic arguments, there is little doubt that communities that actively construct knowledge of practice promote learning. A necessary caution, of course, relates to the kinds of knowledge that the community draws on. Every community has the potential to entrench existing beliefs and ineffective practices (Coburn, 2001; Timperley & Robinson, 1998).

Given the importance of the social context in shaping learning, it is essential that teacher candidates come to acquire an expansive view of 'community' – one that is much broader than the school itself. Not all learning happens in school or a university; indeed, it can be argued that most learning takes place outside of formal institutions, including in the digital environment.

There are two main imperatives for adopting this wider perspective. The first relates to understanding diverse learners. There is an increasing consensus that there is a need to mobilise the social, cultural, and linguistic processes of diverse communities as resources for learning and teaching (Moll, 2010). I contend that it is extremely difficult for teacher candidates to be culturally and linguistically responsive to young people from communities different from their own if they do not have some depth of engagement with at least some of those communities, and some understanding of the funds of knowledge they have to offer. To make the transition from self as normal to self as cultural, and to recognise the cultural diversity of those they interact with and

teach, candidates have to engage with a range of communities. The caution here is that engagement must be supported in ways that challenge unhelpful theories so that it leads to deeper understanding, not entrenchment of those theories. Without support, exposure can be counterproductive.

The second imperative relates to the emergence of new kinds of communities. Dumont et al (2010) refer to the importance of promoting "horizontal connectedness" across areas of knowledge and subjects, as well as to the community and the wider world. This connectedness may be centred in non-school education centres such as museums, libraries, marae, sports clubs or churches; it is increasingly digital and cuts across traditional notions of community. Structured social networking can provide powerful learning opportunities for teacher candidates to test and develop their understandings of what it is to teach effectively. The challenge is to use digital communities in ways that promote learning.

Implications for learning to practise

- Draw on the expertise of a range people – peers, mentors and coaches, lecturers – to structure learning within communities;
- Support teacher candidates to engage in communities with which they are not familiar to deepen their understanding of diversity;
- Construct learning opportunities through a range of media.

Implications for assessment

Assessments require evidence that:

- candidates are engaging in social interactions that introduce them to a diversity of views and can identify how they have contributed to and been changed by these interactions.

Using the learning principles to shape learning-to-practise experiences

I now illustrate how the learning principles can be used to develop adaptive expertise through experiences of the kinds described in the literature referred to at the beginning of the section. For each of the four examples, I contrast effective and ineffective practice.

Example 1. Observing teacher candidates teaching and discussing practice

Observation and feedback is a feature of most university-based teacher education programmes and programmes for provisionally registered teachers. It typically fulfils two functions. First, it provides the teacher candidate with feedback that can help them improve their practice. Second, it provides evidence that the candidate has/has not sufficient expertise to graduate. The analysis in Table 3 has the first (learning) function as its focus.

Table 3. Observing teacher candidates teaching and discussing practice

Learning principle	Activities **not consistent** with the learning principles and development of adaptive expertise	Activities **consistent** with the learning principles and development of adaptive expertise
Develop knowledge by actively constructing conceptual frameworks	• Leave effectiveness criteria implicit. • Analyse record of observation by asking for the candidate's opinion or giving own opinion but not justifying it in terms of an explicit theoretical framework. • Focus on teaching styles and practical strategies with reference to an under-theorised 'what works'.	• Prior to observation, co-construct effectiveness criteria, drawing on theoretical frameworks. • Analyse record of observation using the agreed criteria and candidate's responses to judge effectiveness. • Co-construct new practice, justifying priorities on the basis of their theoretical underpinnings.
Build formal theories of practice by engaging everyday theories	• Make private judgments about the candidate's theories of practice and do not explicitly inquire into them. • Use informal notes to record observations. • Focus on what the candidate wants to talk about.	• Analyse when recorded practice is and is not consistent with effectiveness criteria. • Inquire into personal theories of practice to determine similarities and differences between personal and formal theories and which theories underpinned the practice decisions observed. • Seek ways to integrate differing theories.
Promote metacognition and self-regulated learning	• Focus observations on generic practice. • When identifying possible changes, focus on what the candidate can try next rather than on how they will know it is more effective for their learners.	• Identify practice focus from personal learning goals and identify new learning goals as a result of the analysis. • When identifying changes to practice, also identify how the teacher candidate can monitor whether the new practice is more effective for their learners.
Integrate cognition, emotion, and motivation	• Give personal support to teacher candidates experiencing 'practice shock', focusing on survival without reference to theories of developing professionalism. • Focus judgments of effectiveness on how the candidate feels about their emerging practice.	• Locate support for a candidate experiencing 'practice shock' within the context of developing professionalism through adaptive expertise. • Assist them to judge effectiveness in terms of how their learners respond.
Situate learning in carefully constructed learning communities	• Keep observations and feedback a private exercise between observer and candidate.	• Develop criteria as a group. • Process challenges in meeting criteria collectively, in a mutually supportive context.

Example 2. Using narrative to examine cultural assumptions[1]

Many Indigenous (Brayboy, 2005; Lomawaima, 2000; Sarra, 2011; G. Smith, 1997; L. Smith, 1999) and non-Indigenous (Alton-Lee, 2003; Freire, 1997; Kincheloe & Steinberg, 1997; McLaren, 2003; Timperley et al., 2007; Valencia, 1997) authors contend that the product of longterm power imbalances needs to be examined by educators at all levels. This includes examination of their own cultural assumptions and consideration of how they themselves might be participants in the

[1] This introduction was written by Russell Bishop and Table 4 was jointly constructed with him

systemic marginalisation of students in classrooms, schools, and the wider system. Teachers may not be in a position to rectify societal power imbalances but, by critically considering the discourses they draw on to explain their educational experiences, they can examine their role in the power plays that mediate Māori participation in schooling. In this way, their self-determination as teachers is acknowledged just as they are encouraged to acknowledge that of Māori students.

To this end, student narratives of school experience are used in the Te Kōtahitanga project (Bishop & Berryman, 2006) to give teachers the opportunity to reflect on the experiences of others involved in education, including, perhaps for the first time, student learners. Hearing these narratives, teachers are able to reflect on their own understandings of how Māori young people experience school, how their personal theorising and explanations have influenced their practice, and how this theorising and practice may have affected the achievement of their Māori students. Far from being a coercive activity, the vast majority of teachers report it to be enlightening and empowering (Bishop, Berryman, Cavanagh & Teddy, 2007).

Table 4. Using narrative to examine cultural assumptions

Learning principle	Activities **not consistent** with the learning principles and development of adaptive expertise	Activities **consistent** with the learning principles and development of adaptive expertise
Develop knowledge by actively constructing conceptual frameworks	• Show candidates how to integrate Māori perspectives, processes, and practices into teaching programmes in decontextualised ways, without examining either students' or teachers' experiences of being Māori. • Integrate Māori perspectives, etc., without interrogation or understanding of the relationships that need to be established between teacher and learner.	• Use the evidence in the narratives to identify and explain Māori students' experiences of being educated and teachers' experiences of educating Māori. • Support candidates to locate themselves theoretically/discursively, and to understand that their discursive positioning will be the key to their relationships with students. • Actively engage candidates in constructing frameworks that unpack the natures of agentic and deficit discourses.
Build formal theories of practice by engaging everyday theories	• Determine kaupapa Māori outcomes without considering practices that involve interrogating the experiences of their Māori students. • Determine the teaching and learning programme and the integration model to be used; design a kaupapa Māori teaching and learning programme without first considering candidates' experiences; implement programme; evaluate.	• From narratives of experience, identify and name discourses people have used to explain their experiences; identify who is drawing upon what, and how frequently. • Identify which discourses teachers and candidates most often draw upon to explain their experiences of educating Māori students; identify implications for practice. • Pose the question: "What is the most likely explanation that Māori students will give?" • Assist teacher candidates to identify alternative discourses, associated actions, and likely responses; compare these discourses with alternatives that will result in better outcomes.
Promote metacognition and self-regulated learning	• Know who the tangata whenua of your area are but make no links to their experiences. • Teach appropriate mihi but put little emphasis on practices that develop relationships. • Integrate aspects of Māori knowledge and customs into the curriculum (e.g.	• Develop a means of analysing experiences to identify the discourses (especially relational discourses) that candidates draw on and the likely impact of these discourses on students.

	hāngi into science, tukutuku into maths) without considering how they may be experienced/enacted by students and teachers.	
Integrate cognition, emotion, and motivation	• Acknowledge the emotional processes that candidates go through when trying to integrate Māori knowledges into their programmes, without supporting them to achieve a level of comfortableness.	• Acknowledge the emotional processes involved in shifting discourses. • Provide positive alternatives and models such as the Effective Teaching Profile, underpinned by agentic discourse.
Situate learning in carefully constructed learning communities	• Seek guidance from people in the community knowledgeable about kaupapa Māori and tikanga Māori about how to develop a culturally respectful approach.	• Situate all activities within a learning community that includes members who are culturally knowledgeable and focused on improving student outcomes.

Example 3. Using representations of practice

Representations such as videos and case studies are often used to situate learning in practice, but it has long been established that exposure to effective practice is not in itself sufficient to bring about change because teacher candidates do not know what to focus on or how to translate what they see/hear/read into their own contexts.

Guousseini & Sleep (2011) highlight the importance of making practice studyable, and of teacher educators guiding the focus, mediating the complex landscape of practice, and supporting teacher candidates to see how they can use new understandings in their own practice. Table 5 indentifies how this can be done in ways that are inconsistent/consistent with the learning principles.

Table 5. Studying representations of practice

Learning principle	Activities **not consistent** with the learning principles and development of adaptive expertise	Activities **consistent** with the learning principles and development of adaptive expertise
Develop knowledge by actively constructing conceptual frameworks	• Focus analysis on practical strategies without reference to theoretical constructs or student responses. • Highlight classroom management rather than opportunities for students to learn.	• Require analysis to identify how observed interactions are linked to focus theoretical constructs, how students are responding, and why this might be the case.
Build formal theories of practice by engaging everyday theories	• Focus on 'what is noticed', without specifically locating it in either formal or everyday knowledge.	• Analyse the representation twice: (i) using informal, unstructured observation based on everyday theories of practice and (ii) using structured, formal theoretical constructs. Compare and contrast the two analyses, unpacking the reasoning behind each. • Explicitly use analysis as a way of resolving tensions between formal and everyday knowledge, with impact on learners the measure of effectiveness.
Promote metacognition and self-regulated learning	• Have a generic personal learning goal but not a structured self-assessment framework.	• Relate analysis to a specific personal learning goal that has as its focus improved outcomes for learners. • Use a self-assessment framework to identify what was noticed, the extent to which it was linked to theoretical constructs, and how

		learners responded.
Integrate cognition, emotion, and motivation		[Unlikely to be an issue in this situation]
Situate learning in carefully constructed learning communities	• Construct the learning activity primarily as an individual exercise followed by unstructured discussion where colleagues compare ideas.	• Undertake the analysis in groups, using comparisons of analyses to self-assess. • Consider structuring as a web-based activity in which candidates develop and critique each another's analyses, developing community understanding of practice and the reasons that underpin it.

Example 4. Using metaphor to teach for incorporation of cultural and linguistic knowledge[2].

In Polynesian discourse, speakers often use metaphor and proverbial sayings to communicate truths indirectly. For example, the Māori whakatauki 'Kaore te kumara e whaakii ana tana reka (the kumara does not speak of its own sweetness)' is often used to remind someone not to boast. Metaphors and proverbs are an important part of the traditions and languages of Pasifika peoples, who hold oratory, poetry, and subtlety in high regard as means of communication, in conversation as well as in formal ceremony and ritual.

'Alaga'upu' (Sāmoa) and 'heliaki' (Tonga) both refer to indirectness – saying one thing and meaning another – and are a highly valued part of cultural discourse, essential to the Pasifika practice of spiralling, co-constructed conversation (Pratt, 1862; Kessing & Kessing, 1956; Dale, 1996; Johnson-Hill, 2008).

Metaphorical discourse is central to "Pasifika people's social and cultural psyche" and in tertiary settings, "metaphors are used to define and explore deeper meanings and understandings of western concepts, so that Pasifika students also have a better understanding of course content" (Marat, Papoustaski, Latu, Aumua, Talakai & Kang, 2011, p.1). In teacher education contexts, metaphor can be a powerful tool for supporting candidates to surface their own assumptions about the students they may be teaching. Table 6 identifies how this can be done in ways that are inconsistent/consistent with the learning principles.

Table 6. Using metaphor to teach for incorporation of cultural and linguistic knowledge

Learning principle	Activities **not consistent** with the learning principles and development of adaptive expertise	Activities **consistent** with the learning principles and development of adaptive expertise
Develop knowledge by actively constructing conceptual frameworks	• Introduce the metaphor as a reflective exercise in understanding cultural and linguistic knowledge.	• Situate the metaphor within theories of making connections to cultural and linguistic knowledge and its relevance to teaching (e.g. Cummins, 2008). • Help candidates to view student and community funds of knowledge as resources for teaching and learning.

[2] This introduction was written by Rae Si'ilata and the figure and illustration co-constructed with her.

Build formal theories of practice by engaging everyday theories	• Ask candidates to identify the meaning of the metaphor, critique aspects of interest, and identify implications for their teaching.	• Construct and unpack the metaphor to surface the candidate's assumptions about how particular students think and learn. • Engage and challenge assumptions about what learners know and can do. • Support candidates to use this information to find a starting point for their teaching and for building inquiry about their learners' cultural and linguistic resources into their practice.
Promote metacognition and self-regulated learning	• Ask candidates to identify what they have learned from studying the metaphor and discussing it with colleagues.	• Ask candidates to identify other situations where they need to question their assumptions about students' thinking and ways of learning. • Identify questions that candidates can ask when exploring their learners' cultural and linguistic knowledge, and explore how they could adapt their teaching in specific situations.
Integrate cognition, emotion, and motivation	• Highlight the fact that incorporating cultural and linguistic knowledge may at times feel awkward or strange.	• Surface emotions of awkwardness and strangeness when faced with other cultural and linguistic ways of knowing and adopt an inquiry stance when exploring different worldviews.
Situate learning in carefully constructed learning communities	• Allow discussion to take place within self-selected, homogeneous groups.	• Ensure discussions incorporate and build on diverse funds of knowledge, including those of the students and their whānau/aiga.

The following short text could be used as an introduction to a discussion on metaphor and to questions that might prompt the kind of thinking outlined in Table 6. As you read it, think deeply about possible meanings and about possible applications in the classroom, for school–community relationships, and for teachers and their students. Think about how it relates to seeing the world through someone else's eyes and the importance of ensuring that we create space for considering worldviews, languages, and cultures other than our own, and for incorporating them into educational discourse.

> *A family, with their dog Jess, was netting for sprats as baitfish along a remote beach. They spotted a school not far offshore. The father took the net and walked into the sea, surrounding the leaping sprats so there was no escape. Carefully they pulled the net in, keeping it in the shallow water because there were many more fish than they needed. Having put some in buckets, they extracted the remaining fish from the net and, one by one, threw them back into the water. Some fish were stunned and briefly floated upside down before recovering. Jess the dog became highly agitated when she saw the upside-down fish floating in the water and swam out to rescue them. She carefully took the fish one at a time in her mouth and swam back to the shore, making sure they did not get submerged in the water. Back on the shore, she gently laid them on the beach and returned for the next fish. In all, she 'rescued' six fish and sat watching over them for the rest of the afternoon.*

Questions that could be asked include:

- What was Jess's motivation?
- What did Jess assume about fish culture?
- What advice would you give Jess for future situations where she would like to help the fish?

- What advice would you give teachers working with students who come with cultural and linguistic resources that are different to their own?
- How will you surface and incorporate other worldviews and deeper features of culture into your work with students from linguistically and culturally diverse backgrounds?

3. A model for developing expertise

Approaches to learning to teach cannot be treated independently of their positioning within the overall teacher education programme. In a study of seven exemplary programmes in the US, Darling-Hammond (2006) identified a number of features that have implications for developing models of practice. These include a clear, shared vision of good teaching that permeates formal course work and practice experiences; a conception of professionalism as adaptive expertise; and graduating standards that provide coherence and a basis for integrating courses across sites.

Another feature was that learning-to-practise experiences were closely interwoven with coursework throughout an extended and closely supervised practicum; demonstration learning environments were selected because they modelled practices described in courses. This level of integration required strong relationships, and knowledge and beliefs shared by the school- and university-based faculty who knew they were in the business of transforming teaching.

Further features of these exemplary programmes include their use of explicit strategies to address the kinds of required shift outlined in Section 1, and their emphasis on helping candidates to confront their own deep-seated beliefs and assumptions about learning and students and learn about the experiences of people different from themselves.

Sadly, international research indicates that candidates often complain that the practices of those responsible for their teacher education are inconsistent with the practices being promoted (Korthagen, Loughran & Russell, 2006). This relates to a point made repeatedly by a range of researchers (e.g. Villegas & Lucas, 2002; Stofflett & Stoddart, 1994), that it is unreasonable to expect traditionally trained teacher candidates to teach in non-traditional ways.

Non-traditional but robust approaches to teacher education are gaining ground as a result of the work of researchers such as Grossman, Hammerness & McDonald (2009). These authors, together with a growing number of others, talk about the 'clinical aspects of practice' when referring to what I have called teacher practice, and suggest that, to take these aspects seriously, teacher educators must engage with pedagogies of enactment. This means that the historical divisions between foundations and methods courses and between universities and schools need to be abandoned and, say the authors, "teacher education should move away from a curriculum focused on what teachers need to know to a curriculum organized around core practices, in which knowledge, skills and professional identity are developed in the process of learning to practice" (p. 274). While Grossman et al. acknowledge that organising professional education around a core set of practices will challenge many of the existing structures in teacher education, this approach is consistent with the graduate teacher standards proposed by Aitken et al. (2013) in the companion paper. The model presented in Figure 4 illustrates how such an approach could be situated within the standards model and enact the learning principles.

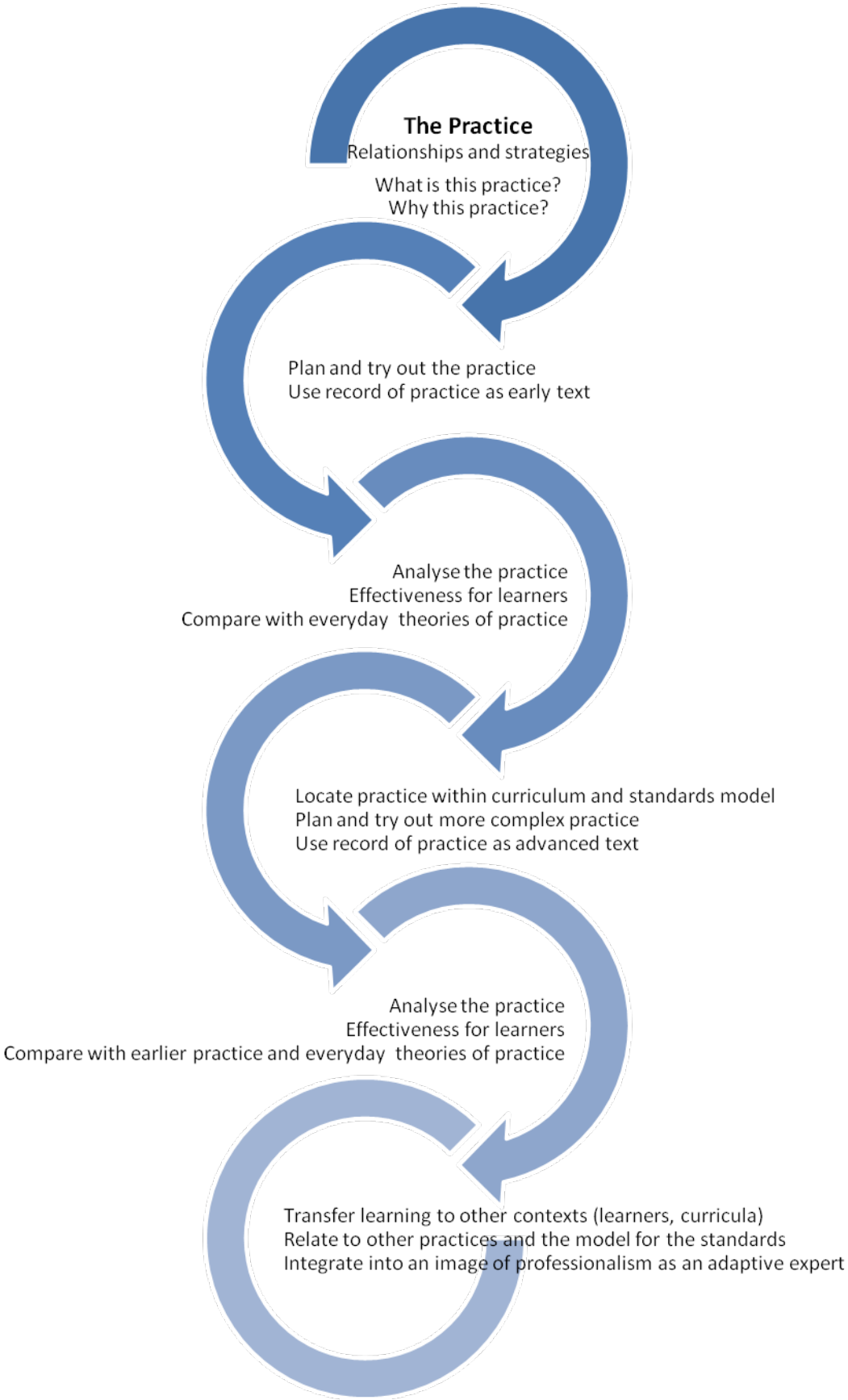

Figure 4. A curriculum of core practices

Explanation of the model

The starting point for the model is a high-leverage practice, along with the relationships and strategies that will be involved in enacting it. Possible high-leverage practices include co-operative learning, feedback, formative assessment, scaffolding, and many others. When setting up a teacher education programme, the first priority is to identify which practices are the most important for candidates to learn at each stage of the programme.

What exactly are core practices? Grossman et al. (2009) propose these characteristics as a starting point:

- Practices that occur with high frequency in teaching;
- Practices that novices can enact in classrooms across different curricula or instructional approaches;
- Practices that novices can actually begin to master;
- Practices that allow novices to learn more about students and about teaching;
- Practices that preserve the integrity and complexity of teaching;
- Practices that are research-based and have the potential to improve student achievement. (p. 277)

For the purposes of illustrating how the model might be enacted, I will use assessment for learning as the high-leverage practice. In doing so, I will draw attention to the learning principles discussed in Section 2.

In the early stages, the 'what' of the practice might involve coming to understand the importance of developing relationships in which teacher and student assume joint responsibility and agency for learning, and developing strategies for understanding students' conceptions and misconceptions as a starting point for teaching. Depending on where the candidate is at, the 'what' of practice might also include learning to be responsive to students through ongoing discussion. The specifics of these practices would be situated in a broad understanding of what assessment for learning consists of, why it is such an important practice (Principle 1), and how it may challenge candidates' everyday theories about teaching and learning, including their cultural positioning and notions of agency (Principle 2).

The next phase involves planning and enacting the practice in a constrained and supported environment. One way would be to teach a colleague a teaching-related concept using assessment for learning processes. This would include unpacking the colleague's conceptions and misconceptions of the concept to be learned. In this case, the teaching-related concept could even be assessment for learning. Another way would be to work with a small group of student learners to unpack their conceptions and misconceptions of a mathematical procedure and to develop relationships that promote shared responsibility for learning. Either way, the candidate's assessment for learning practice would be recorded as a text to be used for further analysis.

Analysis would focus on how learners responded to the practice, and the recording used to deepen the candidate's understanding of assessment for learning practice within conceptual frameworks

(Principle 1), including how these differ from their everyday theories of practice (Principle 2). The processing would include the emotional rollercoaster of learning to teach (principles 3 and 4), and the importance (for themselves and their learners) of developing supportive and challenging relationships in carefully constructed learning communities (Principle 5).

Where a curriculum concept (for example, a mathematical procedure) is taught to student learners, analysis of the practice would also be used to deepen the candidate's understanding of the curriculum (Principle 1) – teaching practices, such as assessment for learning, cannot be learned independently of knowledge of the curriculum. I would argue that it is similarly difficult for candidates to understand the curriculum independently of practice. The two go hand-in-hand.

Developing understandings of curriculum and practice would be located within the Teaching for Better Learning model (Figure 1). Decisions relating to teaching strategies must be located within the model, whether they involve learning priorities, analysing practice, or examining impact.

Findings from the analysis would then be used to construct assessment for learning practice in more complex ways and in a less constrained situation, but still with high levels of support; for example, with a larger group of students with differing levels of understanding. In addition to developing relationships and unpacking students' conceptions and misconceptions, the candidate might provide learning-related feedback. The recording of planning and teaching would become a further, more advanced text for analysis, using the same learning principles as before.

A comparison of the two analyses (one early, one more advanced), together with discussion of the candidates' everyday theories of practice (Principle 2) could be used to promote metacognition and self-regulated learning (Principle 3). What shifts in practice were apparent? How did those shifts reflect changed understandings of the practice? What processes promoted learning the practice? How can these changes be incorporated and sustained in everyday teaching?

As mastery of the focus practice is developed it can be transferred to other situations (for example, other curricula, other students) and its relationship to other practices (for example, scaffolding learning) explored. In these ways, candidates deepen their understanding of the focus practice within conceptual frameworks (Principle 1). This should include situating the practice within the Teaching for Better Learning model in increasingly sophisticated ways. Finally, candidates understand how the practice can assist them to be adaptive expert professionals, responsive to the learning needs of their students.

Implicit in a practice-based curriculum is the idea of supporting candidates to move from early, highly constrained approximations of practice, through less constrained approximations of practice, and to the full complexity of practice encapsulated in the graduating teacher standards. In earlier stages, constraints may relate to the context in which the candidate is practising (for example, size of group or mix of students) or it may relate to the complexity of the practice itself. In the explanation accompanying Figure 4, formative assessment is used as an example. There are many aspects to this practice and it is unrealistic to expect candidates to understand it in its full complexity, right from the word go.

Figure 5 represents the movement from highly constrained approximations of practice to the full complexity of practice required by the standards. The expectation is that reduction in complexity for

recently graduated candidates is achieved through reduction in student contact hours and/or range of learning needs to be addressed. It is implicit in the Teaching for Better Learning model that those who have responsibility for learners should demonstrate that they are able to meet the standards, even if they are beginning teachers. A fully registered teacher must deal with increased complexity primarily in terms of increased contact hours and in the range of learning needs they encounter.

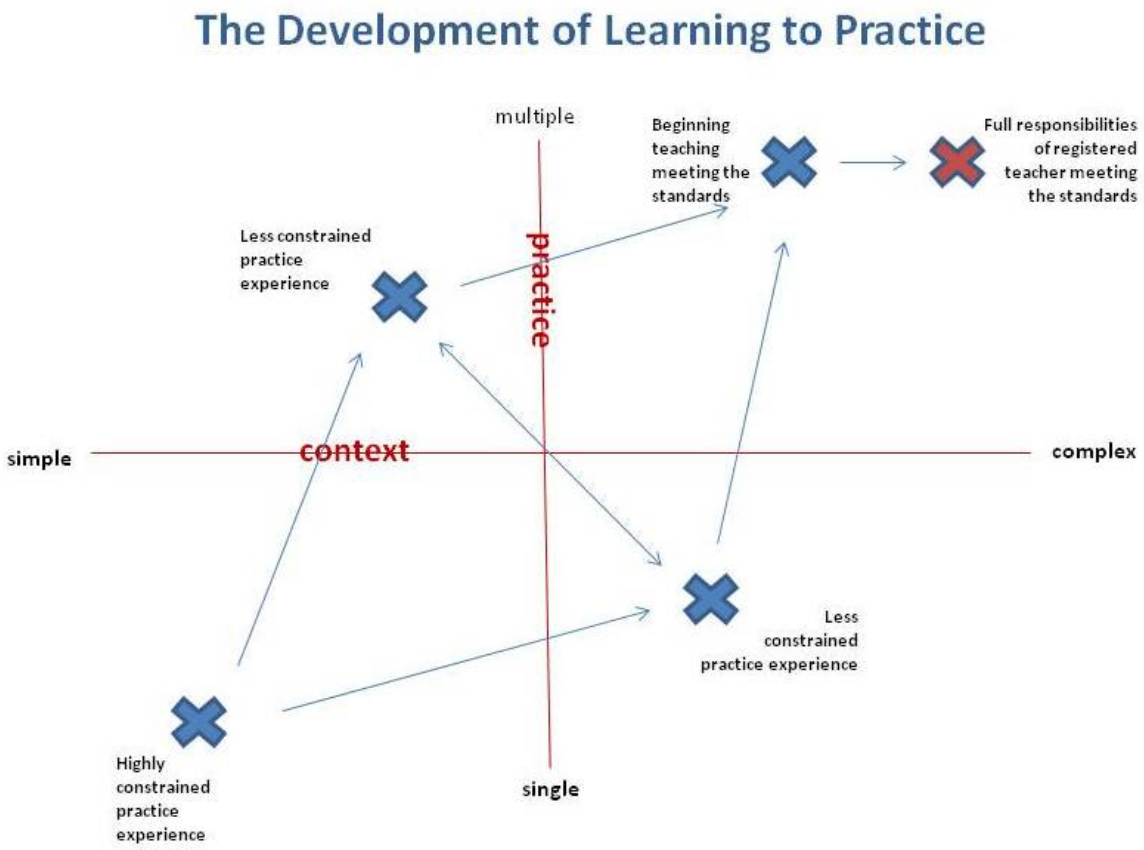

Figure 5. The development of learning to practise

Teacher education expertise

If educators are to implement a curriculum for core practices and support candidates to make progress towards the standards, they need a complex set of teacher education skills (Aitken et al., 2013). These skills are relevant to educators in both university and school contexts. Principle 1, for example, requires teacher educators to unpack their own teaching practice so that the theoretical underpinnings can in turn be made explicit to their learners: 'Why did I, as a teacher educator, choose to use this approach to teach this practice in this situation?' They must also be able to locate all discussion of candidates' practice within conceptual frameworks: 'Why are we learning about this practice and not another?' 'Why is cultural positioning so important?'

Principle 2 means that teacher educators should be able to demonstrate to candidates how they resolved for themselves the tension between doing what they had always done and doing something more consistent with effective practice. If they change their own practice in line with what these two papers advocate, they will have many relevant experiences to draw upon.

Part of the challenge of enacting this principle is to identify for candidates when they are substituting everyday theories of practice for more formal theories, and the consequences of doing so. While such situations can be planned, most arise spontaneously, so responses need to also be spontaneous. In a study by Timperley, Parr and Hulsbosch (2008) of feedback from coaches to teachers, the coaches identified as one of their greatest challenges how to probe and challenge teachers' everyday theories in ways that led to their integration with formal theories. This ability to probe is fundamental to building knowledge and integrating formal and everyday theories of practice. It requires an attitude of genuine inquiry on the part of teacher educators to identify what led candidates to practice in the way they did. Questions such as 'What led you to do that?' and 'What stopped you from ...?' can help. So can being explicit about the difference between everyday and formal theories. This can be done by saying, for example, 'I think we have different ideas about what this means, so we need to unpack these differences and their implications for practice.'

Principle 3, promoting metacognition and self-regulated learning, requires these attributes to be explicitly taught by modelling in situ. One possibility is to ask candidates for feedback on the teacher education practice, and then to process that feedback with them. Korthagen et al., (2006) suggest using candidates' own experiences of learning how to teach as texts for study, as described in the assessment for learning example (page 32).

These same principles should guide the practice of educators in relation to candidate practice, yet, as various studies show, feedback following observations of teaching is often not directed at promoting metacognition or self-regulated learning. For example, the candidate is not asked how they will know that their changed practice is more effective than their previous practice (Timperley et al., 2007). Instead, feedback sessions often consist of little more than suggestions about how the candidate might change superficial aspects of their practice.

Principle 4, integrating emotion, cognition and motivation, points to the need for teacher educators to talk openly about their vulnerabilities when attempting something new, thereby helping candidates appreciate that teaching is an emotional experience for everyone, not just those at the start of their careers.

A characteristic of the mentoring literature is an emphasis on the provision of personal support for teacher candidates who are feeling vulnerable. Wang and Odell (2002) observe, however, that mentors rarely contextualise this support within a defensible theory of professionalism or effective practice. To do so requires a high level of skill because candidates need the support, but they also need to overcome their difficulties not just by gaining greater confidence in their ability to cope, but by learning how to teach in ways that help students learn.

Principle 5 highlights the socialising impacts of communities on learning. The two communities that are specifically designed to socialise teacher candidates into the profession are universities and schools. Every paper on teacher education calls for greater connection and collaboration between these two communities, including joint planning (e.g. Darling-Hammond, 2006; Grossman et al., 2008; Korthagen et al., 2006). Universities do not own theory; as discussed under Principle 2, universities and schools are both theory based (Darling-Hammond, 2006). Neither do schools own practice. All teacher educators, whether working in schools or universities, need to understand what is involved in learning to practise.

Korthagen et al. (2006) suggest that learning to construct and analyse practice experiences with peers in a teacher education programme lays a foundation for peer learning as an ongoing part of professional and career development. Teacher educators are responsible for providing structured experiences and prompts that will help candidates move beyond the sharing of practice and establish analysis and critique as core elements of robust self-regulated learning.

4. What next?

Our vision of teachers as adaptive experts, the Teaching for Better Learning model, and the approaches described in this paper collectively present a perspective on priorities and organisation that is different to what currently prevails in most teacher education programmes. This perspective is in line with current international trends such as are evident in the work of Darling-Hammond (2006) and Grossman et al. (2009). There is now a growing literature on how to enact such an approach. For example, Boerst, Sleep, Ball and Bass (2011) describe how the work of Grossman and colleagues can be used as a theoretical framing when preparing teachers to lead mathematics discussions.

Implementation of changes in line with what is proposed in this paper will require rethinking the relationships, roles, responsibilities, and expertise of all those involved, whether in universities or schools; all are teacher educators. There are implications for partnerships between the universities and schools, the status of each institution, the relationships between them; and commitment will be needed to negotiate how participants can engage, pedagogically and programmatically, around some very specific practices.

Much has been made in the literature about close co-operation between universities and schools, but if the approaches outlined in this paper and its companion are to be realised in practice, co-operation will need a new set of conditions and to be based on a new set of understandings. For example, Hoben (2006) found that associate teachers in our secondary schools, while motivated by professional obligation, undertook the role without either training or time allowance and received little professional recognition for the job. As a result, only a minority of pre-service teachers experienced high-quality opportunities to learn to teach during their school placements. Similarly, in a study focused on the development of provisionally registered teachers, Langdon (2011) found considerable ambiguity in the role of in-school mentors. Not only was the role unclear, mentors were expected to undertake it without any real mentoring knowledge base.

Implementation of this different approach to teacher education will also involve a shift in the kinds of learning experiences that educators design for candidates. Few educators have developed their practice within the theoretical framing described in this paper. This means, therefore, that most will have to rethink at least some of the underpinnings of their own practice and their assumptions about what it means to be a professional. To do the necessary rethinking and enact new roles they will require both resources and commitment.

Internationally, such teacher education programmes are referred to in clinical terms and undertaken by ‘clinical educators’ or specialists. Some institutions (for example, Melbourne University) have gone as far as to call teaching a ‘clinical profession’ (Davies et al., in press). They justify this decision on the grounds that teaching shares many of the characteristics of other clinical practice professions (Alter & Coggshall, 2009 cited in Davies et al.). These include the centrality of the client; highly complex knowledge domains requiring general and specialised knowledge and skills as well as theoretical, practical, and technical understandings not possessed by lay people; the use of evidence and professional judgement in practice; having a community that monitors quality, distributes

knowledge, and creates standards of practice; and completion of a rigorous academic and practical education for clinical practice, underpinned by appropriate standards.

Realising these characteristics will however require more than rethinking approaches to teacher education and renaming the profession. Large-scale change will require a considerable commitment of resources and a general willingness to take on new roles. For example, when introducing its clinical approach, Melbourne University, which trains 1000 graduates each year (Davies et al., in press), renamed academic staff 'clinical specialists', in which role they were charged with working alongside school-based 'teaching fellows' who were released for 50 percent of their time to work across clusters of schools. Teacher candidates split their week between schools and university. The short-term results are positive. Graduates claiming to be 'well' or 'very well' prepared after the one-year programme increased, on average, from 40 to 45 percent (traditional programme) to 90 percent following the introduction of the one-year clinical programme (Scott et al., 2010, cited in Davies et al.). The cost, however, is considerable.

As noted in the introduction, the brief for this paper and its companion was to be bold, so as to provide a basis for robust discussion and consultation. Together, the two papers present a vision for teacher education that could transform the profession. To put what they advocate into practice, a great deal of further unpacking will be required. This will demand commitment and energy, but bearing in mind the issues of equity and quality to be addressed, the stakes are very high.

References

Aamodt, S. & Wong, S. (2011). *Welcome to your child's brain: From utero to uni*. Oxford: One World.

Aitken, G., Sinnema, C., & Meyer, F. (2013). *Initial Teacher Education Outcomes: Graduate Teacher Standards.* The University of Auckland.

Alter, J. and Coggshall. J.G. 2009. *Teaching as a clinical practice profession: implications for teacher preparation and state policy.* New York: National Comprehensive Centre for Teacher Quality. http://www.tqsource.org/publications/clinicalPractice.pdf

Alton-Lee, A. (2003). *Quality teaching for diverse students in schooling: Best evidence synthesis.* Wellington, New Zealand: Ministry of Education.

Anthony, G., Haigh, M., & Kane, R. (2011). The power of the 'object' to influence teacher inducation outcomes. *Teaching and Teacher Education, 27,* 861–840.

Bleicher, E. (2011). Parsing the language of racism and relief: Effects of a short-term urban field placement on teacher candidates' perceptions of culturally diverse classrooms, *Teaching and Teacher Education, 27*, 1170–1178.

Bishop, R. (2007) Lessons from Te Kōtahitanga for Teacher Education. In L. Deretchin & C. Craig (Eds.) *Teacher Education Yearbook XV: International Perspective on Accountability Systems and Their Impact on Students, Society and Teacher Preparation.* Lanham, MD: Rowman & Littlefield Education**.**

Bishop, R., & Berryman, M. (2006). *Culture speaks: Cultural relationships and classroom learning.* Wellington: Huia Publishers.

Bishop, R., Berryman, M., Cavanagh, T., & Teddy, L. (2007). *Te Kōtahitanga Phase 3 whanaungatanga: Establishing a culturally responsive pedagogy of relations in mainstream secondary school classrooms.* Wellington: Ministry of Education.

Bishop, R., Berryman, M., Cavanagh T., & Teddy,L. (2009). Te Kōtahitanga: Addressing educational disparities facing Māori students in New Zealand, *Teaching and Teacher Education, 25*, 1–9.

Blomberg, G., Stürmer, K., & Seidel, T. (2011). How pre-service teachers observe teaching on video: Effects of viewers' teaching subjects and the subject of the video. *Teaching and Teacher Education, 27* (2011), 1131–1140.

Boekaerts, M. (2010). The crucial role of motivation and emotion in classroom learning. In H. Dumont, D. Istance, & F. Benavides (Eds). *The Nature of Learning* (pp. 91–112). Paris: OECD.

Boerst, T., Sleep, L., Ball, D., & Bass, H. (2011). Preparing teachers to lead mathematics discussions. *Teachers College Record, 113* (12).

Bransford, J., Brown, A., & Cocking, R. (Eds) and Committee on Learning Research and Educational Practice: Donovan, S., Bransford, J., Pellegrino, J. (eds). (2000). *How People Learn: Brain, Mind, Experience and School.* Washington DC: National Academy Press.

Brayboy, B. M. J. (2005). Towards a Tribal Critical Race Theory in Education. *The Urban Review, Vol. 37, No. 5, December 2005*, pp. 425–446. DOI: 10.1007/s11256-005-0018-y. Published online: March 14, 2006.

Coburn, C. (2001). Collective sensemaking about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis, 32*, 145–170.

Cole, A., & Knowles, J. (1993). Teacher development partnership research: A focus on methods and issues. *American Education Research Journal, 30*, 473–495.

Colley, H. (2002). A ‘‘rough guide’’ to the history of mentoring from a Marxist feminist perspective. *Journal of Education for Teaching, 28*, 257–273.

Cummins, J. (2008). Teaching for transfer: Challenging the two solitudes assumption in bilingual education. In J. Cummins & H. Hornberger (Eds.). *Encyclopedia of Language and Education, 2nd Edition, Volume 5,* (pp. 65–67). Springer Science.

Dale, P.W. (1996). *The Tonga Book*. London, England: Minerva Press.

Dall’Alba, G. & Sandberg, J. (2006). Unveiling professional development: A critical review of stage models. *Review of Educational Research, 76*(3), 383–403.

Darling-Hammond, L. (2006). *Powerful Teacher Education: Lessons from Exemplary Programs*. San Francisco: Jossey Bass.

Davies, M., Anderson, M., Deans, J., Dinham, S., Griffin, P., Kameniar, B., Page, J., Reid, C., Rikards, F., Tyler, C. (in press). Masterly preparation: embedding clinical practice in a graduate pre-service teacher education program. *Journal of Teacher Education*.

De Corte, E. (2010). Historical developments in the understanding of learning In H. Dumont, D. Istance, & F. Benavides (Eds). *The Nature of Learning* (pp. 35–68). Paris: OECD.

Dreyfus, H., & Dreyfus, S. (1986). *Mind over machine: The power of human intuition and expertise in the era of the computer*. New York: Free Press.

Dumont, H., Istance, D., & Benavides, F. (2010). *The Nature of Learning* (pp. 35–68). Paris: OECD.

Feiman-Nemser, S. (2008). Teacher learning: How do teachers learn to teach? In M. Cochran-Smith, S. Feiman-Nemser, D. McIntyre & K. Demers (Eds.). *Handbook of Research on Teacher Education, 3rd Edition* (pp. 697–705). New York: Routledge.

Feiman-Nemser, S., & Buchmann, M. (1985). Pitfalls of experience in teacher Education. *Teachers College Record, 87*, 53–65.

Freire, P. (1997). *Pedagogy of the heart*. New York, NY: Continuum Publishing Company.

Gardiner, W., & Parata, H. (2007). *Te Hiringa i te Mahara: Maori secondary school teachers and professional development, 1998–2008: 10 years on*. Wellington, Gardiner & Parata Ltd.

Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, re-imagining teacher education, *Teachers and Teaching: theory and practice, 15*, 273–289.

Guousseini, H., & Sleep, L. (201) Making practice studyable. *Mathematics Education, 43*, 147–169.

Hacker, E., Dunlosky, J., & Graesser, A. (2009). *Metacognition in educational theory and practice*. Hillsdale, NJ: Erlbaum.

Hammerness, K., Darling-Hammond, L., Bransford, J., Berliner, D., Cochran-Smith, M., McDonald, M., & Zeichner, K. (2005). How teachers learn and develop. In L. Darling-Hammond (ed.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 358–389). San Francisco: John Wiley & Sons.

Hatano, G., & Inagaki, K. (1986). Two courses of expertise: In H. Stevenson, H. Azama & K. Hakuta. (Eds.), *Child Development and Education in Japan* (pp. 262–272). New York: Freeman.

Hatano, G., & Oura, Y. (2003). Commentary: Reconceptualizing school learning using insight from expertise research. *Educational Researcher; 32*, 26–29.

Hoben, N. (2006). *Real teachers, real classrooms and real experiences: The work of associates with pre-service teachers on practicum*. The University of Auckland: Unpublished doctoral dissertation.

Hobson, A., Ashby, P., Malderez, A., & Tomlinson, P. (2009). Mentoring beginning teachers: What we know and what we don't. *Teaching and Teacher Education, 25* (2009), 207–216.

Ingersoll, R., & Kralik, J. (2004). *The impact of mentoring on teacher retention: What the research says*. Denver, CO: Education Commission of the States.

Istance, D., & Dumont, H. (2010). Future directions for learning environments in the 21st century. *The Nature of Learning* (pp. 317–338). Paris: OECD

Jensen, B., Sandoval-Hernández, A., Knoll, S., & Gonzalez, E. (2008). *The Experience of New Teachers: Results from TALIS 2008*. Paris: OECD.

Johnson-Hill, Kelly. (2008). Inner Exhilaration and Speaking Truth through Metaphor: An Exploration of the Theological Significance of Māfana and Heliaki in Tongan Dance, *Studies in World Christianity 14*(1), 19–34.

Keesing, F., & Keesing, M.,(1956). *Elite communication in Samoa: a study of leadership*. Volume 3 of Stanford anthropological series. Stanford University Press. p. 88. Retrieved 16 January 2009.

Kincheloe, J. L. & Steinberg, S. (1997). *Changing multiculturalism*. Buckingham, UK: Open University Press.

Korthagen, F., Loughran, J., & Russell, T. (2006). Developing fundamental principles for teacher eduation programs and practices. *Teaching and Teacher Education, 22*, 1020–1041.

Korthagen, F.A.J., & Wubbels, T. (2001). Learning from practice. In *Linking practice and theory: The pedagogy of realistic teacher education* (pp. 32–50). Mahwah, NJ: Lawrence Erlbaum.

Lampert, M. (2009). Learning Teaching in, from, and for Practice: What Do We Mean? *Journal of Teacher Education, 61(*1–2), 21–34.

Langdon, F. (2011) Shifting perception and practice: New Zealand beginning teacher induction and mentoring as a pathway to expertise. *Professional Development in Education, 37*(2), 241–258.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.

Le Fevre, D. (2011). Creating and facilitating a teacher education curriculum using preservice teachers' autobiographical stories. *Teaching and Teacher Education, 27*, 779–787.

Lomawaima, K. T. (2000). Tribal sovereigns: Reframing research in American Indian education. *Harvard Educational Review, 70*(1), 1–21.

Lortie, D. (1975). *Schoolteacher*. Chicago: University of Chicago Press.

Lu, H. (2010). Research on peer coaching in preservice teacher education – A review of literature. *Teaching and Teacher Education, 26*, 748–753.

Lucas, B., & Claxton, G. (2010). *New kinds of smart: How the science of learnable intelligence is changing education*. Berkshire, England: Open University Press.

Lunenberg, M., & Samaras, A. (2011). Developing a pedagogy for teaching self-study research: Lessons learned across the Atlantic. *Teaching and Teacher Education, 27*, 841–850.

Marat, D., Papoustaski, E., Latu, S., Aumua, L., Talakai, M., & Kang, S., (2011). *Akoaga: Efficacy, Agency, Achievement and Success in the Tertiary Sector; Focus on Students and Parents from Pasifika Communities*. Auckland, New Zealand: Unitec ePress.

Masat, D., & Dooly, D. (2011). Rethinking the use of video in teacher education: A holistic approach. *Teaching and Teacher Education, 27* (2011), 1151–1162.

McLaren, P. (2003). *Life in schools: An introduction to critical pedagogy in the foundations of education (4th ed.)*. Boston, MA: Pearson Education.

Ministry of Education, (2007). *The New Zealand Curriculum*, retrieved from NZCurriculum.tki.org.nz

Moll, L. (2010). Mobilizing Culture, Language, and Educational Practices: Fulfilling the Promises of Mendez and Brown Journal. *Educational Researcher, 39*, 451–460.

Montecinos, C., Walker, H., Rittershaussen, S., Nuñez, C. Contreras, I.,Solís, M.(2011). Defining content for field-based coursework: Contrasting the perspectives of secondary preservice teachers and their teacher preparation curricula. *Teaching and Teacher Education, 27* (2011), 278–288.

Ministry of Education, New Zealand Teachers Council (2011). *Tātaiako: Cultural competencies for teachers of Māori learners*. www.minedu.govt.nz

Nilsson, P., & Driel, J. (2010). Teaching together and learning together in primary science student teachers' and their mentors' joint teaching and learning in the primary classroom. *Teaching and Teacher Education, 26* (2010), 1309–1318.

Ponitz, C.E.C., McClelland, M.M., Jewkes, A.M., Connor, C.M., Farris, C.L., & Morrison, F.J. (2008). Touch your toes! Developing a direct measure of behavioral regulation in early childhood. *Early Childhood Research Quarterly, 23*, 141–158.

Pratt, G., (1862). *A Grammar and Dictionary of the Samoan Language, with English and Samoan vocabulary*, NZ Licence CC-BY-SA 3.0. NZ Electronic Text Centre, Victoria University of Wellington. Retrieved 16 January 2009.

Pressley, M., & Harris, K.R. (2006). Cognitive strategy instruction: from basic research to classroom instruction. In P.A. Alexander, & P. Winne (Eds.), *Handbook of Educational Psychology (2nd ed.)*, (pp. 265–286). Mahwah, NJ: Erlbaum.

Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher, 29*(1), 4–15.

Sarra, C. (2011). *Strong and smart: Towards a pedagogy for emancipation: Education for first peoples*. London, UK: Routledge.

Schunk, D. & Zimmerman, B. (1994). *Self-Regulation of Learning and Performance*. New Jersey: L. Erlbaum Associates.

Scott, C., E. Kleinhenz, P. Weldon, K. Reid, S. Dinham (2010). *Master of Teaching MGSE: Evaluation Report*. Camberwell, Victoria: Australian Council for Educational Research.

Silverman, R., Welty, W., & Lyon, S. (1996). *Case studies for teacher problem solving*. New York: McGraw-Hill.

Sleeter, C. (2008). Preparing white teachers for diverse students. In M. Cochran-Smith, S. Feiman-Nemser, D. McIntyre & K. Demers (Eds.). *Handbook of Research on Teacher Education, 3rd Edition* (pp. 559–582). New York: Routledge.

Smith, G. H. (1997). *Kaupapa Maori as transformative praxis*. The University of Auckland: Unpublished doctoral dissertation.

Smith, L. T. (1999). *Decolonizing methodologies: Research and indigenous peoples*. London: Zed Books.

Soslau, E. (2012). Opportunities to develop adaptive teaching expertise during supervisory conferences. *Teaching and Teacher Education, 28*, 768–779.

Stofflett, R., & Stoddart, T. (1994). The ability to understand and use conceptual change pedagogy as a function of prior content learning experience. *Journal of Research in Science Teaching, 31*, 31–51.

Sykes, G., Bird, T., & Kennedy, M. (2010). Teacher Education: Its Problems and Some Prospects. *Teaching and Teacher Education, 61*, 464–476.

Timperley, H.S. & Alton-Lee, A. (2008). Reframing teacher professional learning: An alternative policy approach to strengthening valued outcomes for diverse learners, 328–369. In G. Kelly, A. Luke and J. Green (eds.), Disciplines, Knowledge and Pedagogy. *Review of Research in Education, Vol. 32*. Washington, DC, Sage Publications.

Timperley, H.S. & Parr, J.M. (2005). Theory competition and the process of change. *Journal of Educational Change, 6*(3), 227–252.

Timperley, H., Parr, J., Hulsbosch, N. (2008). Coaching through Feedback: A Close and Critical Analysis. Paper presented to the American Educational Research Association Annual Meeting, Chicago.

Timperley, H.S., & Robinson, V. (1998). Collegiality in Schools: Its nature and implications for problem solving. *Educational Administration Quarterly, 34*, 608–629.

Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher Professional Learning and Development: Best Evidence Synthesis*. Wellington, New Zealand: Ministry of Education.

Valencia, R. R. (1997). *The evolution of deficit thinking: Educational thought and practice*. London: Falmer Press.

Villegas, A. M. (2008). Diversity and teacher education. In M. Cochran-Smith, S. Feiman-Nemser, D. McIntyre & K. Demers (Eds.), *Handbook of Research on Teacher Education, 3rd Edition* (pp. 551–558). New York: Routledge.

Villegas, A., & Lucas, T. (2002). *Educating culturally responsive teachers*. New York: State University of New York Press.

Sundli, L. (2007). Mentoring – a new mantra for education? *Teaching and Teacher Education, 23*, 201–214.

Vosnaidou, S. (2007). The cognitive-situative divide and the problem of conceptual change. *Educational Psychologist, 42*(1), 55–66.

Wang, J., & Odell, S. (2002). Mentored learning to teach according to standards-based reform: A critical review. *Review of Educational Research, 72*(3), 481–546.

Wideen, M. Mayer-Smith, J. & Moon, B. (1998). A critical analysis of the research on learning to teach: Making the case for an ecological perspective on inquiry. *Review of Educational Research, 68*, 130–178.

Zhang, M., Lundeberg, M., Koehler, M. & Eberhardt, J. (2011). Understanding affordances and challenges of three types of video for teacher professional development. *Teaching and Teacher Education, 27*, 454–462.

Ministry of Education

45-47 Pipitea Street
PO Box 1666
Thorndon
Wellington 6140

Email information.officer@minedu.govt.nz
Phone 64-4-463 8000
Fax 64-4-463 8001

Published May 2013

ISBN 978-0-478-40643-6 (print)
ISBN 978-0-478-40642-9 (web)
RMR-1018

www.educationcounts.govt.nz

newzealand.govt.nz